# Facilitating Teaching and Learning through e-Learning

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### NUS FACTS and FIGURES (1/2)

- 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









### NUS FACTS and FIGURES (2/2)

- 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)









- 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

### **MULTI AGENCY APPROACH**

### 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

- Governance, Policy and Planning
- Network Infrastructure and Services
- Operations and Data Centre
- Academic Computing
- Administrative Information Systems
- Desktop Computing, User Support Services, Helpdesk
- Enterprise Infrastructure and Services, Identity Management
- IT Security
- Research Computing and High-Performance Computing
- Student Computing
- Telephony
- Web Support Services

This story was printed from CNET Asia.

### NUS notebook deals 2008/2009

By Darius Chang Jul 28, 2008

URL: http://asia.cnet.com/reviews/notebooks/0,39050495,62044220,00.html

#### 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.





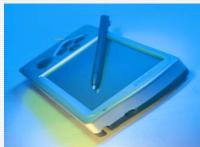


- Campus-wide coverage for both Kent Ridge and Bukit Timah Campus
- Wireless broadband speed at 54 Mbps (IEEE 802.11 b/g)
- Over 1,000 wireless base stations and hotspots
- Implementation of LEAP for enhanced security
- Wireless roaming among institutes of higher education









### **Outside Campus**

**Cable Modem** 

**ADSL** 

**ISDN Dialup** 

**Analog Dialup** 

Wireless GSM/GPRS

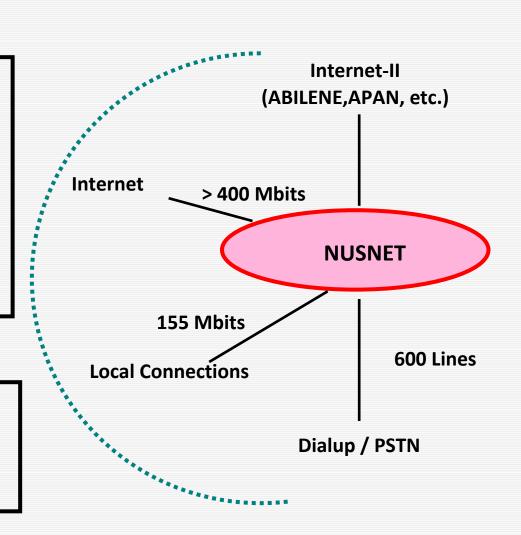
**Internet Roaming GRIC/IPASS** 

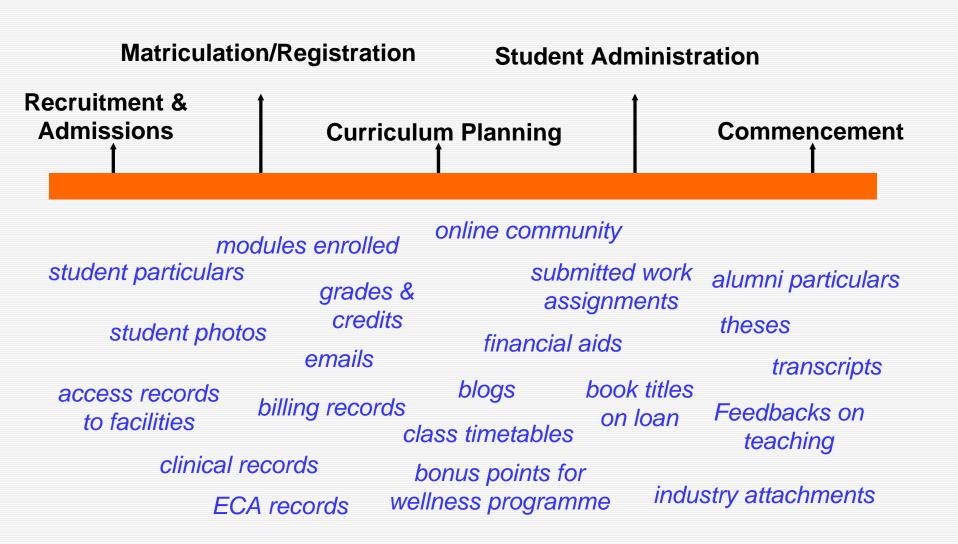
### **On Campus**

**Computer Clusters @ 100 Mbits** 

Secured PnP @ 100 Mbits

Wireless PnP @ 54 Mbits





### **Centre for Development of Teaching and Learning**

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

### **MULTI AGENCY APPROACH**

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Faculty IT Services and Facilities

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# Centre for Development of Teaching and Learning

**Pedagogy and Training** 

**Centre for Instructional Technology** 

**IT for Teaching and Learning** 

### **INSTRUCTIONAL METHODS**

#### **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

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 <u>evolutionary</u> 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



### **OUR E-LEARNING PHILOSOPHY**

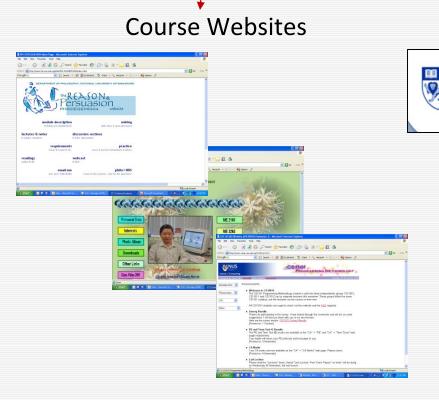
- Importance and value of face-to-face teaching
- Technology as an enabler and facilitator to improve the teaching and learning processes
- Focus on technologies that help staff and students be more productive in what they can already do
- Focus on technologies that enhance student learning

- 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**

### TWO TIER SUPPORT MODEL

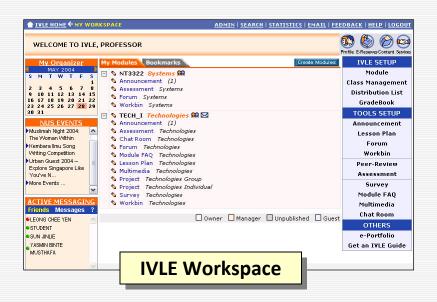
### Top-Down Support and Bottom-Up Drive



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





### 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**

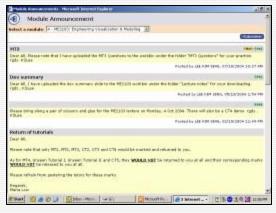
Module Syllabus
Web/SMS Notification \_\_\_\_\_
Workbin

Caters to a mix of faculty

#### **Class Roster**



#### **Announcement**



#### **Lesson Plans**



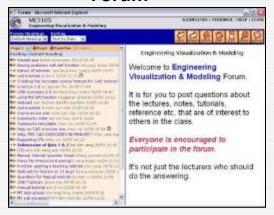
#### **Assessment**



#### Workbin



#### **Forum**



### IVLE is integrated to ..



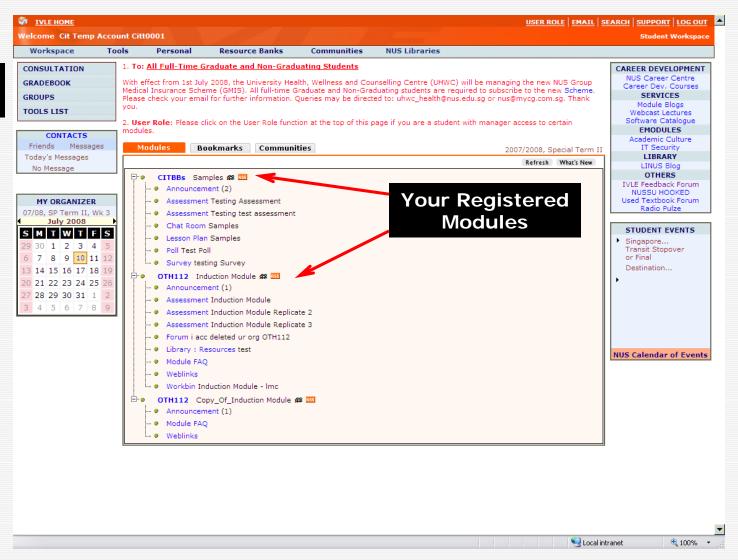
**Curriculum Planning Student Administration Others Admission** Admission **Digital Library** Course Particulars Student Particulars Webcast Lectures **Course Bidding** Curriculum **Timetabling** Administration **Podcast Lectures Exam Marks Administration** Blogs Class Rosters Communities **Class & Tutorial Groupings** 

Web based with single sign-on Focus on staff and students will follow

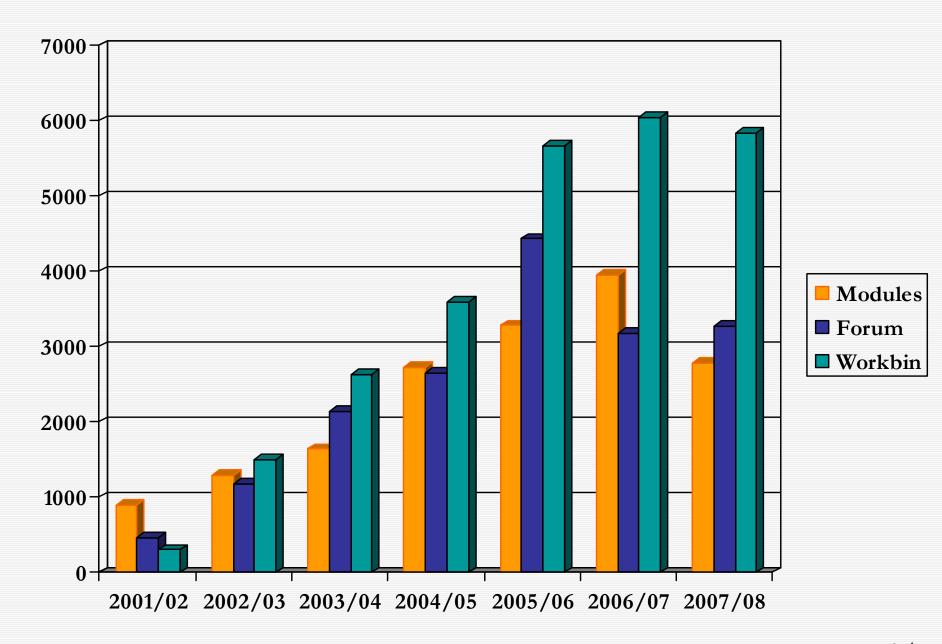
### INTEGRATED VIRTUAL LEARNING ENVIRONMENT

### Student Workspace

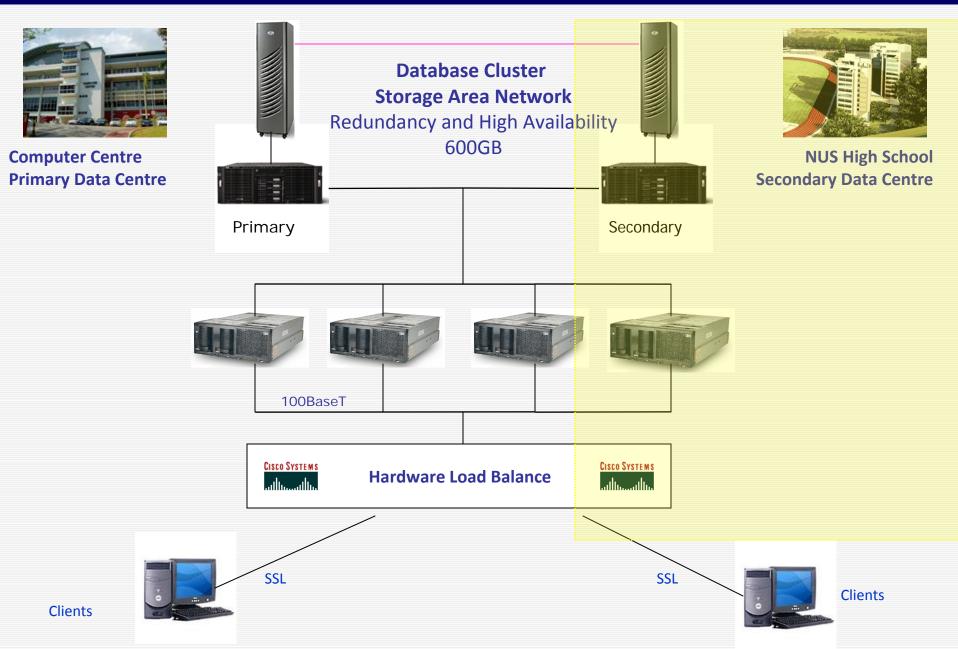




### IVLE USAGE 2001/02 – 2007/08

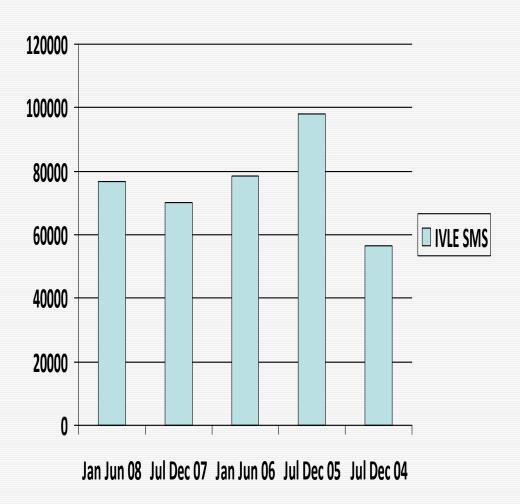


### **IVLE BUSINESS CONTINUITY**



### **MOBILE SERVICES**

### Knowledge, when, where and how you want it





### **Mobile Applications**

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

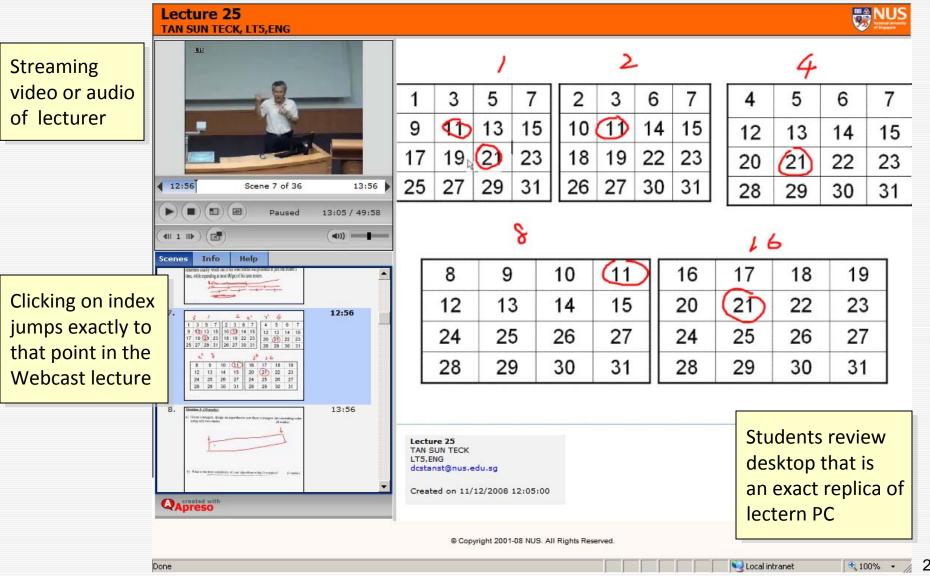
### **SMS Services**

Examination Marks

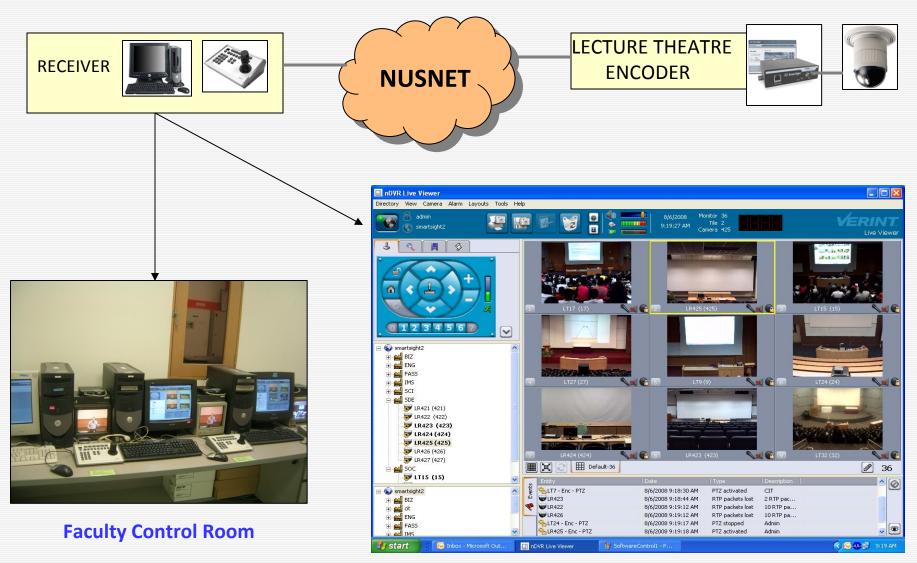
IVLE Course Announcements

### WEBCAST and PODCAST LECTURES

### to reinforce learning and study

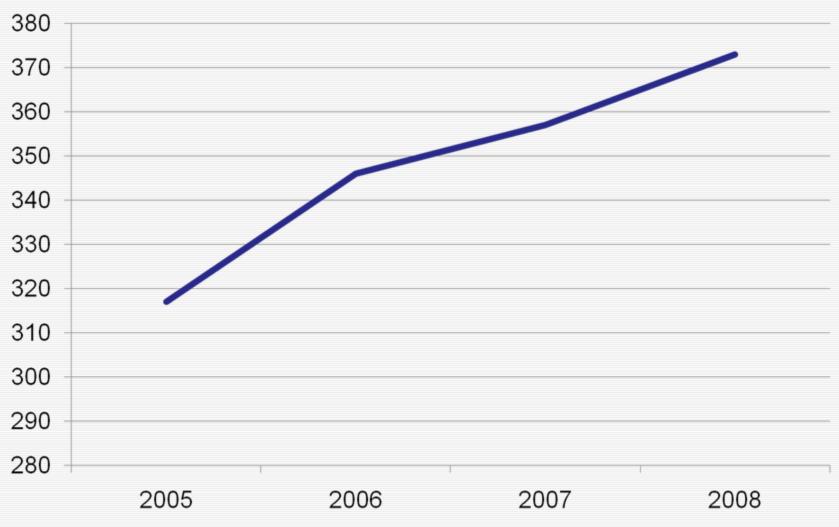


### WEBCAST LECTURE MANAGEMENT



Video Management Software capable of managing video units across the campus



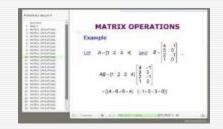


### MULTIMEDIA ENABLED PRESENTATIONS





























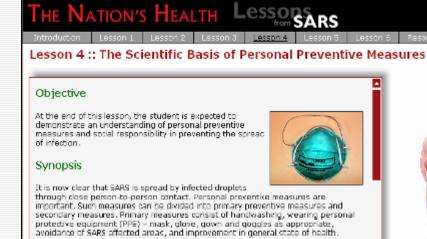




### **ONLINE COURSEWARE**

### eModules to support interactive online courseware









### DISTANCE LEARNING PROGRAMMES

### **Conferencing Mode**

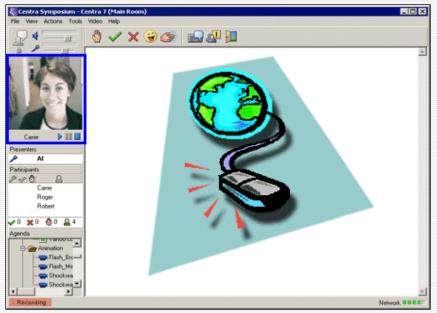
### Singapore – MIT Alliance 2

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 'realtime' and participate in classroom discussions

### MEDIA REPOSITORIES

### **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)



### SECURE ASSESSMENTS

### Case Study – Faculty of Medicine 3<sup>rd</sup> year / Final year Examinations

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

Dr Erle Lim et al Computer-based Versus Pen and Paper Testing Annals Academy of Medicine Sep 2006, Vol 35 No 9

### 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

### **SECURE ASSESSMENTS**

- 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?

## <u>When</u>

- E-Learning Week on Feb 18<sup>th</sup> Feb 22<sup>nd</sup> 2008 [CNM, OSHE, CIT]
- No teaching during this week for CNM (20 staff, 300 students)
- Classes supported by IVLE, Centra and PowerPoint [Breeze]

### **NUS ONLINE COMUNITIES**

## student driven; informal learning



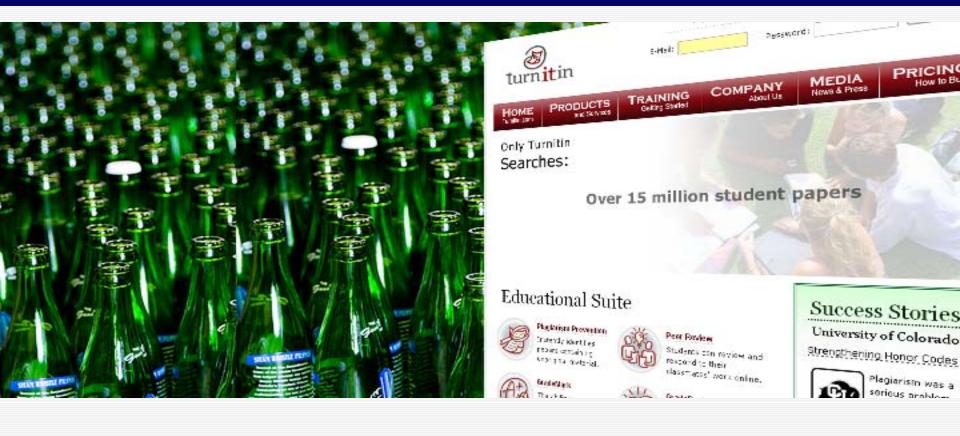
- NUS Communities
- Blog.NUS
- Wiki.NUS
- IVLE Communities
- Mobile Blogs
- NUS 2<sup>nd</sup> Life

share, exchange files, photos and discuss with friends start a blog about your studies, work and life start a wiki to collaborate on documents with friends IVLE space to share, exchange and discuss with friends

share, exchange files, photos and discuss with friends on your mobile phone

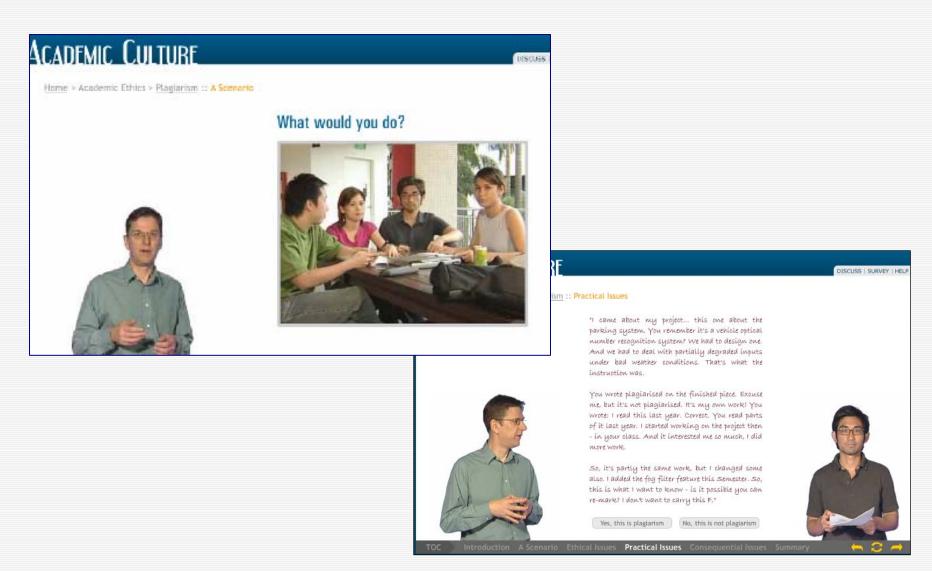
share, exchange files, photos on the 3D virtual network

### PLAGIARISM PREVENTION



- 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



### **VIDEO RECORDING and PRODUCTION**

### **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.



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





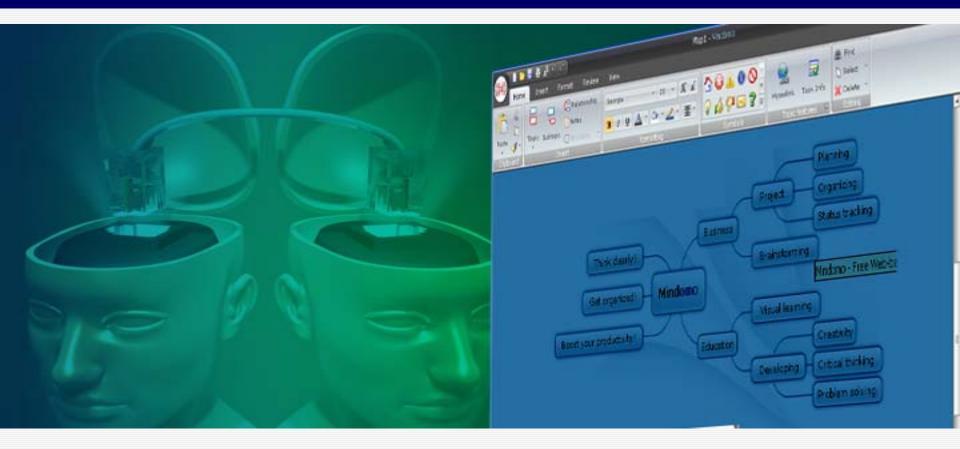


### **CLASSROOM RESPONSE SYSTEM**



- 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.

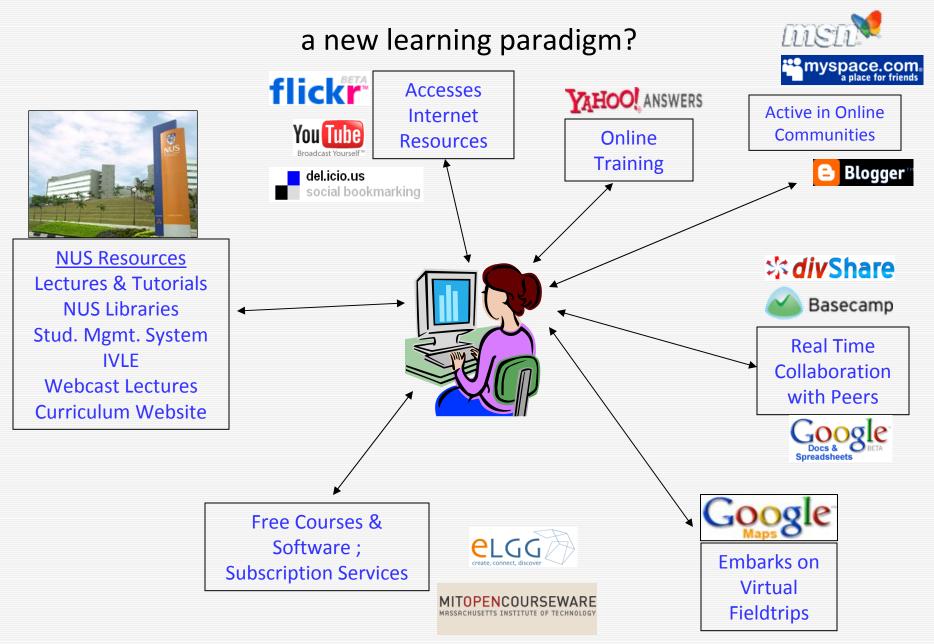
### MIND MAPPING



- 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



### NUS PERSONAL LEARNING ENVIRONMENT

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

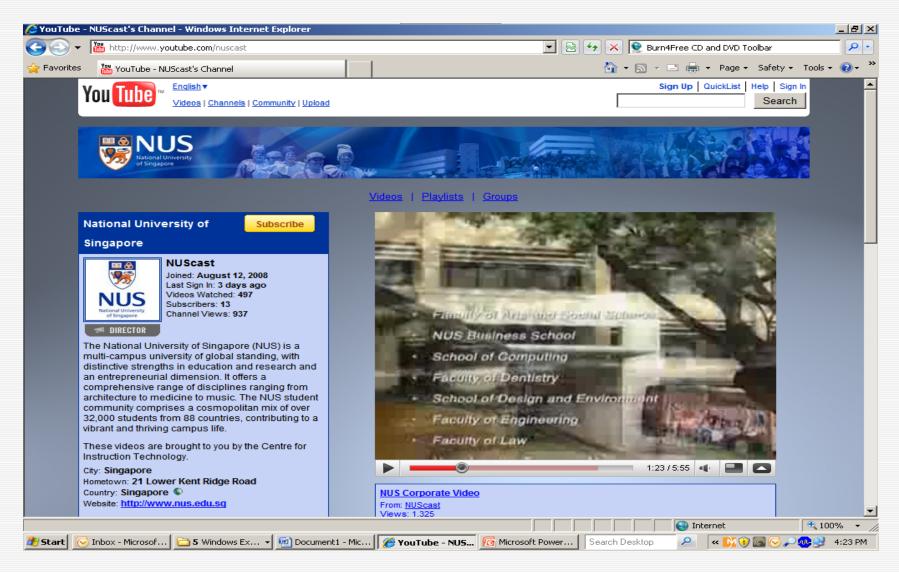
Unified Communication Platform



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



## go where potential students are going...

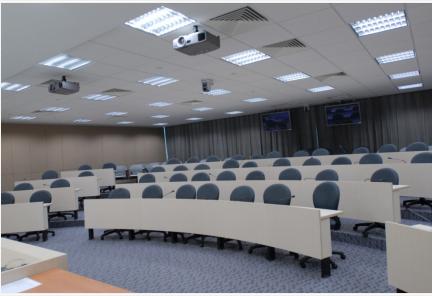


# Multi-Use Teaching Spaces

# 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