Facilitating Teaching and Learning through e-Learning

Ravi Chandran
Centre for Instructional Technology
National University of Singapore
• Founded in 1905, Government-funded

• 14 faculties and schools

• 31 national and university-level research centres and institutes

• 24,092 undergraduates and 7,173 graduate students

• 1,944 faculty members and 1,464 research staff

• 3,622 administrative & professional staff
• 50 Bachelor’s degree programmes

• 138 Master’s and Doctoral degree, and Graduate Diploma programmes

• Double Degree, Joint Degree and Concurrent Degree programmes

• Broad-based curriculum focusing on multi-disciplinary, global education

• 7 halls of residence on campus for 6,000 students

• 3 campuses with 1 under construction (University Town)
GLOBAL PARTNERSHIPS

- Duke University in the Duke-NUS Graduate Medical School Singapore
- Eindhoven University of Technology in the Centre for Design Technology
- Georgia Institute of Technology in The Logistics Institute-Asia Pacific
- John F Kennedy School of Government, Harvard University, in the Lee Kuan Yew School of Public Policy
- Massachusetts Institute of Technology in the Singapore-MIT Alliance
- Peabody Institute, Johns Hopkins University, in the Yong Siew Toh Conservatory of Music
**Association of Pacific Rim Universities (APRU)**
A trans-Pacific consortium of 36 leading research universities from 16 economies (http://www.apru.org)

**Shanghai, Seoul, S’pore University Alliance (S³UA)**
A partnership between NUS, Korea University and Fudan University to jointly conduct globally-oriented education and research programmes, with a significant focus on Asia.

**Universitas 21 (U21)**
U21 is an international network of research-intensive universities that aims to facilitate collaboration and cooperation between the member universities and to create entrepreneurial opportunities for them.
more focus and accelerated pace

- **Computer Centre**
  - Core IT Services and Facilities

- **Faculty IT Unit**
  - Faculty IT Services and Facilities

- **NUS Library**
  - Digital Resources

- **Centre for Development of Teaching and Learning**
  - Pedagogy and Training

- **Centre for Instructional Technology**
  - IT for Teaching and Learning
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NUS notebook deals 2008/2009

By Darius Chang
Jul 28, 2008
URL: http://asia.cnet.com/reviews/notebooks/0,39050495,62044220,00.htm

Introduction

Students at the National University of Singapore (NUS) have the largest selection of notebooks for the campus purchase program, with vendors from such as Acer, Lenovo and NEC offering laptops at heavily discounted prices.

If you purchase any laptop under this program, the machine will be configured with the following software free:

- Windows XP Professional or Vista operating system
- Adobe Creative Suite 3 Web Premium
- Adobe Acrobat Reader
- NUS Windows Shopping
- NUS Dialup

If you already own a laptop, then you may have all the above system installed in your notebook except for the Windows XP/Vista and Macromedia Webtools 8 programs.

Another advantage of this campus purchase program is that all units will be given at least a three-year on-campus warranty, with some brands even offering international coverage as well.
• Campus-wide coverage for both Kent Ridge and Bukit Timah Campus

• Wireless broadband speed at 54 Mbps (IEEE 802.11 b/g)

• Over 1,000 wireless base stations and hotspots

• Implementation of LEAP for enhanced security

• Wireless roaming among institutes of higher education
**Computer Centre**

**ACCESS, ANYTIME and ANYWHERE**

### Outside Campus
- Cable Modem
- ADSL
- ISDN Dialup
- Analog Dialup
- Wireless GSM/GPRS
- Internet Roaming GRIC/IPASS

### On Campus
- Computer Clusters @ 100 Mbits
- Secured PnP @ 100 Mbits
- Wireless PnP @ 54 Mbits

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**NUSNET**

- Internet-II (ABILENE, APAN, etc.)
  - Internet > 400 Mbits
  - 155 Mbits
  - 600 Lines

**Local Connections**

**Dialup / PSTN**
Research on learning practices, philosophy & pedagogical theory;

Formulation of policies in matters such as teacher appraisal, peer review, selecting outstanding educators, and student assessment;

Developing and implementing teacher learning programmes

Exploring and promoting pedagogical sound applications of instructional technology in collaboration with CIT

www.cdtl.nus.edu.sg
more focus and accelerated pace

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MULTI AGENCY APPROACH
**Lectures**
oral, written, narrative videos, drill and practise, discussions, demonstrations

**Skills Based**
role-playing, games, modeling, simulations, assessments, CAI

**Individual vs. Group**
self study, jigsaw learning, group discussion, brain-storming, cooperative learning, CAI

**Inquiry Based**
case studies, problem based learning, projects, reflective discussion

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**Students value face-to-face instruction – year after year. ICT should not replace or overshadow the real benefits of classroom interactions.**

ECAR Study of Undergraduate Students and Information Technology, 2008
• Constant changes in educational technology, curriculum changes and student expectations requires an **evolutionary** approach in selecting technologies for teaching and learning

• Experimentation is needed on what works for teaching and learning – **trial and error**

• Students still want limited amount of technology in their course – **technologies that make them more productive in what they are already doing**

• Limited ROIs when investing in education technology

• There is also a need for IHLs to keep pace with educational technology trends for incoming students
• Importance and value of face-to-face teaching

• Technology as an enabler and facilitator to improve the teaching and learning processes

• Focus on technologies that help staff and students be more productive in what they can already do

• Focus on technologies that enhance student learning

• Encourages student-lecturer contact
• Encourages cooperation among students
• Encourages active learning
• Gives prompt feedback
• Emphasizes time on tasks
• Respects diverse talents and ways of learning
NUS Educational Technology Platforms
Top-Down Support and Bottom-Up Drive

Course Websites

Course Management System

Centrally managed and tightly integrated
Consistent look and feel

Flexibility and Variety
What IVLE can do for you.

- Assessments (Quizzes)
- Assignment/Notes Exchange (Workbins)
- Communities
- Class Announcement with SMS
- Discussion Forums
- Chat Rooms
- Class Management and Class Roster
- Distribution Lists
- Grade Book
- Lesson Plans (Week-by-Week Schedule)
- Library e-Reserves and Resources
- Module FAQs
- Module Syllabus and Readings
- Multimedia and Video Support
- Organizer with Class Timetables
- Project Workspace and Peer Review
- Webcast and Podcast Lectures
- Surveys and Polls
IVLE COURSE MANAGEMENT SYSTEM

Comprehensive
Module Syllabus
Web/SMS Notification
Workbin
Lesson Plans
Discussion Forums
Chat Rooms
Assessments & Surveys
Project Management
Webcast Lectures
Video Streaming

Supplemental
Module Syllabus
Web/SMS Notification
Workbin
Lesson Plans
Discussion Forums

Administrative
Module Syllabus
Web/SMS Notification
Workbin

Caters to a mix of faculty
Web based with single sign-on
Focus on staff and students will follow
1. To: All Full-Time Graduate and Non-Graduating Students

With effect from 1st July 2009, the University Health, wellness and Counselling Centre (UHWC) will be managing the new NUS Group Medical Insurance Scheme (GMIS). All full-time Graduate and Non-Graduating students are required to subscribe to the new Scheme. Please check your email for further information. Queries may be directed to uwhc.health@nus.edu.sg or nus@myvis.com.sg. Thank you.

2. User Role: Please click on the User Role function at the top of this page if you are a student with manager access to certain modules.
IVLE BUSINESS CONTINUITY

Database Cluster
Storage Area Network
Redundancy and High Availability
600GB

100BaseT

Hardware Load Balance

NUS High School
Secondary Data Centre

Computer Centre
Primary Data Centre

Primary

Secondary

Clients

SSL

Clients

SSL
MOBILE SERVICES

Knowledge, when, where and how you want it

Mobile Applications
- Mobile IVLE
- Podcast Lectures
- Mobile Blogs
- NUS Staff Directory

SMS Services
- Examination Marks
- IVLE Course Announcements
WEBCAST and PODCAST LECTURES

to reinforce learning and study

Streaming video or audio of lecturer

Clicking on index jumps exactly to that point in the Webcast lecture

Students review desktop that is an exact replica of lectern PC

Webcast Lecture
WEBCAST LECTURE MANAGEMENT

Faculty Control Room

Video Management Software capable of managing video units across the campus
Number of Webcast Request
eModules to support interactive online courseware

**Objective**

At the end of this lesson, the student is expected to demonstrate an understanding of personal preventive measures and social responsibility in preventing the spread of infection.

**Synopsis**

It is now clear that SARS is spread by infected droplets through close person-to-person contact. Personal preventive measures are important. Such measures can be divided into primary preventive measures and secondary measures. Primary measures consist of handwashing, wearing personal protective equipment (PPE) - mask, glove, gown and goggles as appropriate and avoidance of SARS affected areas, and improvement in general state of health.
Conferencing Mode

**Singapore – MIT Alliance 2**
Advanced Materials for Micro- and Nano-Systems
Chemical and Pharmaceutical Engineering
Computation and Systems Biology
Computational Engineering
Manufacturing Systems and Technology

Web-Based Mode

**M.Sc. in Financial Engineering (DL)**
Joint Teaching and Co-Supervision

- Some 50 professors from MIT and another 50 from NUS, NTU and the Research Institutes conduct courses and co-supervise the students.

- Interaction with MIT professors and students takes place face-to-face as well as via distance education facilities.

- Students at MIT and Singapore ask questions in ‘real-time’ and participate in classroom discussions.
Network TV
BBC
Discovery
Channel News Asia
Research Channel
Channels 5, 8, U, Suria
NUScast

Media Repositories
NUS YouTube
NUScast
NUS Galleria (public and private)
Case Study – Faculty of Medicine 3rd year / Final year Examinations

- Started in year 2004
- Clinical Vignette-based MCQ Paper 3
- Modified Essay Questions MEQ
- Cohort of 213 students

During examination, prevents
- surfing of website for answer
- reading emails
- MSN or yahoo
- copying questions to local or external drive
- opening of file locally from the PC or externally from thumbdrive

Dr Erle Lim et al
Computer-based Versus Pen and Paper Testing
Annals Academy of Medicine
Sep 2006, Vol 35 No 9
- Yong Loo Lin School of Medicine; Department of Medicine
  Student Group Size: ~220 students
  Frequency: every year for Final Year Exam and Re-exam

- Yong Loo Lin School of Medicine; Department of Surgery (New!)
  Student Group Size: ~220 students
  Frequency: every year for Final Year Exam and Re-exam

- Faculty of Law @ BTC (New!)
  Student Group Size: 30 students
  Frequency: each Semester for Quiz 1 & Quiz 2

- Arts and Social Sciences; Centre for Language Studies; Malay 2 (New!)
  Student Group Size: 12 students

- School of Computing for Computer Networks Laboratory
  Student Group Size: ~70 students
  Frequency: every Semester 1

- Arts and Social Sciences; English Language & Literature
  Student Group Size: 14 students
Why

In preparation for flu pandemic plan, where if a flu pandemic hits, staff and student will need to be familiar with IVLE and related technologies like webcast, Breeze, virtual classroom, etc. Can e-Learning infrastructure and support demands be met?

When

• E-Learning Week on Feb 18th – Feb 22nd 2008 [CNM, OSHE, CIT]
• No teaching during this week for CNM (20 staff, 300 students)
• Classes supported by IVLE, Centra and PowerPoint [Breeze]
student driven; informal learning

- **NUS Communities**: share, exchange files, photos and discuss with friends
- **Blog.NUS**: start a blog about your studies, work and life
- **Wiki.NUS**: start a wiki to collaborate on documents with friends
- **IVLE Communities**: IVLE space to share, exchange and discuss with friends
- **Mobile Blogs**: share, exchange files, photos and discuss with friends on your mobile phone
- **NUS 2nd Life**: share, exchange files, photos on the 3D virtual network
• Lets you quickly and effectively check all of your students’ work in fraction of the time

• Results are based on searches of billions of pages from both current and archived instances of the internet, millions of student papers and commercial databases of journal articles and periodicals.
Plagiarism eModules to **educate students** on good academic culture
Corporate Videos
We produce corporate videos on a University, Faculty, Department or Unit level.

Live Event Coverage
CIT deploys a multi-camera team that covers a multitude of corporate and academic events.

Instructional Videos
These videos are used as teaching aids involving specific subjects.

Informational Videos
We also produce informational videos for academic and corporate events.

Video Assessment Course
We do regular training courses on video production, editing, assessment and evaluation
• Classroom Clickers to enhance student participation and enable instant feedback.

• Helps to you to overcome the "silent majority".

• Anonymous response encourages the students to participate.
- **Online mind Mapping tool** – *Access anytime anywhere*
- **Multiple platform support** – *Window, Mac and Linux*
- **Multiple languages support** – *European languages, Japanese and Chinese*
- **Browser based online storage**
NUS Educational Technology Projects
PERSONAL LEARNING ENVIRONMENT

a new learning paradigm?

Accesses Internet Resources

Online Training

Active in Online Communities

Real Time Collaboration with Peers

Embarks on Virtual Fieldtrips

Free Courses & Software; Subscription Services

NUS Resources
- Lectures & Tutorials
- NUS Libraries
- Stud. Mgmt. System
- IVLE
- Webcast Lectures
- Curriculum Website

Google Docs & Spreadsheets

Basecamp

divShare

Blogger

Internet Resources

flickr

YouTube

del.icio.us

social bookmarking

Yahoo! Answers

msn

NUS Libraries

Stud. Mgmt. System

IVLE

Webcast Lectures

Curriculum Website

Personal Learning Environment

new learning paradigm?
NexUS
Your Personal Learning Environment

http://nexus.nus.edu.sg
connect.live.learn
Unified Communication Platform

Lectures from NUS, BTC
Other IHLs, Organisations

Portable 3G Phone Users

A conferencing platform that can scale from high-quality board room systems, mobile phones to desktop systems to support live interactive lectures between NUS campuses and other IHLs and collaboration among students.

Unified Communication Platform

NUS Students Desktop Video Conferencing, IM with UT Lecturers and Students

University Town

Telepresence
go where potential students are going...
Multi-Use Teaching Spaces

cit.nus.edu.sg/nusfacilities
National University of Singapore
http://www.nus.edu.sg

Computer Centre
http://www.nus.edu.sg/comcen

Centre for Instructional Technology
http://www.nus.edu.sg/cit

Centre for Development of Teaching and Learning
http://www.cdtl.nus.edu.sg