<table>
<thead>
<tr>
<th><strong>Title</strong></th>
<th>Learning in a networked multimedia environment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Author(s)</strong></td>
<td>Chun, Ming Leung.</td>
</tr>
<tr>
<td><strong>Date</strong></td>
<td>1999</td>
</tr>
<tr>
<td><strong>URL</strong></td>
<td><a href="http://hdl.handle.net/10220/1729">http://hdl.handle.net/10220/1729</a></td>
</tr>
<tr>
<td><strong>Rights</strong></td>
<td></td>
</tr>
</tbody>
</table>
Paper No. 19
Learning in a Networked Multimedia Environment

Professor Chun Ming LEUNG
Director of Technology Development
The Open University of Hong Kong, Hong Kong

Easy access to the Internet from home and workplace, coupled with advances in information technology, are reshaping education and training by providing new learning environments and new ways to learn. The educational paradigm in the next century will likely be a combination of synchronous, interactive learning and asynchronous, online instruction, with just-in-time learning and on-demand teaching becoming more prevalent. In recent years, Web-based learning (WBL) has been successfully implemented in distance learning, corporate training, and as a supplement to traditional classroom teaching. WBL is a learning environment for delivering (synchronously and asynchronously) interactive multimedia education using the World Wide Web as a communication medium. WBL is more than just posting course materials on the Web. It is a constructive method for course delivery and management, based on a tight integration of study materials, course assessment, student feedback and communications among students and instructor, with an emphasis on connectivity, interactivity and the use of hypermedia. The potential of WBL for improving teaching efficiency and learning effectiveness has been recognized. WBL enables learning modes that are not possible using traditional means. It has many of the attributes emphasized in the recent paradigm shift towards interactive, collaborative, and student-centred learning. In this talk I will give an overview of the philosophy, ingredients and impact of WBL. I will also identify the pedagogical issues and implications of learning in a networked multimedia environment.
Seminar on Open & Distance Education  
10 September, 1999

Learning in a Networked Multimedia Environment

Outline of Talk

Learning Environment

Technology vs. Pedagogy (I)

Asynchronous
- printed materials
- audio cassettes
- video cassettes
- CD ROM, DVD
- Internet (e-mail, text chat)
- WWW (interactive, multimedia)

Self-Paced
- correspondence course
- audiotape / videotape
- computer based training
- online training via Internet (text based, e-mail)
- Web-based instruction (interactive, multimedia)

Technology vs. Pedagogy (II)

Synchronous
- audio conferencing
- audiovisuals
- video broadcast
  - satellite
  - instructional TV
- video conferencing
  - satellite
  - ISDN (group / desktop)

Live Interactive
- audio tele-training (2 way)
- audiovisuals
- video broadcast
  - (1 way video, 2 way audio)
- interactive video conf.
  - (2 way video, 2 way audio)
  - [delivered instructors on site]

Technology Drives Pedagogy

<table>
<thead>
<tr>
<th>Technology</th>
<th>Pedagogy</th>
</tr>
</thead>
<tbody>
<tr>
<td>asynchronous</td>
<td>self-paced</td>
</tr>
<tr>
<td>synchronous</td>
<td>live, interactive</td>
</tr>
</tbody>
</table>
Question

Can we have a learning environment that
- combines the best of both approaches (synchronous & asynchronous),
- is technologically feasible and
- pedagogically sound, but
- is affordable?

Internet Explosion

<table>
<thead>
<tr>
<th>Year</th>
<th>Worldwide Internet Hosts (in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/1995</td>
<td>5.8</td>
</tr>
<tr>
<td>1/1996</td>
<td>14.3</td>
</tr>
<tr>
<td>1/1997</td>
<td>21.8</td>
</tr>
<tr>
<td>1/1998</td>
<td>29.6</td>
</tr>
<tr>
<td>1/1999</td>
<td>43.2</td>
</tr>
</tbody>
</table>

Web-Based Learning

What is WBL?

WBL is a learning environment for delivering interactive multimedia education using the WWW as a communication medium.

Components of WBL System

Information
- requirements
- schedule
- teaching staff
- student contact info
- photo album
- FAQs
- links

Study Material
- study guide
- lectures
- tutorials
- glossary & index
- FAQs
- resource materials
- downloadable archives

Communication
- announcements
- e-mail
- threaded discussion
- interactive chat
- white board
- student presentations
- FAQs

Assessment
- requirements
- schedule
- assignments
- past assignments
- quizzes/exams
- past quizzes/exams
- view progress

Example

OUHK Online Learning Environment
(www.ouhk.edu.hk)
Seminar on Open & Distance Education

10 September, 1999

**Educational Benefits**

- [ ] Hypermedia (multimedia + hypertext)
- [ ] Accessibility anywhere, anytime
- [ ] Reversibility (replay, fast-forward)
- [ ] Flexibility (time + place + pace)

**Learning Is More Effective...**

- by doing (hands-on exercises, explorations)
- by interactive & cooperative techniques (discussions, group projects)
- if more of the senses are engaged (interactive multimedia courseware)
- by immediate application & follow-up (online drills & tests, in-class assignments)

**Changing Educational Paradigms**

<table>
<thead>
<tr>
<th>teacher-centered</th>
<th>learner-centered</th>
</tr>
</thead>
<tbody>
<tr>
<td>teacher as transmitter</td>
<td>teacher as facilitator</td>
</tr>
<tr>
<td>instruction</td>
<td>construction, discovery</td>
</tr>
<tr>
<td>absorbing materials</td>
<td>learning how to learn</td>
</tr>
<tr>
<td>linear, sequential</td>
<td>hypertext learning</td>
</tr>
<tr>
<td>individual work</td>
<td>cooperative learning</td>
</tr>
<tr>
<td>specialized, disciplinary</td>
<td>interdisciplinary</td>
</tr>
<tr>
<td>stable content</td>
<td>just-in-time learning</td>
</tr>
<tr>
<td>one-size-fits-all</td>
<td>customized</td>
</tr>
<tr>
<td>one-time learning</td>
<td>continuous, lifelong</td>
</tr>
</tbody>
</table>

**Learning in a Networked World**

**Implications & Outlook**

**Communication Networks**

**The Learning Matrix**

3
Interactive Distance Education (in Physics)

- 1997: USA – Hong Kong (graduate students)
- 1998: USA (high school students)

International Distance Education

Course Information
"Survival Skills for Research Scientists"
- for graduate students in physics
- from late January to mid-April, 1997
- 10 weekly sessions, each 1-1/2 hours long
- classes start at 7 am in US, 8 pm in HK
- 12 students from US, 20 students from HK
- homework, in-class exercises, grant proposal, oral presentation, no exams

Course Logistics
In-class communications
- video and audio — PictureTel (30 fps)
- data — Internet using LearnLinc

Communications outside of classroom
- announcements by electronic mail
- homework submitted in electronic form by ftp, graded and returned electronically by ftp
- course notes distributed in printed form

Equipment Setup

Course Information
"Introductory Physics by Distance Learning"
- for high school students in physics
- from March to mid-May, 1998
- 10 weekly sessions, each 1 hour long
- classes start at 3 pm on Wednesdays
- 12 students, 6 notebook PCs (networked)
- homework, in-class exercises, no exams
Seminar on Open & Distance Education

10 September, 1999

Course Logistics

Synchronous communications (in class)
- video and audio — ISDN (Intel Proshare)
- data — Internet (LearnLinc, WebCT)

Asynchronous communications
- bulletin board & electronic mail (WebCT)
- assignments — use Scientific Notebook
- paperless — all work submitted, graded and returned electronically

Equipment Setup

Course Delivery Tools

LearnLinc I-Net
- electronic hand raising
- text chat
- Q & A
- feedback polling
- applications sharing
- shared white board
- synchronized web browser
- library of course materials

WebCT
- bulletin board
- private mail
- chat room
- online quizzes/grading
- course notes
- course management
  (e.g., grades, student progress)

Activities in a Typical Session

in-class exercises
- qualitative questions
- analytic problems
- numerical calculations
- hands-on lab work
- computer simulations
- spreadsheet exercises

What is the trend?

- Shift toward Web-centric teaching/learning
- Fast adoption of distance-learning technologies by traditional universities
- Commercialization of "high-profit" courses and programs
- Proliferation of online course offerings (will reach a million in a few years!)

Outlook & Challenges
"2001: The Learning Odyssey"

No more pencils!
No more books!
No more lectures!
No more teacher’s dirty looks!

Thank you!

Professor Chun Ming LEUNG
Director of Technology Development
The Open University of Hong Kong
30 Good Shepherd Street, Homantin
Kowloon, HONG KONG
Email: cmleung@ouhk.edu.hk