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ABSTRACT

Technikon Natal is a higher education contact institution in Durban, South Africa. In the last 6 years, the Online Learning Center has evolved bottom-up, driven by the contagious creative spirit of champion lecturers. Activities have grown to such an extent that it has become necessary for the institution's management to develop an institutional vision and model for online education. This paper reflects upon trends and developments in this environment, from 1994 to 2000. It speaks of experiences and lessons learned by online learning practitioners, and weighs up various issues in order to suggest a sustainable model for an institution that faces constraints commonly experienced by the majority of higher education institutions in the developing world. Examples are given from the range of past and current online learning projects at the Online Learning Center. (Author/AEF)

Online Education Practice: a Dual-Track Balancing Act

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Abstract: Technikon Natal is a higher education contact institution in Durban, South Africa. In the last six years the Online Learning Centre has evolved bottom-up, driven by the contagious creative spirit of champion lecturers. Activities have grown to such an extent that it has become necessary for the institution's management to develop an institutional vision and model for online education.

This paper reflects upon trends and developments in this environment, from 1994 to 2000. It speaks of experiences and lessons learnt by online learning practitioners. It weighs up various issues in order to suggest a sustainable model for an institution that faces constraints commonly experienced by most higher education institutions in the developing world.

Introduction

Technikon Natal is a higher education contact institution in Durban, South Africa. In the last seven years online education has evolved bottom-up, driven by the contagious creative spirit of champion lecturers. By the end of the year 2000, activities had expanded organically to such an extent that it has become a priority for the organisation's management to take ownership of the practice. This ownership will allow a more clearly defined focus, enabling Technikon Natal to collaborate and compete with other institutions, in the context of preparing students for an e-commerce driven workplace.

This paper reflects upon trends and developments in the Online Learning Centre, from 1994 to 2000. It speaks of experiences and lessons learnt by online education practitioners. It weighs up various issues in order to suggest a sustainable model for an institution that faces constraints commonly experienced by all educational institutions in the developing world.

History of Technikon Natal and South African Education: 1994 – 2000

Technikon Natal is regarded a historically white institution. The transformation of the institution commenced during a transformation forum in 1994, the year of the country's first democratic elections. As a result of this process, 21% of the student population is presently white and the remaining 79 % black.

During the time of transformation, the trend of academic development in the mainstream became prominent. Mainstreamed academic development implies a focus on the learner through academic staff development and curriculum development. Lecturers are taught to adapt their teaching techniques and the curriculum to suit a diverse student population. This approach is opposed to the voluntary, add-on, remedial student support model that existed previously during the apartheid years, where the curriculum and teaching techniques remained intact and "struggling" students were required to attend "extra" lessons conducted by tutors, outside of a course's time table.

Since South Africa became a democracy, the country's educational policies have evolved towards a system of outcomes-based education (OBE), emphasising access, learner-centeredness and flexibility. All of these are facilitated with greater ease through the use of computer technologies.

Initial Implementation of Online Education through Ready-Made Courseware

During 1994 a pre-designed computer-assisted learning (CAL) system was purchased for the Education Development Centre (EDC), a student support department awkwardly placed *outside* the academic ambit of the institution. One staff member was appointed to install the PLATO online tutorial system in mathematics, physics, chemistry and English and to recruit users for the use of ready-made software.

Although there was no institutional vision for online education and no broad guidelines for implementation at the time, the CAL Centre's own long-term goal was to develop ways of introducing online learning in a *sustainable* way and to become a central academic support service for all faculties - the guiding consideration being, "how to extend the scope of involvement in the pedagogical use of online learning from the margins towards the centre of institutional practices" (Taylor 1998).

The challenges that the marginalized EDC faced when the CAL Centre became one of its subunits were: being a voluntary, add-on service (not timetabled); surviving on donor money; being placed outside the academic ambit; and carrying the stigma of "remedial education". In spite of these challenges, the CAL Centre currently functions as an independent unit known as the Online Learning Centre (OLC). It is centrally placed in the academic ambit, offering a range of services, has access to the institution's budget, and comprises of two academic staff members plus an administrator and a technician. In the main these successes can be ascribed to the systematic, research-based approach of a handful of adventurous, tenacious, lone-ranging practitioners.

Online education at the institution has now reached a point where top-down meets bottom-up: as mentioned previously, at the end of 2000 the academic management team showed an interest in making an institutional commitment in order to support lecturers in their practice. This point will be elaborated on at the end of the paper. However, at this point some guiding principles that have been used by this unit that has operated in the absence of an institutional vision for online education will be discussed:

From the start, the institutional climate posed challenges far greater than making the technology work. In the beginning stages lecturers' "remedial" approach to students with learning difficulties was still at the order of the day. It often occurred that lecturers sent individual students away to the EDC to get "extra help" in the student's "free time" for a particular academic problem. Single students would then work in isolation online, not knowing how to select relevant materials from a host of options, and losing motivation quickly.

Therefore it was necessary to keep a firm stance on implementation in the mainstream curriculum. This approach required a focus on working with lecturers and academic departments rather than with individual students. Lecturers have been required to be *involved*, following the process of online content review and selection (to customise various programmes suited to a variety of courses and learner needs); time-tabling sessions as part of students' formal programme; appointing subject facilitators to assist during these sessions; developing ancillary printed materials to link tutorials to lecture content; and giving credits for work completed to boost motivation.

As a result of this work method, the PLATO system is now extensively used for first year courses on campus. Student numbers have increased from an initial group of forty to close to two thousand. This proves that it is not only the *design* of educational software that determines quality of learning, but equally important is *the way in which it is implemented.*

The underlying pedagogy of the PLATO tutorials is mastery learning, which is particularly effective for the reinforcement of basic sub-skills, e.g. practising to do a chemistry titration or calculating vectors in physics (Bloom 1986). During 1994 we conducted a study with electronic engineering first year students who used PLATO maths. Results indicated that the PLATO intervention helped students to achieve outcomes that require the mastery of basic sub-skills. However, PLATO did *not* improve students' ability to solve problems that require the use of higher order thinking skills. Interviews with students revealed their need for balancing individual online tutorial work with constructivist-type activities such as follow-up group discussions, in order to make PLATO tutorials more relevant to lecture content.

The quotes below underline that first year students with no previous exposure to technology are empowered (and not alienated), if a learner-centred approach is used:

"PLATO doesn't become tired of explaining."
"It is that I am not afraid to do anything."
"I could never do calculations alone. PLATO gui

Although our DOS-based version of PLATO is now "old technology", it is still heavily in use after seven years.

In-House Courseware Development with a Focus on Staff Development

Since the initial implementation of commercially available educational software in 1994 at the institution, the need has arisen for the development of software in-house, in areas that are either not commercially available, or available but not quite fitting Technikon Natal's syllabus, or commercially available but not affordable. In order for two educational technologists to support fifty-five academic departments, a model of in-house courseware development *with a focus on staff development* has evolved.

As the unit has been a "lone ranging department" (Taylor 1998), staff has had to keep a focus in the absence of managerial input. This has had positive as well as negative implications. On the one hand we have had free reign to experiment and learn, pushing the boundaries of development and technology in our efforts to support lone ranging practitioners' innovations. On the other hand this has caused a scattered focus and an overloaded infrastructure, the unit being inundated with requests for involvement. Therefore, in grappling to regain focus and to find a suitable and sustainable model for online education, the OLC observed trends at other higher education institutions. The two main models that emerged seemed to be staff development and production.

Below is a summary of some of the benefits and drawbacks of both models.

STAFF DEVELOPMENT UNIT	PRODUCTION UNIT
Lecturers are empowered if their skills are developed – it is a personal investment.	Good short-term solution (specialist developers can get something up and running quickly).
The lecturer is in control of the environment and owns process in the long run.	Specialist developers can develop sophisticated learning materials.
Long-term updates are more feasible.	
The support department can function with skeleton staff, in the absence of managerial support.	

Table 1: Benefits of staff development and production models

STAFF DEVELOPMENT UNIT	PRODUCTION UNIT
Time constraints of lecturers to do development	A production unit requires a big infrastructure in order to develop projects for a range of departments.
If lecturers themselves do the development, it is not likely to be done on a sophisticated level (time constraints).	Cannot function in the absence of managerial support.
	In the long term the lecturer is not in control of the environment – unable to take care of upgrades and updates.
	Impractical for a production person to drop current projects to take care of updates a year or two down the line

Table 1: Drawbacks of staff development and production models

In hindsight it seems that keeping the focus on staff development and continually redirecting ownership to the lecturer since the early "PLATO" days of implementation, has been crucial for the creation of a sustainable climate. The greatest challenge has been developing software in collaboration with academics and, in the process, enabling them to *remain in control of the process.*

Orwig (1999) emphasises the importance of providing online practitioners (lecturers) with incentives and resources in order to get them involved, and rewards for successful practice. One of the most positive offshoots of the staff development model is that by gaining technological skills, a lecturer becomes more marketable. This personal investment is at least one incentive for getting involved, even if no formal institutional forms of recognition exist.

Another important focus in an attempt to cultivate a sustainable climate, has been to work with champions and to give these champions every opportunity to succeed, and to promote their work on and off campus. As a result, these champions become role models, mentors and, even, coaches to others further down the line.

Academic Staff Development Workshops

Since 1998 the centre has offered staff development workshops to all academic staff on campus. Web pedagogy has formed an important foundation for all workshops. Some topics at the time of writing are virtual classroom development, facilitation and management; website development and management; multimedia authoring and electronic presentations.

The quote below is a response commonly given by lecturers during feedback:

"Thank you for the relaxed, non-threatening environment in which this course is presented. It gave me the confidence to use the Net effectively and to apply its advantages to the classroom setting."

Lecturers are on the one hand keen to get involved, yet on the other hand many are hesitant since they have probably been intimidated somewhere along the line by those who claim to own the technology. Therefore we focus strongly during workshops on demystifying technology.

The following quote also indicates a common response:

"Many doors opened, but we need to step through now."

Once lecturers realise that they can master the technology, there is the realisation that stepping into practice is hard work, takes commitment and requires real support.

Development Tools

During training we have not focused so much on high-end bells and whistles, but rather on template-driven, "low-end" technologies that make it more feasible for lecturers to do the development (e.g. Toolbook Assistant; Microsoft Word and Microsoft Front Page for website development). As lecturers are able to create materials relatively quickly, there is more time to explore pedagogical issues, for example learning how to select media and development tools appropriately for a specific target group. Another important pedagogical skill is to learn how to facilitate actively online once electronic materials are developed, in order to prevent students from getting lost in cyberspace and to sustain online interaction and ensure that learning takes place.

Projects

The importance of faculty support of a lecturer's project cannot be over-emphasised. Projects have stalled in spite of the enthusiasm and commitment of lecturers. Not only is this a waste of valuable resources, it is also

extremely demoralising for everyone who has poured time and energy into a project. We have therefore introduced detailed inter-departmental agreements, and in order to cope with the demand and to prioritise projects, only support subsidy-generating courses.

Below follow examples from the range of past and current online learning projects at the OLC:

The Pharmacology Project of the Community Nursing department is a CD ROM-based distance education multimedia project for registered nurses and midwives who are unable to travel to Technikon Natal. Through this project Fregona, Harris and Kruger (1999) have explored the provision of pharmacology training for rural community nurses and midwives in KwaZulu Natal.

The Operating Systems IV virtual classroom of the Computer Studies department is an example of constructivist learning on the World Wide Web. Fourth year learners construct a rich online resource every year through individual and collaborative projects. In this project the power structures of traditional education, including roles of lecturers and learners, are challenged (Pete & Khalili 1998).

The End-User Computing intranet site of the Computer Studies department is used to develop web browser literacy and information literacy amongst first year students, in preparation for projects such as Operating Systems IV (Khalili & Pete 2000).

The Thekwini Project of the Languages and Communication department is a virtual classroom on the World Wide Web that uses innovative techniques such as scavenger hunts to develop academic literacy skills and increase the motivation levels of second language students (McKenna 2000).

Online Open Learning for Contact Teaching

The range of projects listed above all fit in somewhere along the continuum of open learning. Online learning does not only belong to distance education. Where it is implemented in a previously traditionally taught contact course, open learning comes into play. For many of the courses above, lecturers have retained contact sessions with students. However, where these courses previously consisted of traditional transmission mode lectures only, there is now a balance of lectures, tutorials to touch base and make logistical arrangements and online sessions (that include access to materials and contact with lecturers and peers).

Conclusion: a Top-Down, Bottom-Up, Dual-Track Balancing Act

Taylor (1998) elaborates on Morrison's (1996) idea that if thirty percent of lecturers in a given institution teach online, this indicates the critical mass that is required to extend online education towards the centre of institutional practice:

> "...then the institution would undergo a paradigm change in its educational practices".

In order to reach the critical mass, he proposes a dual-track approach, namely balancing innovation and appropriation – examining innovative lone ranging lecturers' work methods and adapting and applying these to other courses. In this way an additional ten percent of "early adopters" can be gained. The challenge is to gain the last ten percent to achieve this critical mass:

> "Institutions have to engage the attention of the unconverted rather than continue to focus on the easily or already converted. This identifies the target." (Taylor 1998)

For the last seven years at the Online Learning Centre we have followed a dual-track approach, continuously balancing various aspects in order to gain and sustain the participation of the pioneers and the early adopters.

The recent commitment of our academic management team will enable the development of an institutional vision and a coordinated strategy. Issues that will be addressed by the newly founded Online Learning Committee include a survey to pool institutional resources; providing incentives, resources and rewards to motivate lecturers to practise, and a discussion of the existing intellectual property policy. It is hoped that these debates will shift online education from the margins towards the centre of Technikon Natal's educational practice.

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