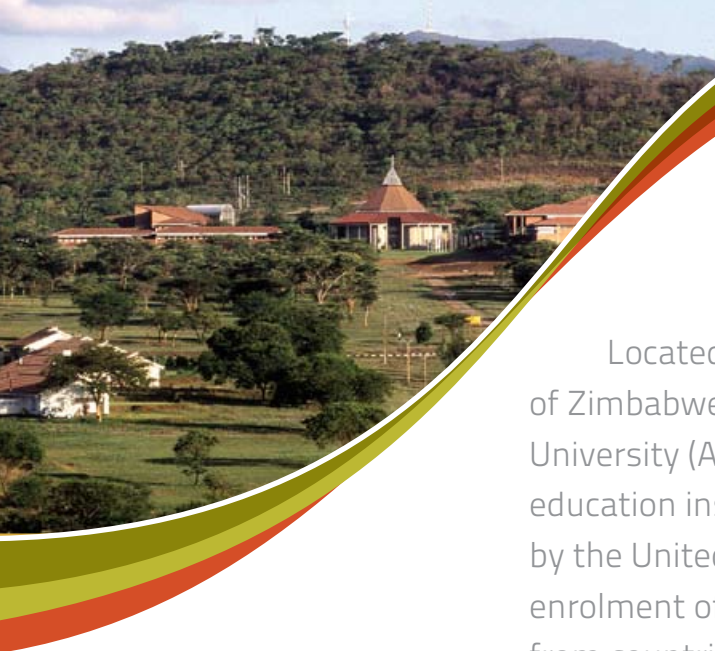# The Use of ICT at
Africa University

Located in the beautiful eastern highlands of Zimbabwe just outside Mutare City, Africa University (AU) is a private, Pan-African higher education institution affiliated with and supported by the United Methodist Church. With an annual enrolment of approximately 1,200 full-time students from countries such as Zimbabwe, Angola, the Democratic Republic of Congo and Mozambique, AU offers training in theology, agriculture, education, humanities and social sciences, management and administration, health sciences, and peace and leadership.

The recent context of economic and social upheaval in Zimbabwe did not dampen the spirit of AU's leaders, who continued to run the institution in the face of shortages of local currency and deterioration in provision of essential services such as communications and basic amenities such as water and electricity. They continue to pursue their vision of AU as a Centre of Excellence in Africa, using Information and Communication Technologies (ICT) in the teaching, learning, research, and management of all systems within AU. Despite the contextual challenges, which include having to use a dial-up Internet connection in 2002, AU now boasts a campus-wide ICT network for enhancing learning, teaching, and administration.

Developing Infrastructure

AU embarked on the development of a robust campus-wide network in 2005 after the AU Board of Directors allocated US$300 000 to ICT (and another $280 000 for upgrades in 2009). The network topology consists of a
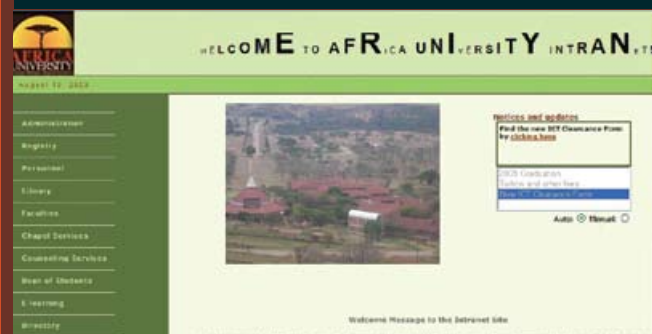
'We have a 1:1 ratio of computers to staff and 1:20 for students. The aim is to achieve a 1:5 ratio for students by 2012.'

(Martin Dwomoh-Twenboah, AU ICT Consultant)

There are approximately 2,000 data points in the university.

There are 335 data points in 12 student hostels.

direct fibre-optic link between the ICT building (the main gateway) and other university buildings, including student hostels, allowing for Internet connectivity in every room in student hostels as well as every office, utility area, and laboratory on campus. Other recent improvements include campus wireless hotspots and the acquisition of five servers.

In order to accommodate power cuts and load shedding, AU has also obtained a number of generators and UPS systems. As one of the major challenges facing the university is the high cost of bandwidth (512kbps uplink and 1MBps downlink currently costs US $10,878 per month), the university has acquired 'Packet Shaper', a bandwidth management system to use and manage bandwidth so that bandwidth is concentrated in administration, staff rooms, teaching rooms, and the library during the day, and directed to hostels and the library in the evenings. The university is aiming to increase its bandwidth to 1MB uplink and 2MB downlink by the end of 2009, which will be funded through the university operational budget.

'We want to automate most academic and administration operations, and our target is to automate 85% of both academic and administration operations by 2011. This is all because of cost-saving to increase productivity and efficiency and to reduce operational costs.'

(Martin Dwomoh-Twenboah, AU ICT Consultant)

Enhancing Administration and Management Operations

Moving from the manual administration of business and finance operations, the university has adopted and customised Pastel software to improve productivity and promote efficient record-keeping. Where course registration and grading were done by individual faculties in 2005, student academic and financial records are now computerised and centralised. AU aims to develop this system further in order to allow students to view their marks and register for courses online, as well as view and print unofficial transcripts; to enable prospective students

'Usually university email is more reliable and faster than Yahoo and Gmail.'

(Zwenhamo Albert Chiteka, Senior Lecturer in Plant Breeding and Genetics, Faculty of Agriculture and Natural Resources)

'Every academic, technician, administrator, and secretary has computers, except the cleaners and groundskeepers who access the labs to check mail. We are slowly moving away from memos to a paperless system.'

(Fanuel Tagwira, AU Vice Chancellor)

to submit admission applications online; and have faculty members enter marks online. The university has also developed a personnel system, which was implemented in 2009. The rationale for developing such systems is to facilitate accurate data management, reduce costs, improve control and security, and improve efficiency and effectiveness.

Email is the official means of communication for all students, staff, and other employees at AU. All staff and students are given an AU email account when they join the university, and they are required to check their emails regularly. This has significantly reduced the amount of paper used and hard-copy record-keeping.

'I use the Smart classrooms when I want to demonstrate a concept … it is a matter of showing the material on the board and you spend most of your time explaining… We are able to communicate effectively with our students, especially using Moodle. I enter my course outline and learning material and post assignments. It has reduced my workload in terms of having to physically meet students all the time, … [and] in terms of the time factor to prepare material. In subsequent seminars, you are only updating material.'

(Stephea Chuchu, Lecturer, Faculty of Administration and Management; Accounting and Finance)

Enhancing Learning

AU offers face-to-face electronic teaching and learning for various courses across faculties, and uses Moodle as an e-learning platform. There are four Smart Classrooms that lecturers can book for teaching. In addition, each faculty has at least two laptops, which staff members can use in their lessons. The university has deployed inventive methods to incentivise academics to use technology, such as giving a laptop to the lecturer who displays the best use of e-learning technology (based on a student survey). From 2002, the university also made a policy decision that no student would graduate from AU without completing a computer literacy course.

'All course outlines are on the e-learning platform. There are no printed copies of course outlines.'

(Fortunate Sibanda, Webmaster, ICT Department)

'Lecturers post notes, and we go to lectures for explanations. They also post tutorial practice questions which are very helpful. You can interact with the lecturer if you want to raise an issue which you are not happy with.'

(Brighton Mutingwende, third-year Accounting student)

'In the library, we are limiting hard-copy subscriptions and getting online subscriptions. But we need to train lecturers to access electronic journals.'

(Brian Kutiwa, Assistant Librarian responsible for Library Client Services)

The fully air-conditioned Jokomo Yamada Library boasts an extensive online catalogue of resources, and features a computerised network, 35 computers with Internet access for student use, an electronic book security system, and an Archives collection. Using Greenstone Digital Library

'Digitising exam papers is helpful because students know what lecturers require and practise before writing a paper. To get the (physical) copy may be difficult, it takes time. Now you just click and then you get the examination and you can view many papers on one screen.'

(Brighton Mutingwende, third-year Accounting student)

open source software, the AU Digital Library (DL) seeks to preserve and archive information and, more importantly, to provide indexed access to the literature available for academic and research purposes, minimising the constraint of bandwidth required to access research information online. Information resources in the AU DL include past examination papers; full theses and dissertations; research projects, newspaper and journal articles, research, seminar and conference papers; and academic publications. AU also has subscriptions to a number of online and CD-ROM-based electronic databases, providing access to over 20,000 electronic journals and books. The CD-ROM subscriptions provide researchers and students with access to journal literature without needing to access the Internet.

'If you do not embrace ICT as an academic, you will expire. You have to stay on the cutting edge if you want to be relevant.'

(Fanuel Tagwira, AU Vice Chancellor)

'ICT pervades everything that is happening in university. For it to come through, there is a need for leadership in order for buy-in to come through.'

(Zwenhamo Albert Chiteka, Senior Lecturer in Plant Breeding and Genetics, Faculty of Agriculture and Natural Resources)

> *'Our vision is to be the best wired institution on the African continent. We haven't even started.'*
>
> (Fanuel Tagwira, AU Vice Chancellor)

Progressing in the Current Social and Economic Context

- Funding for ICT at AU comes from a variety of sources. It is budgeted for in university operational costs, students pay a technology fee of US$100 per semester, and all funding proposals include an ICT component.
- Strong leadership and management of the university has mitigated against the Zimbabwean social and economic context hampering AU's progress.
- AU has ICT champions in the form of Martin Dwomoh-Twenboah, an Associate Professor from the US who has volunteered his services at AU during his vacations, as well as the Vice Chancellor Fanuel Tagwira.

Challenges Facing the University

- The primary challenge facing AU is the high cost of bandwidth in Zimbabwe. The university uses satellite bandwidth, which is extremely expensive in Zimbabwe. Whilst the university has acquired access to a number of e-journals (which generally have the advantage of being more current), students can only download articles during the evenings when more bandwidth is allocated to the library. The university is engaging in discussions with the Ministry of Higher Education around receiving level one licensing, whereby AU would receive bandwidth directly from the satellite company rather than through a local service provider.
- Another major challenge facing the university is security and virus threats, as virus protection software is currently not upgrading and downloading automatically although subscriptions are paid regularly. The reason for the problem is ascribed to poor bandwidth, which makes it impossible to download effective updates of current DAT (data) files for the particular antivirus software in use. AU has recently acquired new antivirus software in order to overcome this problem on all AU servers, the email server, and individual workstations.
- The reluctance of academics to use technology presents an additional challenge to the university. The university is attempting to address this by awarding a prize to the person who shows best use of e-learning

technology. In addition, staff members currently engaged in e-learning are given preference should they request a loan from the university to purchase a laptop. To tackle the reluctance of academics to use the new Moodle platform, the university hired an administrative assistant for three months to help lecturers convert their print materials into digital format. The e-learning technology unit continues to support academics in transforming their teaching approach through individualised training. In order to encourage use of the Digital Library, the library has developed a marketing strategy targeted at academics so that they may influence their students to use the facilities.

Moving Forward

Whilst having developed strategies to target their challenges, there are areas that the university needs to focus on to optimise the use of ICT at AU:

- In the absence of a clearly defined and up-to-date strategic plan, AU needs to work on developing an ICT strategy to drive the vision of the university's ICT rollout in a systematic and measureable way;
- The university recognises that there is a need to update the hardware in their computer laboratories, as many computers are out of date and the equipment in each lab is not standardised;
- AU continues to target academics to encourage them to adopt ICT to enhance the various technology offerings.

'The university labs are not up to date compared to the university infrastructure.'

(Martin Dwomoh-Twenboah, AU ICT Consultant)

'My message for my colleagues when it comes to ICT is that we have no option. We must fight hard to make sure our institutions are IT networked, because the rest of the world will leave us behind. If Africa wants to bridge the digital divide, higher education institutions must take the first step.'

(Fanuel Tagwira, AU Vice Chancellor)

This brochure is one of a series that aims to showcase good practice in African higher education. It is intended for higher education decision-makers on the Continent and overseas. Each institution in this series has taken simple steps to solve basic fundamental problems and improve the level of education and service delivery in a context of limited resources. This series is produced by the South African Institute for Distance Education (SAIDE), with the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) and the Partnership for Higher Education in Africa (PHEA) providing funding for the production of this brochure.