Three tertiary institutes, three different projects. All making learning better, quicker and smoother. Whoever said school was boring?

Tied Down No Longer

Daniel Tan, Director of NYP’s Computer and Network Centre, taps on the combined strength of both his server systems and human resources.
School curriculum and the goings on of education systems may seem hundrum at first, but one learning facility has finetuned its processes for better service delivery to its users. The Homesglen Institute of Technical and Further Education in Melbourne, Australia, implemented a US$200,000 solution aimed squarely at its three user profiles—the teachers, students and the management itself.

The tertiary institute’s Learning Resource Centre (LRC) is a dynamically provisioned file system—only the relevant information is presented to the target user in question—providing Web access to learning resources. Students get access to subject material, timetables and reference notes, and are given a communication channel with other students in the class as well as the relevant teachers. Teaching staff are presented with an interface easier to navigate around for their tasks such as class-planning and so on. Most importantly for that is the ability to update this information easily and on the fly, with the results instantly reflected.

The traditional file system used to be structured as a hierarchy, which made it complex to handle as time went by and more information got pushed into the tiers. The new structure is flattened, and presents itself in a uniform format across all the teaching departments. It is “smart”, weeding out unnecessary information for the particular user depending on profile, so that confusion is eliminated.

An integral part of the project allows the teachers to mark their students’ attendance on a mobile device, linking this input back to the LRC, which then provides (or limits) access the students have to the proper classes and material marked out by the teachers. This access can be specified right down to the level of an individual class list and be made time-sensitive, so that control options remain high.

The management and planning committees of the school get new ways to quantify the value of materials purchased for the students, because the monitoring and tracking of students’ progress is done on a real-time basis, and reflects material usage against that data to evaluate the currency of materials. No more guesswork, no more assumptions—just the raw, hard facts. This is a breakthrough not just for Homesglen, but an example shown to an industry where historically, no set method has been established for charting material usage.

The three years that went into developing this has paid off in a system fully browsable over the Internet and resting on a stable 24x7 infrastructure. It has saved them from the expected cost of upward-spiralling disk usage—a saving estimated to be “tens of thousands” of dollars in storage and management costs.

On its Oracle grid solution, Martin Power, Homesglen’s Information Systems Manager, says, the adoption of it was essential because of the demand and need for uninterrupted service. “It allows me to provision business services with optimum uptime and flexibility. It’s not a scientific grid model; it’s very much a services-oriented model,” he says.

It’s all about expansion flexibility, Power says. On the possibility of a surge in student enrolment and the accompanying needs, he says, “I could rent the additional capacity [for physical servers] at a huge expense, whereas with the grid model, I can simply buy more blades for my data centre and at the end of the exercise, redeploy that additional capacity to other services.”

### Scalability Means Growth

Daniel Tan would agree. The Director of Nanyang Polytechnic’s (NYP’s) Computer and Network Centre also upgraded its infrastructure to Web-enable mission-critical application systems on an Oracle grid, as well as employing centralised SAN/NAS and cluster technology with a consolidated backup system for full uptime and scalability.

NYP is one of the first tertiary institutions in Singapore to adopt grid technology on a large-scale.

The impact of this has been felt on several levels. For one, the teaching staff does not have to be in the office anymore for a range of administrative chores such as timetable planning, module registration, examination results entry and so on. They had to previously because the system was shut down every night for backup. Moreover, staff get Web-access from anywhere now, so those on leave or attachment are still linked to the campus.
Nobody refuses an increase in computing power. Waiting times for the programs decreased dramatically: the time taken to open the user mailboxes, which used to take up to 30 seconds, has now been slashed to a mere five seconds. Large downloads of school records, which used to freeze systems, is now possible and stable.

The IT staff has a load taken off their minds with the SANNAS technology in place, because doing away with the old, isolated silo architecture allows for the easy adding of applications as user requirements change and expand. The centralised storage management is scalable for their tape libraries—a need that will keep growing.

While converting over a thousand client/server programs to a Web interface (an increase from 40 percent to a full 100 percent of Web-based programs), the staff did not need to re-write program code during this migration.

Much like the principle of grid technology itself, tapping on the accumulated resources of many servers, Tan chaired regular project meetings which included staff from other IT departments throughout the campus, to tap their varied technical expertise, as well as to keep the project development progress transparent.

"Project planning, management and effective communication are important skills in managing multiple vendors to ensure the project keeps to the schedule and runs smoothly," he says. Regular checks foresaw the many potential hiccups in their path, and the meetings ironed out coordination and technical issues, too.

**The Virtual Canvas**

The Singapore Management University (SMU) wants you to paint your future. Exploiting the features of Tablet PCs in a wireless campus, the university’s Office of Communications and IT Director, Foo Yin Kee, has combined existing technologies to come up with a novel approach to a classroom environment in which students and teaching staff benefit.

Aimed at creating a “participative learning environment”, all the classrooms have two screens and projectors installed on their ceilings; students’ and lecturers’ Tablet PCs, which are automatically connected to the projectors upon entering the classrooms, are able to “take over” a projector to share presentations and material. This two-way communication is made even more convenient because participants are freed from wires and time-wasters like the process of setting up a traditional projector.

Operational cost savings accrued amount to well over a million Singapore dollars (US$620,000) per year: an estimated US$34,000 is saved per year from cutting down the number of support staff required from five to three people, because of the eradication of manual equipment testing throughout campus; the automatic-shutdown of the projectors lengthens the lamp hours dramatically, saving a whopping US$950,000 per year.

The “Virtual Canvas”, by NCS, is complemented by the latter’s Teaching Facility Management Support System (TMSS), an application enabling the monitoring of teaching facilities throughout campus and sounds alarms for faults or breakdowns, shortening response time and the need for legwork to conduct routine checks.

The students are happy. A poll of 109 people reflected the greater majority’s positive response to the project, especially in the areas of being able to share information with the professors as well as amongst each other. No one registered a negative complaint there.

The future of TMSS will lean towards live camera monitoring to assist support personnel in covering classroom activities, as well as video-recording scheduling of class sessions.

Foo is careful about not getting carried away by the sheen of exciting new technology—he ensures that the projects match the needs of the users. Feedback is gathered through special interest groups created amongst the university staff during development: “This is to ensure that technology was not implemented simply because of novelty or keeping up with trends, but because genuine needs and workable solutions are identified,” he says.

He emphasises a proactive approach over a reactive response as a best practice: “The TMSS is the epitome of that for support staff, because by the active monitoring of equipment, they are able to gauge the performance of the individual devices and plan preventative maintenance even before the faults become visible to the user.”