Extending eLearning to mLearning

– effectiveness of mobile devices in course delivery

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Content Outline

• mLearning – The Pull Factor
• Why not LTP?
• mLearning Architecture
• iBookshelf
  – eBook on Windows
  – mBook on Android and iOS
• Classroom Management Software
• What does it mean?
• 100% laptop initiative was launched in Nanyang Polytechnic (NYP) in 2005
• All Students equipped with notebooks
• High Density WLAN in campus
• High proliferation of mobile devices among students in Singapore
• Support the School of Engineering, NYP vision of access to knowledge *anywhere and everywhere* – even when the mobile device is offline and connection to the Internet is not possible
mLearning - The Pull Factor

First-order infrastructures, such as the Internet, are foundations for second-order infrastructures, such as Facebook, which, in turn, enables third-order effects, such as e-textbook delivery in a social context.

## eLearning vs. mLearning

<table>
<thead>
<tr>
<th></th>
<th>eLearning</th>
<th>mLearning</th>
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<tbody>
<tr>
<td><strong>Definition</strong></td>
<td>• Electronically supported learning and teaching of any kind.</td>
<td>• An abbreviation of mobile learning.</td>
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<td>• Digital communication, electronic devices or internet is used to support learning process</td>
<td>• Learning using portable devices</td>
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<td>• Allow student to learn in different environments and whilst on the move</td>
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<td><strong>Length of Information</strong></td>
<td>• Detailed information</td>
<td>• Extension of eLearning.</td>
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<td>• Students to advance at their own pace</td>
<td>• Simple, digestible chunks of information</td>
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<td></td>
<td></td>
<td>• “Just in Time eLearning “</td>
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<td><strong>Access to Information</strong></td>
<td>• Traditionally, using mouse clicks to select information to view. (With new touch screen PCs, the differentiation is reducing.)</td>
<td>• Ability to pinch, swipe, zoom and tap the screen.</td>
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Why not LTP?

The Whole is Greater Than the Sum of its Parts
One example...

The way we were taught

Pre-lab | Lab | Writing | Feedback

How about this?

Pre-lab | Lab | Writing | Feedback
mLearning Architecture

Learning Management System / ibookshelf
Classroom Management Tools

mBook on iOS
mBook on Android
mLearning Development

- Learning Management
- Collaboration
- Content Analysis
- Assessment and feedback
In-house developed learning management system

Complete, integrated, interactive and essential collection of electronic resources for an academic module pre-downloaded for offline use
Ibookshelf Structure

• Animation
• Website
• Reading materials are interlinked

Offline and online access to notes

Week by week: follows lesson plan

1. Concept of search engine
   1.1 What is a search engine?
   1.2 Key terms of search engine
   1.3 Types of search engine
   1.4 How search engine works?
   1.5 Search engine algorithm
   1.6 List of search engines
   1.7 Search engine optimization

2. Introduction to VB.NET
   2.1 VB.NET IDE environment
   2.2 Structure of VB.NET project
   2.3 Steps in creating a window application in VB.NET environment
   2.4 Variables in VB.NET
   2.5 Arrays and constants in VB.NET
   2.6 Arithmetic, comparison and logical operators in VB.NET
   2.7 Built-in functions and string method
   2.8 Selection and iteration construct for VB.NET program
   2.9 Messagebox function in VB.NET

3. Menus, error handling and database development
   3.1 Menu construction in VB.NET
   3.2 Error handling and debugging in VB.NET
   3.3 Database development in VB.NET

4. File handling, library development and graphic manipulation
   4.1 File handling in VB.NET
   4.2 Library development in VB.NET
   4.3 Graphics in VB.NET

5. DAQ interface card: Digital Input and Output
Relevant AES case is extracted to support and provide a practical example to the current topic discussed within the module.

AES – Accumulated Experience Sharing

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<th>Tutorial</th>
<th>Practical</th>
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Secure server access to selected material
### eBook – Learning Material

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- **Local Material**
- **iBookShelf Online**
- **Internet**
- **Upcoming**
mBook - Android and iOS

Notification when there is an update

Pre-downloaded into the mobile device for offline use

Archive after module completed
mBook - Android and iOS

Dual-axis navigation and a zoomed-out "browse" mode
- Hyperlinks
- Slide shows
- Image sequence
- Audio and video
- Panorama
- Web content (include support for hyperlinks & hyperlink buttons)
- Pan and zoom
- Seamless link to Youtube and other learning portals
- 360 degree views of same object with each part labelled (promotes better understanding of topic)
mBook - Android and iOS

Access to notes by topics

- Introduction
- Human Decision Making Process
- Systems Information Quality and Models
- Types of Decision Support Systems
- Group Decision Support Systems
- Data Mining
- Module Submission

Why do people use Decision Support Systems (DSS)?

- They do not make decisions by themselves.
- They are called DSS not decision making systems.
Classroom Management Tools

- Students in different module groups
- Online classroom management
- Online Teaching
- Online and Offline assessment
What does it mean?

• Feedback from staff
  – Marked improvement in attendance
  – Ability to monitor student progress more closely
  – Instant quiz feature is useful to allow lecturers to gain instant feedback and gauge the students level of understanding
  – Ability to interleaver interactive activities with lecture makes lessons more interesting and engaging
  – Ability to transfer files with annotation to students on-demand makes teaching effective
What does it mean?

• Feedback from students
  – Learning-point centric delivery coupled with interactive activities help to reinforce and retain concepts learned
  – Instant quiz feature is useful for students to gauge their level of understanding and clarify with lecturers on the spot
  – Annotations on presentation materials help students to focus on lesson delivery
  – Lessons notes with annotations received from lecturers are useful for revision and reference
What does it mean?

... ALWAYS connected to
  - resources
  - community

Multi-sensory learning environment
Instant feedback on learning
What does it mean?

Different Individuals With Different learning style Different learning speed

Transforming learning