

The Broader Impact of the PHEA ETI at Catholic University of Mozambique: A Shift in Mindset

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INSTITUTIONAL BACKGROUND

Universidade Católica de Moçambique (UCM) – the Catholic University of Mozambique – was conceptualized during the Mozambique peace talks between Frelimo and Renamo in 1992. UCM, which is one of the first private universities in the country, was officially founded in 1995, and opened its doors in 1996.

UCM's management is based in Beira, the country's second largest city, which also hosts three faculties of the institution. In keeping with its mission of offering education to all Mozambicans, however, the university comprises a further six campuses around the country. Distance education is an important part of the university's mandate and the number of distance education students has increased exponentially over the past 10 years – from about 2,000 students in 2003, to more than 11,000 students a decade later.

Vice Rector Dr Martins dos Santos Vilanculos Laita has been at UCM for 15 years, and has a far-reaching institutional memory when it comes to the state of technology at the university.

'In 1998 we had the Internet, but it was at a very low level. There was no intensive use of Internet – we still used the traditional means of communicating,' he says. 'We had a few computers – not more than 10. We also didn't have many students, because UCM was only into its second year of operation.'

He continues: 'In 2008 and 2009, progressively we started having more computers and more connections to the Internet. Today, we are at a stage where we are fully using technology for teaching and for communicating.'

The Partnership for Higher Education in Africa (PHEA) Educational Technology Initiative was not UCM's first experience with using technology in education and implementing online learning practices. But it took the partnership with the PHEA ETI for the principles of educational technology to effect change in the broader institutional mindset.

Dr Wisdom Machacha, director of the Centre for Distance Education (CED) at UCM, on the impact of the PHEA ETI:

We consider the PHEA ETI like a matchstick to light all the wood; you have all the wood, but you need a match to light the fire. All the other projects, they came in, but they never had such an impact on changing the way we do things.

PHEA ETI BACKGROUND

UCM is one of the seven universities the PHEA ETI supported across Africa. The intention was to help these universities make effective use of educational technology to address challenges faced by the tertiary education sector in Africa.

At UCM, the PHEA ETI was divided into the following five projects:

1. ICT Policy, Use Policy and Strategy Development.
2. e-Learning.
3. Centre for Distance Education (CED): Learning Materials Digitization.
4. OER Health Sciences.
5. A research project: Research into Adoption of e-Learning in Central and Northern Mozambique ('Constraints, challenges, and possibilities of adopting e-learning and teaching in a developing country: An exploration of higher education institutions in Central and Northern Mozambique').

However, over the course of the PHEA ETI interventions at UCM, Projects 2 and 3 developed far beyond their original scope. In addition, the culture of using educational technology has permeated the institutional mindset, leading to several changes in practice. These stories form the focus of this case study.

CED Director Dr Wisdom Machacha, on UCM's growing stature in the use of educational technology:

When we came into the PHEA ETI project, we were considered to be the worst: the youngest in terms of capacity, in terms of age and experience – the university itself is a new university. Later on they discovered that even though we were the underdogs, we achieved so much.

TECHNOLOGY CHAMPIONS

UCM Rector Dr Padre Alberto Ferreira



Dr Padre Alberto Ferreira was appointed rector of UCM in 2006. When he arrived at the university, the Information and Communications Technology (ICT) department was not functioning well, according to Ferreira. Thus UCM jumped at the chance to participate in the PHEA ETI, in order to enhance its use of technology in education.

Ferreira himself has been instrumental in using the PHEA ETI as a platform on which to build further initiatives. For example, during the course of the project, the university management upgraded connectivity infrastructure, installing fibre optic cables between the three campuses in Beira, at its own expense.

Ferreira's management style involves leading by example. He was one of the first contributors to UCM's recently launched electronic journal (*Revista Electrónica de Investigação e Desenvolvimento*). He has also embraced Moodle for personal use – even going as far as publishing agendas for his council meetings on the platform and inviting comment from council members via the forum.

But Ferreira's thinking when it comes to educational technology reaches far beyond the scope of the PHEA ETI. He is particularly excited by the potential for using educational technology for distance learning. 'Most of our students who finish their studies go home and then they apply for a job, but they need to continue,' Ferreira says.

If the university offers some online courses, maybe they can apply for a postgraduate programme – a master's degree or PhD – and it could be of benefit to them and the university, because we'll not abandon our students who want to continue their studies.

He views the growth in online distance education as contributing to the transformation of higher education, not

just at his institution but throughout Mozambique. And he is not alone. He says:

Most of the people who come here, like the minister of education, are copying a lot of things that we are doing. We have pilot projects that are implemented, and others come here to learn and to implement similar projects in their institutions.

I think this is really good news for us and it makes us very happy to know that we are leaders in Mozambique in terms of delivering online courses and using ICTs.

UCM Rector Dr Padre Alberto Ferreira on the use of educational technology at the university:

Everybody is committed; this kind of thought is not only happening with me. My staff and my collaborators are really committed. Even if I'm not monitoring, they come here and say: 'Okay, Father Alberto, such-and-such a project is happening.' Sometimes I really become amazed, because I didn't even know that it was happening.

CED Director Dr Wisdom Machacha



Machacha arrived at UCM in 2008, when he was appointed the coordinator for the ICT department. At the end of 2011 he was promoted to director of the Centre for Distance Education (CED). With Machacha's ICT background, and his involvement on the PHEA ETI committee, he was the ideal person to implement educational technology when it came to distance education.

'When I came here, there was a general feeling that it was not the time to implement technology. There was a feeling that the students were not ready, and that the teachers were not ready,' says Machacha. But his own perspective was different. 'I had the view that technology actually helped to bridge the educational divide in areas where the infrastructure is poor,' he says.

Although in terms of the outcomes of the PHEA ETI only eight of the CED modules were to be digitized – and, by the same token, only eight of the modules were to be offered online via a learning management system, or LMS – Machacha quickly saw the benefits of greatly expanding these initiatives. With this increased offering, Machacha realized that UCM could not rely solely on external trainers to capacitate

its staff. 'We used a cascading methodology,' he says. 'We'd train a few champions and those champions would go and train others.'

The PHEA ETI also resulted in Machacha's professional development.

At the beginning of the project, there were seven members of the PHEA ETI committee; but owing to staff turnover, Machacha and Tendayi Madziya are the only two left. Says Machacha:

The amount of work which is left to me and Tendayi is quite enormous, because now I'm managing all the five projects, including the research project. So I'm starting to learn how to do new things. Now I'm into research and I'm also presenting papers at conferences.

CED Director Dr Wisdom Machacha on the catalytic role the PHEA ETI has played at UCM:
We had the people as the firewood, but we did not have a matchstick to start the fire, so the PHEA ETI came at the right time. The fire is started and it's burning strong – it's very hot right now! Thanks to the PHEA ETI we managed to kickstart our e-learning journey.

UCM Head Librarian Tendayi Madziya



Tendayi Madziya has worked at UCM since 2001, when he found a job as a librarian for the Faculty of Health Sciences. In 2007, he was appointed as the head librarian for the entire university.

He was part of the PHEA ETI from its inception and, together with Machacha, is one of only two PHEA ETI committee members to remain at UCM today. 'When this project was first formulated, there was an OER [open educational resources] component, and this, in a way, also ties into the library area. So it was necessary that, as a librarian, I would be involved in the project,' explains Madziya.

He says:

I think things have changed a great deal at UCM. When I first joined the university in 2001, of course I was not involved in the teaching process itself, but most faculties were using the traditional way of teaching: chalk and the chalkboard.

When I started visiting all the faculties from 2007, I discovered there was some difference – some faculties were

quite behind when it came to technology; others were using PowerPoint. But from 2009 there was something like a demand from the top people to actually use technology.

Madziya points out that in addition to implementing educational technology tools at UCM, the PHEA ETI has capacitated the staff with project management skills:

When we started, the whole group did not have much experience in running projects. There was some experience with educational technologies – of course we had been involved in some use of these – but not to the extent of running the implementation as a project that would reach a certain level.

Head Librarian Tendayi Madziya on how attitudes towards educational technology have changed at UCM:

When this idea of the use of technology was first introduced, of course it was not easy. It involved a lot of changes – from attitude changes to the way of working. Some people thought that e-learning was not possible in Mozambique, particularly at UCM. Some people underrate themselves, mainly because they don't want to change. But later on they discover that actually it's possible.

CED IT Coordinator Dr Flávio Monteiro



Dr Flávio Monteiro, who previously worked in industry, was appointed by UCM in the second half of 2011 with the mandate of setting up online courses for the CED. He had his work cut out for him: in January, 2012, UCM launched its first IT honours course online, followed by its online masters in August of that year. Part of Monteiro's mission is to convince the students themselves of the possibilities and benefits of online learning. As Monteiro says: 'They need to see that it works.'

Monteiro was also involved in conceptualizing and coding a custom-built bulk SMS system for UCM to communicate with its distance education students. 'Students may not read their e-mails, so we catch them through their cellphones,' he explains. 'We send about 50,000 messages a month.'

CED ICT Coordinator Dr Flávio Monteiro, speaking about the use of online learning in distance education at UCM:
We will continue to have students without access to the Internet, or without reliable access to electricity. But the ones that can go online – we are ready for them!

Across the UCM staff, including at management level, there is the realization that greater use of educational technology can help the university to grow, as it both attracts greater student numbers and makes financial sense.

EXPANSION OF THE ORIGINAL PHEA ETI DIGITIZATION PROJECT

The huge growth of UCM's digitization project is testament to the university's growing realization that it can harness educational technology to strengthen the institution and its offerings and services. Initially, UCM intended to digitize eight of its distance learning modules run by the CED. However, the approach of the university was not simply to comply with its PHEA ETI objectives, but to fully integrate the new technology into its overall strategy for running the CED. 'In actual fact, we were aiming at digitizing eight courses,' says Machacha. 'And digitization is now 100% – over 300 courses.'

Madziya explains the reasoning behind this shift in thinking:

What was happening previously was that the logistics of making sure that the students could get materials in time was very difficult. It was very difficult to photocopy all the resources, and considering that the road network in Mozambique is very poor – and at times during the rainy season, the roads are totally broken down – it was very difficult to deliver the material. It also involved a lot of money – hiring a lorry to go to the different points to deliver the material.

So that made the whole process very difficult; the students would go without materials for three months when the course had already started. If we could digitize the material, we would save money on photocopying and we would save money on logistics.

We had the idea of starting to digitize a small number of courses, and during the process we actually discovered it was the right thing. So we thought of going further than we had planned.

For UCM, saving money on logistical costs has also helped the university to better serve its students – and attract more of them.

According to Machacha, in 2008 there were about 2,000 distance education students; by 2013, that had grown to 11,000, out of about 15,000 students in total.

'It may sound like we're exaggerating, but when I came into the CED as director, the biggest problem I had academically in 2010 and 2011 was to provide students with enough manuals.' He explains that they would limit the intake, because there was no capacity to produce manuals. 'So when we started digitizing the materials within the PHEA ETI projects, we could go to a printing company and print as many manuals as we wanted, and recruit as many students as we wanted,' he says.

CED Director Dr Wisdom Machacha, on the effect the expansion of the PHEA ETI digitization project has had on UCM student numbers:
This digitization of our materials has increased flexibility in terms of increasing our numbers and our ability to support as many students as possible.

The expansion of the digitization project was not only about quantity; it was also about quality.

The CED quickly realized it was important to create material specifically for distance education, as well as to respect copyright, and it procured additional training from Saide (at UCM's own expense) in how to tackle this. Says Machacha:

We had never previously respected any copyright. With digitizing, we respect copyright: at the end of the manual, we reference correctly where we got the material. It was not only digitizing our courses by typing copy into a spreadsheet or word document; but by digitizing and formatting it for distance education.

UCM has now adopted the Commonwealth of Learning format, which is open access and allows for material to

become an OER. As Machacha explains, the format can be adopted by any university that wants to offer distance education: 'It's a structured way of producing distance learning materials, with summaries, objectives, examples, assignments and activities.'

And, given the growing awareness within the UCM management about the importance of educational technology, the university was happy to commit its own resources in order to gain expertise in producing distance education material. As Machacha says, the university management felt it was value for money in terms of an investment, because CED had shown this to them. 'The rector, the vice rector, finance, and administration were very supportive, and we went for it!' he says.

CED Director Dr Wisdom Machacha, on how the PHEA ETI encouraged UCM to broaden the scope of its educational technology practices:

What the PHEA ETI did was to open our eyes; to make us see that what we were trying to do was not enough to effect this whole revolution. So we contacted Saide to help us with quality assurance.

EXPANSION OF THE ORIGINAL PHEA ETI E-LEARNING PROJECT

The fact that e-learning was a priority on the UCM agenda, combined with the university's enthusiasm for getting modules and courses online, has meant that its online learning has reached far beyond the scope of the original PHEA ETI outputs. 'The rector is the one who has been championing the e-learning issue,' says Vice Rector Dr Martins dos Santos Vilanculos. 'He has always made it clear that in the near future, he wants UCM to have dual modes, where we have the paper-based, or the contact mode; and progressively we should also be offering the same courses in e-learning.'

As several faculty members emphasized, e-learning at UCM did not start with the institution's PHEA ETI involvement. Says Madziya:

This PHEA ETI project was not the beginning of e-learning at UCM. Previously there was the Nuffic project, which had a component of e-learning in it, using an LMS called Chisimba. However, there were quite a number of problems in terms of functionality.

In a move that was in the works before the advent of the PHEA ETI, UCM's standard LMS is now Moodle, rather than Chisimba.

Celestino Pembe completed his undergraduate and masters degrees in IT at UCM, and is now an IT lecturer, as well as being on the university's technical support staff. Having worked with both systems, he explains some of the basic differences in the two LMS platforms' functionality:

Chisimba didn't offer many resources, like Moodle does. We didn't have chats at that time, nor any other tools like forums. Moodle offers much more: the Moodle community is bigger than Chisimba and most of the people now have migrated.

When it came to implementing course modules on the Moodle platform, again UCM initially aimed to put only eight modules online. Says Madziya:

The implementation was like an action research [project], whereby we would start at a small scale and at the same time we would actually be looking at the best options. We at first had thought of having only eight courses, but then later on we discovered that e-learning was the answer to a lot of our problems.

Machacha elaborates:

In the CED, 258 of our modules are on the platform (the total throughout the university is 418 modules). We saw this was the way to develop distance education further: eight was not sufficient. The students would complain about

the difference in the quality of the materials and it would be a problem for us.

But now the team was faced with a new challenge: how to capacitate staff throughout the university to offer their modules and courses via the LMS. As Machacha explains, the institution adopted the cascading approach, whereby a few ‘champions’ were trained and in turn would train others.

Pembe was one of those champions, and says the lecturers had mixed reactions to the new expectations of them. ‘Those who normally used technology were happy; those who did not regularly use technology were scared,’ he says.

We had to be patient. Most of the times we started by training them on how to use computers and e-mails. Some of them had training and just stopped; but most of them got excited and kept on using the Moodle platform to manage their courses.

Machacha explains that the university has adopted a carrot-and-stick approach, to ensure as many lecturers as possible get on board. ‘What you are doing on the LMS is now embedded within the performance-evaluation process of academic staff,’ he says. ‘So, the stick is you can give them a negative mark; you get a positive if you are managing your courses via the LMS.’

UCM also introduced a small financial incentive to motivate staff. If faculty members prepare and present a module via Moodle, they receive a token payment for doing so – provided their material has passed a quality assurance process. ‘We give them \$20, which is equivalent to an hour’s lesson,’ says Machacha.

CED Pedagogical Director Dr José Júlio explains that it is not only the staff who need to be convinced of the benefits of e-learning, but the students too. In the beginning, students were apparently ‘very scared’; they said e-learning was ‘very difficult’. But, Júlio says: ‘At the end they say: “Ah... This is very good! We don’t need much money for books.”’

And Júlio can appreciate this transformation from a personal perspective, gained during his own studies in Portugal. ‘I was used to computers, but when I started studying ICT for education, at the beginning it was very difficult for me,’ he says. ‘In the end, I realized I didn’t need to go to the library; the library was with me, at my place.’

Dr Ibraimo Mussagy is a lecturer in the Economics faculty, as well as an advisor (finance and administration) to the rector. He’s also an early adopter of technology, and is well placed to assess the impact that the adoption of e-learning has had across the university – when it comes to both his own teaching and the rector’s use of Moodle at a management level.

Mussagy was already using Moodle prior to the training run as part of the PHEA ETI, but went along to the workshops to learn more. He explains:

At the beginning, the other teachers were feeling some constraints in using and understanding the platform. Most of the workshops were in English – the first constraint; the other constraint is that many of the teachers didn’t teach using computers. That’s why, at the beginning, the percentage of teachers using the platform was small.

However, Mussagy asserts that the directive from UCM top management to use Moodle has had an impact. ‘Most of the teachers are using more technology; most of the teachers right now are putting more content on the platform; most of them are also using the platform to give their courses,’ he says.

The lecturers at the institution have also been supported when it comes to their hardware needs:

Most of our teachers now have their own laptops. If you came six years before, you would not have the same number of computers for teachers as you have at present. They put pressure on the administration, so we drew up a plan. The



Vice Rector Dr Martins dos Santos Vilanculos Laita

faculties pay for the laptops and the teachers pay them off in instalments.

Moreover, processes put in place to help the teachers adapt their courses to an LMS have borne fruit for teaching at the university as a whole. A course-mapping template, introduced by Saide, has been adopted across UCM.

Solomon Rumphungwe, an IT lecturer and course coordinator, explains the usefulness of the process:

The rector says that everyone must use the course-mapping template, and something like 70% of staff are using it. It helps you to plan; it's quite helpful, because then you know exactly what you need to do before you go on the platform.

Machacha elaborates on how the course-mapping process has created a culture of planning at UCM – even among those staff not currently offering courses via Moodle. ‘Planning is not a very common aspect of conventional teaching, because everyone trusts that the professors know what they’re doing,’ says Machacha. He continues:

But when you come to distance education, you need to have your plan approved before you start messing up the platform. So this planning template actually created a culture of planning within UCM. It's all about planning and structuring your course before you start teaching: plan, develop, deliver.

As mentioned, the UCM rector has taken to Moodle – using the platform for administrative management in ways the original designers would probably never have thought of. ‘When we discuss an agenda before a rectorate meeting, the secretary creates a forum in Moodle,’ explains Mussagy. ‘We start to make our contributions online before the meeting and we come up with a final agenda, which all of the members have contributed to using the platform.’

Mussagy has also found that using an LMS has improved the quality of his interaction with students:

I have a very shy student. When I put the first course I created on the platform, the first lesson was to teach the students how to edit their profile and so forth. The first person to submit their contribution to the platform was that shy student. The next day she greeted me, for the first time ever. That is one of the things I've noticed – the students and teachers become closer; students feel more comfortable talking to you.

Lecturer and Advisor Dr Ibraimo Mussagy on UCM management's shift in attitude towards online learning:

The change comes not only from the teachers, but also from the top.

ONLINE COURSES AT UCM

Within the scope of the PHEA ETI, it was never the intention to develop 100% online courses. Today, however, UCM runs 100% online degrees via the CED; while the Faculty of Health Sciences runs blended-learning postgraduate courses that are 90% online. ‘Saide discouraged us from being too ambitious; Andrew Moore [of Saide] was afraid of us getting into something too complicated,’ says Machacha. ‘But he was actually surprised.’

Initially, the online masters came about because of financial and logistical problems involved in implementing a conventional IT masters at the Pemba campus. Due to the capacity building undertaken as part of the PHEA ETI, UCM was ready to respond to this dilemma by putting the entire course online.

Machacha explains:

They were asking students to come for two weeks to class every other month and it was not practical – no employer would allow their students to do that. Secondly, we do not have the teachers to come to Mozambique to teach for two weeks only every other month. Financially and logistically it was impossible for both students and teachers. So

when we developed the online course, all the eight students who were in the conventional course moved over to the online version.

Both the online IT masters course and the online IT honours course began running in 2012, in August and January respectively. Dr Flávio Monteiro was brought in as the IT coordinator for the CED, to develop and run these courses.

He says:

It was tough to make people understand that such things could happen. For them, it was like, 'This guy's nuts, because he's telling us that he's going to teach online! How can this happen here? We don't even have the resources!'

But we convinced them that the basics will never come if we don't work. The world is running on technology and you cannot escape it.

After convincing the faculty, Monteiro's next task was to show the students the benefits of online learning and convince students that it works.

For this reason, at the beginning of the year CED runs a session that it broadcasts to all of its CED centres (11 throughout Mozambique), working with the IT people and using their labs to 'project' the session to the students.

Says Monteiro:

So they start seeing this; they start believing – 'they are speaking from Beira!' We include one tutor from abroad – he's speaking from Zimbabwe. The image is neat; the sound is neat. The students start believing it's possible to study without needing to go to school. It's not that they don't go to school – they go to school online.

Machacha also believes that an important part of holding the course online is the access it gives to international instructors. 'Technology has allowed us to improve the quality of the professors who teach, because now we have professors from South Africa, Kenya, Zimbabwe and the US who are willing to work for us on a part-time basis,' he says. 'It's allowed us to improve the quality and depth of our course – professors whom we could not bring in because of costs like air tickets and accommodation are now accessible. It has made our course quite popular with students.'

CED Director Dr Wisdom Machacha, on UCM's international ambitions for its online IT masters course:

In future we are confident that we will be able to have international students from other countries – be they English-speaking or Lusophone. We have enquiries from Angola, Brazil and São Tomé and Príncipe. So, in future, we will be an international university in the real sense and this is thanks to technology.

Celestino Pembe was one of the first group of online IT masters students. 'It was completely online. If we couldn't watch, we could use the chat board, or we could use the forum to discuss difficulties,' he says. 'We were the pioneers of this masters in IT.'

Via a video-conference session, the current intake of honours students were enthusiastic in pointing to the benefits of studying online. One of the biggest advantages they noted was that they did not need to travel from their base to attend face-to-face classes; as the majority of students are working and studying part time, this is hugely convenient to them. Disadvantages focused on the expense of the technology (connecting to the Internet), as well as challenges presented by the Internet and electricity infrastructure in Mozambique in general.

Monteiro first started experimenting with a video-conferencing platform called WebEx in early 2012, incorporating it as part of the online courses from the second half of that year. ‘We’ve made it a rule that we give one session per month per subject,’ he explains. ‘Now everyone is using the video conferencing.’

Monteiro does not exaggerate: from other courses run by the CED, to management meetings with far-flung campuses and resource centres, UCM has embraced video-conferencing technology. Machacha explains that the video conferencing started in 2012, when the institution purchased the software from the US. ‘We started off with the IT courses, but now some teachers on the general courses, like public administration, are also using it.’ He explains:

We also use this video-conferencing system for management meetings with my resource-centre managers. I can meet them here on this screen: that’s why I have speakers, and a microphone. I also have a camera, so they can see me when I talk to them. I can talk to all my managers without them having to come to Beira.

Meanwhile, the Faculty of Health Sciences has been offering its own blended learning courses, which are largely online, since 2010. Initially it offered an honours interdisciplinary course on HIV/Aids and in August 2012 launched an online masters in HIV/Aids Management.

Dr Hemma Tengler is the HIV/Aids advisor and the course coordinator for the masters. ‘We try to make the course as interactive as possible, using forums, and chats, and encouraging interaction between the students. During the course the...willingness to learn from other students increases,’ says Tengler.

What we also try to do is make the course as practical as possible, which means each module has a certain number of case studies brought in from real life. Students are given real-life problems to solve, experienced by virtual characters. In this way we try to establish a link between theory and practice.

Tengler is grateful for the Moodle training she received as part of the PHEA ETI, and has focused on putting it into action:

After the training you must be aware that what you have learned is something you are going to implement. No one else is going to develop the module for you: you have to practise, you have to find out how it works and – if you get stuck – you have to support each other.

Victor Nuvunsa, the assistant coordinator of the HIV/Aids Management course, is positive about how far the course – and UCM as a whole – has advanced in terms of online learning. ‘I see the market of distance learning increasing a lot and I think this is an opportunity for the university.’ He maintains that within UCM there is an interest in improving and in exploring this field of technology and e-learning: ‘I think it’s growing, as they see that it’s possible to run online courses, and the interest from students is growing as well.’

With this in mind, the Faculty of Health Sciences is currently working with the CED to develop a four-year course on the management of social projects, including HIV/Aids, which is due to launch early in 2014, upon approval from the rectorate.

Farisai Gamariel is the head of the Languages department at UCM and also an online masters student on the HIV/Aids Management programme. ‘It was my first time doing online learning, because all along I used to attend classes with teachers teaching us standing in the front of the class,’ he says.

Actually it is not as easy as you might think: every day of the week, from Monday to Friday, there is a task. During the weekend, we also have a chat session, and we have assignments to upload. It keeps students busier than when we are present in lessons with teachers!

Inocencia Fumo is the coordinator for the Medicine course, and one of Gamariel’s fellow students. She appreciates

the access to resources that online learning affords her:

We have many different problems that we can access knowledge to solve. For example, we have the electronic library. Four or five years ago access was not common, but now it's common to use the electronic library from the United States.

Advisor and Course Coordinator Dr Hemma Tengler, on the access to resources online learning provides:

One aspect of online learning is definitely the flexibility. There is a huge amount of information that is freely accessible; you do not normally have so many reference materials during conventional classroom teaching. What is really nice is to see students make use of this wide range.

TECHNOLOGY IN MANAGEMENT AT UCM

The PHEA ETI focused on interventions in educational technology. But the overall change in mindset at UCM, as staff become accustomed to making technology work for them, means that they have also created custom-built systems to suit their management needs.

The prime example of this is the custom-built bulk SMS platform created by Monteiro in order to manage the CED students. Together with his team, he coded this system during his end-of-year vacation in 2011/12, so that it would be up and running for the start of the new academic year. Staff members now routinely send a total of more than 50,000 SMSes each month, primarily to convey urgent administrative and course information.

Monteiro explains:

Some of our students are in locations where they don't really check the Internet every day. What we want are students who can access the Internet daily, but we are in Africa – we have limitations. Students don't have a computer or Internet connectivity, or the money to pay for such. It's more expensive to use a cellphone here than in Europe.

Bulk SMSes, though, provide a cheap and convenient way for the CED to connect with its growing student body. The system is set up so that each lecturer has an account for each individual class; this way, no student is spammed with unnecessary information. The SMS facility also has a scheduling system: for example, a lecturer can sit and input SMSes running for a whole semester, reminding students of assignment hand-in dates and the like.

THE UCM ELECTRONIC JOURNAL

On 30 October, UCM launched its electronic journal, *Revista Electrónica de Investigação e Desenvolvimento*.

'As you know, the university is not only about delivering lessons and classes, but also research,' says the rector, who was among the first staff members to publish a paper online.

We are really committed in terms of doing our best, because we want to have more visibility in terms of what we are doing in this field. I am not the only one who is really happy today: all of us are, because we have transformed our dream into this reality.

The e-journal project is being jointly developed by the Research department, led by Dr Fernando Canastra, and the ICT department, led by Dr Simone Mura. Says Mura:

An electronic journal is much more visible than a hard-copy journal, and also it can be easily accessed. In Mozambique the use of the Internet is becoming much greater – so a paper journal might find it very difficult to get the same penetration. The other intention is to make it an international publication so, via the Internet, it can actually reach that kind of audience.



UCM e-journal launch

‘It started two years ago,’ continues Mura. ‘The whole idea was to capacitate UCM teachers and students in research methodology. It got some assistance from the Dutch NGO Nuffic. The whole idea was to improve research within the university.’

The journal, which is open access and, via its research repository platform, constitutes an OER, is not directly the result of the PHEA ETI. But the environment that PHEA ETI created in the institution helped in the understanding of what the journal hopes to achieve.

Madziya explains: ‘When we started the OER project (as part of the PHEA ETI), the rectorate didn’t support it, because there was a lack of information on what it is.’ He explains that now that ‘all those articles are there, online in the journal – they are an open resource’ previous nay-sayers are ‘actually getting into the OER world without knowing it’.

Machacha has the same take on this:

You know what happens with these technology issues: once you come to understand them you become more comfortable. Before, the rector was saying he doesn’t want to participate in OER – now we are coming to the end of this project, and he launches an open journal, which is open licence, and Creative Commons.

It’s a process: when someone comes in with the idea of you developing materials and giving them away for free, you become afraid; but when you start indulging unknowingly with others who do it, you find that you are in and you are part of it.

CED Director Dr Wisdom Machacha, on UCM's development of an electronic, open-access journal. *We could not run away from it, because we are using so much technology. OER is an 'in thing' – we could not escape fashion: we had to be there!*

TAKING THE UCM LIBRARY CATALOGUE ONLINE

At the same time that UCM was developing its use of educational technology through its PHEA ETI involvement, it was also engaged in the process of migrating its library catalogue to an online platform.

Madziya explains: 'I started this programme myself in 2009 and it didn't have any financial support, as there was no funder. Even the university itself didn't put much into this project. The rectorate tasked Madziya with finding a non-commercial, free software program, and after some research he chose Koha:

It was not easy, because I am not an expert in that area. When you get it from the Internet, you have to design and adapt it, but luckily I found a student who was very good with computers to help me with the whole process.

Madziya continues:

Having an online catalogue is the trend all over – when you think of automating the library, you need to have a database of the resources you have in the libraries, so at least you can plan better.

We started with the three faculties in Beira to see if it would work. After Beira we went out to the other campuses and installed satellite programmes in the other faculties. Then we decided to put it online and link the whole thing up. And now the catalogue is online!

Madziya is very positive about the tangential influence the PHEA ETI had on his implementation of the online catalogue for the UCM libraries:

When we talk about an electronic library, we are talking of resources in digital form, and when we talk of e-learning, we are talking of electronic learning, so the two are very much linked.

The teachers need to upload resources onto the LMS and they can even get the resources from the library, or upload electronic books onto the platform. It was very much related and the PHEA project actually helped to make that relationship much stronger.

FUTURE CHALLENGES AND PLANS FOR EDUCATIONAL TECHNOLOGY AT UCM

Despite the many recent successes at UCM, as both a direct and indirect result of the PHEA ETI, the university's educational technology champions are cognisant of the challenges that still lie ahead. In the main, these are concentrated on Mozambique's Internet infrastructure and electricity capacities, as well as how to spread online learning at UCM beyond the three central Beira faculties.

Mugassy explains:

Sometimes we don't have Internet. That's why in some of the courses we have decided not to use the chats, but to make forums, because sometimes we have problems with the Internet. Right now, it's improving, but sometimes it's difficult.

And Monteiro adds:

We need to have the same quality of Internet connection throughout the country. We have students who are in towns, and some who are in rural areas, and all of them need to have the same quality of service. Within the cities the quality

is very good; outside the main cities, the quality is not so good.

There is also the matter of expanding the gains of the PHEA ETI to UCM's other campuses around the country. As Madziya says:

This PHEA ETI project was mainly concentrated on faculties in Beira, but UCM is also in other provinces. They also need to be in the same boat, so we need to make sure that all these other outside faculties can also join in.

In addition, a few faculty members mentioned the lack of a clear ICT policy at UCM as representing a hindrance to future development. However, this policy is currently being finalized as part of the institution's PHEA ETI involvement, and should be approved by the rectorate shortly.

When it comes to future plans, Machacha has outlined some challenging goals for 2014: 'The plan is that we work so hard that all 14 courses offered by the CED will be available online by the 2015 enrolment,' he says. Meanwhile, the Faculty of Health Sciences will go ahead with its current and new online offerings.

And training at the outlying campuses will continue. 'We will allocate some money – 5% – to the ICT department. We want to see if it's possible to continue doing what we have done in the past and make it sustainable,' says the rector. 'Because we know if we do not support this project it will crash. And our dream is to expand it from Beira to other campuses.'

KEY LESSONS LEARNED

Flexibility of partners: Staff praised the flexible nature of the PHEA ETI, as it allowed for universities to determine their own needs. Says Machacha:

The PHEA ETI project was good, because it allowed for flexibility, unlike other projects, which were very rigid. You could change your focus midway, if you realized the reality on the ground was different to what you had planned. That was very good – it made us successful.

ICT policy: Several faculty members stressed the importance of UCM developing an official ICT policy to guide staff in implementing initiatives. 'An ICT policy will actually make sure there is continuity and that people will not depend on someone's word but on written-down policies,' says Madziya.

Interfaculty collaboration: Sometimes a university can have 'silos' of online learning, but the methodology does not spread throughout the institution. This was the case at UCM prior to the PHEA ETI, but subsequently faculties are starting to work together in implementing online learning programmes. For example, the CED and the Faculty of Health Sciences are currently collaborating to develop a course. 'We help each other, we take experience from each other. We take a module we've designed and it forms part of a bigger course – a joint venture as a university,' says Nuvunsa.

Management buy-in: Any project has a much greater chance of success if the top university management is championing it. UCM Rector Dr Padre Alberto Ferreira has led the institution from the front when it comes to online learning. 'From a policy perspective, the rector said everyone has to go for e-learning; and we had an ICT strategic planning meeting with all the deans in August 2013,' says Machacha.

Staff capacity building: UCM has a 'cascading' system of mentoring, which can be thought of as 'training the trainers'. This approach has benefited the university, in terms of both capacity building and cost saving. Machacha explains:

This methodology has worked very well for us, because it saves us money on hiring external trainers. We train our own trainers and we cascade our training to other faculties. That's the strategy we're going to use to expand online

learning to the other faculties that have been left behind.

Starting small: As already mentioned, UCM greatly expanded its digitization and e-learning PHEA ETI projects beyond their original scope. Setting achievable, realistic goals is critical, because these can be scaled up if they are successful. ‘When you start any process, you should start it at a small scale. If you start at a larger scale, you may hit the wall,’ says Madziya.

CONCLUSION

The PHEA ETI has proved a catalyst for educational technology at UCM – through its official outcomes and, perhaps even more importantly in terms of future endeavours, through the institutional mindset it has created that has given rise to other processes and initiatives.

From expanding the original digitization and e-learning projects, to using SMSes for management purposes, launching an electronic journal, and instituting an online library catalogue, among other achievements, the staff at UCM have placed educational technology at the core of what they do. Most commendably, they have not simply adopted a ‘cookie-cutter’ approach, but have adapted internally benchmarked educational technology practices to suit their own needs.

Says Madziya:

The PHEA ETI project has come to an end, but the use of technology will continue. One reason for that is because UCM as a university, without having to source funds from outside, has invested a lot in improving infrastructure, like the fibre optic network.

It has also invested a lot in training its staff so they can have the necessary abilities to carry on with e-learning. So having people capacitated and also having the infrastructure in place are two major factors that will keep the impetus going.

UCM Vice Rector Martins dos Santos Vilanculos Laita, on the place of educational technology at UCM:

UCM is a university that recognizes the importance of technology. It not only recognizes it, but is actually pursuing the implementation of technology in all areas – in management and at a classroom level.

IT Lecturer Celestino Pembe, on what the PHEA ETI project has meant for UCM:

We learned a lot of things since the PHEA ETI started, especially about training. Myself, I hope this doesn't stop...Even our students, when they come in, they don't know what an LMS is, or what e-learning is; but when they feel it, they like it, and they keep digging it! This is really the most important thing I encourage as a teacher.

CED Director Dr Wisdom Machacha, on the outside recognition UCM has received:

At the National Institute for Distance Education, UCM is considered to be the leader in both distance education and technology use in education. The provincial director and other politicians have all been here and told us we are doing a good job.

It makes us happy, but it also puts on a lot of pressure to maintain our good name and meet expectations.

ABBREVIATIONS AND ACRONYMS

CED	Centre for Distance Education (<i>Centro de Ensino à Distância</i>)
ETI	Educational Technology Initiative
ICT	Information and Communication Technology
IT	Information Technology
LMS	Learning Management System
OER	Open Educational Resource(s)
PHEA	Partnership for Higher Education in Africa
Saide	South African Institute for Distance Education
SMS	Short Message Service
UCM	Catholic University of Mozambique (<i>Universidade Católica de Moçambique</i>)



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