Uganda
Institute of Computer Science, Mbarara University of Science and Technology

Training and Implementation of e-learning in Mbarara University of Science and Technology (MUST)

Summary of project developments

The team established an e-learning steering committee to coordinate the implementation of the project, as well as the development of its e-learning policy and platform. The committee, which includes representatives from all faculties, has met regularly over the duration of the project. With support from a consultant from Makerere University, the committee developed an e-learning policy for the institution, which was presented to the University Senate and adopted in January 2011.

Another early task was to assess whether each faculty had adequate resources to take part in the e-learning project. It was determined that the Institute of Computer Science was ready, and that the Faculty of Development Studies had some equipment as well, while other departments required additional equipment or infrastructure.

Equipment received in the framework of the project ran an e-learning software platform (Claroline). In March 2011, the project team organized two workshops to familiarize staff and students with the e-learning policy and to present the concept and possibilities of e-learning. This also provided an opportunity to introduce the system to a limited number of users (students, staff). Then in November 2011, the project team held four workshops for 120 academic staff from four faculties (Medicine, Science, Developing Studies, as well as the Institute of Computer Science). Participants were shown how to use the e-learning platform – how to create courses, upload content, set assignments, etc. The system was then commissioned for use by staff and students, and has since been used almost exclusively by the Institute of Computer Science, which has the most adequate infrastructure. The Institute of Computer Science offers the following professional training programmes to the local communities: Cisco Certified Network Associates (CCNA); Information Technology Essentials (ITE).

Additional e-learning workshops welcomed 55 participants on 13 and 14 December 2012: the first workshop took lecturers through content development and upload (presentation of the e-learning policy at the institution, hands-on content development exercises, discussion on best practices), and the second workshop focused on quality assurance and assessment. The University's Software Incubation and Innovations Unit is currently developing an online quality assurance tool. During discussions held at the workshops, participants agreed to retain a blended approach of using both traditional classroom and e-learning methods when the pilot distance learning programmes are introduced.

Regarding the existing courses, the project team conducted a user satisfaction survey in May 2012. Students and teachers reported that they were generally satisfied (66%-75% satisfied) with the available platform and resources, but poor network connectivity and insufficient number of computers were the two most often cited limitations.
Looking forward, the institution plans to go beyond the existing programmes and to offer postgraduate diplomas as well. The e-learning steering committee proposed three diplomas for e-learning: a Master’s in Health Informatics, a Master’s in Computer Security, and a Master’s in ICT for Development. A curriculum review workshop was organized on 30 August 2012, and the Quality Assurance Committee is to examine revised proposals in July 2013. The Master’s programmes will then be presented to the University Senate, to the University Council and finally to the National Council for Higher Education. Considering the remaining steps, the team expects that the programmes could commence by early 2014.

Together with the development of its offering, the project team took steps to familiarize the community and prospective students with the existing and projected e-learning opportunities. In April 2012, it visited nine education institutions within and outside Mbarara, to assess staff familiarity with e-learning as well as EMIS (ICT for education management), and to check infrastructure at the different institutions. It was determined that there was low awareness, that most teachers were lacking in basic IT skills, that all institutions had computer rooms but that the connectivity was generally unreliable and expensive. The project team concluded that it would be necessary for the pilot project to have reasonable ambitions (such as a certificate course in health sciences) and decided to initiate consultations to this end. Also, it was decided to start compiling an introductory course on IT skills. Awareness-raising was also carried out through a series of radio talk shows in August 2012.

The March 2011 and November 2011 workshops provided the project team with an opportunity to assess staff awareness of grid computing. It proved to be very low. Students and academics at Mbarara were not familiar at all with the technology, while researchers abroad expressed no additional need for the resources, considering that they already had access to similar tools. In August 2012, the team held a grid computing sensitization workshop, for lecturers and researchers from all academic and research units. Participants were introduced to the concept of grid computing as well as existing applications, and discussions were held on possible projects. Three proposals were put forward: a climate change monitoring project (Faculty of Science), a numerical analysis project (Mathematics Department) and an image analysis project aimed at improving early diagnosis of cancer (Department of Obstetrics). These projects are to determine precisely if and how grid computing can support their activities. The project team is in close touch with the respective researchers to offer them the required support when the time comes for them to use the grid.

**Cooperation**

The project team has established research and teaching cooperation with several institutions in line with its focus on e-learning.

- Cooperation established with the Medical School at the University of Bristol (UK), using a web platform (“BlackBoard”) to enable professors as well as undergraduate and postgraduate students from both institutions to hold interactive classroom sessions in real time (through text presentations and voice communication). A first conference between undergraduate students of both institutions was held in February 2011, followed by a second conference early in 2012. Postgraduate pediatric students of the two institutions have conducted initial tests of the platform as well. A presentation with several co-authors, including from the University of Mbarara and Bristol University, was presented at the “Global Health Education for Tomorrow’s Doctors” conference (Association for the Study of Medical Education (ASME), Birmingham, UK, 20 October 2011).
- A project using comparable tools is starting between the Faculty of Development studies at Mbarara and the Faculty of Arts and Social Sciences, Dalhousie University, Canada. Students from the two institutions will be able to interact in real time through the “blackboard” platform.

- Mbarara is taking part in the “Medical Education for Services to All Ugandans” (MESAU) project, together with three other Ugandan institutions and Johns Hopkins University (USA). This project involves regular video conferences organized in turn by participating institutions. In August 2012, Mbarara hosted a video conference on the Ebola virus.

- With support from the University of Oldenburg (Germany), the Faculty of Development Studies has acquired a video conference kit.

**Communication**

The above-mentioned presentation co-authored with the University of Bristol gave rise to a paper on e-learning for North-South Global Health Partnership Students, published in “Medical Education”, Wiley (November 2012).

On completion of the current phase of the project, coordinators are encouraged to share their thoughts on the relevance, sustainability, impact, and strong and weak points of the Initiative. The team highlighted the following:

- Participation in the project has enabled the consolidation and systematization of existing e-learning initiatives and plans within the university, notably through the work of the e-learning steering committee. Furthermore, the project has enabled the infrastructure to be mapped out and shared in a more efficient way, thereby ensuring equal benefit for stakeholders from different faculties.

Regarding the impact of the project, the coordinator noted the following:

- The project’s activities have improved the use of e-learning technologies in teaching and learning at the institution and created awareness of e-learning opportunities among secondary school teachers and students. The project has reached out to healthcare workers as well in order to publicize available resources (existing short courses) and the distance learning programmes under development.

- In total, the project team estimates that 150 researchers and lecturers have benefitted from the project; awareness has been raised for two-thirds of participants and one-third of participants are already using the e-learning platform for teaching. About 900 students are directly benefitting as well: they have been trained on the e-learning platform and are using it on a regular basis. Finally, approximately 500 secondary school students have been introduced to e-learning opportunities through visits to their school. While this last group has not yet obtained access to the platform, their awareness will facilitate further extension of the course offering.

Regarding sustainability of results, the coordinator highlighted the following:

- The university has a well-established ICT infrastructure and is committed to implementing the e-learning policy. The team has been working in close
cooperation with the university’s ICT committee to close the remaining infrastructure gaps.

Finally, coordinators are encouraged to share any lessons learned and recommendations to UNESCO for the management of future comparable projects:

- The planned time for the project was too short considering the lengthy bureaucratic procedures it had to go through; the project team recommends that future project proposals seek to factor in all possible scenarios in estimating the length of the project.

- Procurement of the equipment was challenging: the process had to go through the institution’s official procurement procedures which are complex and time consuming. The team recommends that UNESCO handles procurement in the future.

- The team recalls that operational funds were channelled through the institution’s bank account. This delayed implementation while the funds were being released to the project, which required an official request to the finance department. The team suggests that the project should open a bank account with the project coordinator, with two officials from the university administration acting as signatories.
Mbarara University, Uganda, grid computing sensitization workshop, August 2012

Mbarara University, Uganda, curriculum review workshop, August 2012 (top) and e-learning development, upload and accessibility workshop,
Mbarara University, project equipment installed

Mbarara University, videoconference session

Mbarara University, Uganda, radio talk show, August 2012

Illustrations: Mbarara University of Science and Technology, Uganda