

Masters in Educational Technology, Design and Innovation
INTRODUCTORY UNIT 2

Pedagogies for Technology Intensive Learning Environments

Characteristics

- Delivery mode: Face-to-face lab sessions and On-line using dedicated Moodle section.
- ECTS credits: 4
- Delivery period: Year I, Semester I. of course
- Pre-requisite study units: Basic Psychology, basic awareness of on-line learning.
- Method of assessment: Coursework Activities (Task-oriented projects).
- Result: Percentage mark & Grade
- Attendance: Compulsory
- Lecturers Professor P.A.M. Kommers & Ph. Bonanno.

Description

Participants will be given the opportunity to explore and experiment with different learning technologies to understand the conditions, possibilities and limitations these offer to human learning. Reference will be made to various Virtual learning environments including Content and Learning Managements systems, Group management environments, and Communication / Collaboration tools. The pedagogical potential of Gaming environments, Ubiquitous Computing systems, Technology-based Creativity support systems (using tools for designing simple simulations, games, interactive stories and robot construction tools for simulating interactive behaviour) will be explored. The pedagogies underlying these technology-intensive approaches to learning will be elaborated.

Reading List

- Articles and papers by contributing academics.
- Dedicated Information packs.
- Various Multimedia and On-line resources.
- Laurillard, D. (2002). *Rethinking University Teaching: A conversational framework for the effective use of learning technologies*. Second Edition. Routledge, Falmer.
- Jochems, W., Van Merriënboer, J. & Koper, R. (Eds.) (2004). *Integrated E-Learning: implications for pedagogy, technology and organisation*. Open and Flexible Learning Series. London: Routledge Falmer.

Main sections of Unit

- Teaching versus Learning (*Natural learning method; Stellenbosch declaration*)
- Technologies for Pedagogical extension (*Developing instructional aids; Presentation technologies*)
- Virtual Learning Environments (Designing a website and an instructional event using Moodle)
- Simulation-based learning (Designing a learning experience using a virtual simulation Eg. Google Earth)
- Game-based learning (Designing a learning experience using an identified commercially available game; design a simple game using 'Scratch')
- Mobile Learning (Flexible Learning)
- Creativity Support Systems (Constructionist Learning Model; Design tools; Interactive storytelling; Robotics; Interactive toys)
- Educational TV (Developing a 15 minute session on an identified topic for an educational programme)

Learning Technologies

Extending human learning

Learning in the Context of Digital Technologies



- Acquisition
- Participation
- Contribution
- Learning as participation in learning communities to master the unknown

Different Models

- Extending school experiences



- Innovative learning scenarios



Main branches of Educational Technology

- Classroom technologies
- Virtual learning Environments
- Simulation and Game-based learning
- Mobile Learning
- Technology-intensive creativity support systems
- Educational TV

Classroom technologies

- Using various tools to design instructional aids
- Presentation technologies
- Image capturing technologies
- Event management tools
- Photography
- Videography
- Sound editing
- On-line tools: media sharing, group management, self promotion.

Virtual Learning environments

[Moodle](#)
[Blackboard.com](#)
[Future VLEs](#)

Simulation-based learning

[Google Earth](#)
[Simulations with Java](#)
[Web-based Simulations](#)
[Second Life](#)

Game-based learning

[Food force](#)
[Digital Zoo](#)
[New Approach to Teaching](#)
[Global Conflicts: Palestine](#)
[Underseige](#)
[A Force More Powerful](#)
[The Calm and the Storm](#)
[Spore](#)
[Full Spectrum Warrior](#)

Mobile Learning *Just in time, just enough, just for me*



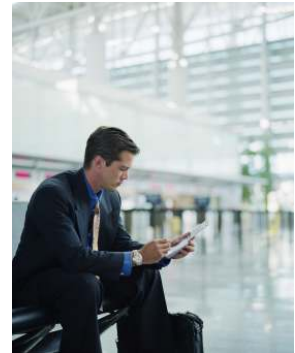
The fourth wave of digital technologies

- 1960s: **Mainframe era** – data processing
- 1970s: **PC era** – training in ICT, CAL, CBI/T
- 1990s: **Internet era** - communication & collaboration
- 2001: **Ubiquitous computing era** – anyone, anytime, anywhere learning



Ubiquitous Computing

- Users wander through the real world with wireless mobile devices (Tablets, PDAs, Mobile phones, Mobile gaming consoles, iPods) that allow them to carry the virtual world with them.
- Promotes pedagogy in context
- Allows users to interact with smart objects in the real world.



Learning on the move



Learn and practice skills through video and audio documentaries and broadcasts.

Learning, Sharing, Contributing without boundaries



Digitized Knowledge

Different in the way it is:

- Developed
- Stored
- Disseminated
- Used

Go to:

- [Google](#)
- [YouTube.com](#)
- Select YouTube – Broadcast Yourself
- In 'Search' type 'Mobile Learning'

Promoting Flexible Learning

- Time
- Location
- Delivery channels
- Delivery method

Creativity Support Systems

- Designing games
- Interactive storytelling
- Robots to explore learning
- Digital artistic expressions

<http://scratch.mit.edu/>



Empowering 'bedroom' game designers

[Microsoft is to offer a consumer version of professional tools used to develop videogames for the Xbox 360.](#)



Interactive toys



- V.Smile Art Studio plugs directly into the V.Smile TV Learning System
- Allows children to create animated or slide show masterpieces on the TV!
- Features 8 step-by-step drawing lessons, 2 mini games and drawing free play.
- Draw with a pencil, fill in colour, shape drawing, stamp or animated image and choose from a vast library of backgrounds and 64 colours.
- Children can also animate elements of their drawings or create slide shows.

Innovative, educational gaming console for pre-schoolers

- Two modes of play:
 - Adventure - for a real gaming experience
 - Learning Fun - for a totally unique educational adventure
- Plug and play feature ensures easy set up and instant fun
- Games are age specific, appeal to both boys and girls
- Feature different educational activities such as English, maths, art, science, geography and history
- User friendly controller features light up buttons, chunky enter key and easy to use joystick



Inquiry-based learning

Create:

- Storyboards
- Games
- Performances

• Example:

[Immersive Education](#)



Creative Use of Technology

Learn by designing



- Simulate human or social behaviour through building and programming robots
- Using technology as a medium for creative expression

'Guessing' robots find their way

US researchers developed robots that use "guesswork" to navigate through unfamiliar surroundings are being by.

The mobile machines create maps of areas they have already explored and then use this information to predict what unknown environments will be like.

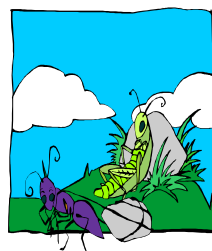


Interactive Storytelling

- Creating open ended stories
- Thinking in verbs
- Assembling verbs into events
- Building personality models
- Gossip to flow info in story

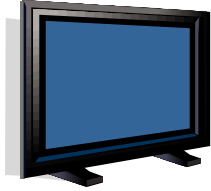


IST: Developing characters and environments



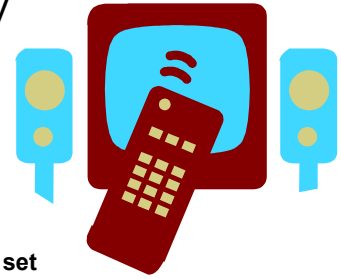
- Designing how characters make choices and modulate behaviour towards others
- Sequencing character behaviour in dramatically reasonable ways

Educational TV



- Kids TV
- Documentaries
- Curriculum-oriented
- Adult Education
- Integrated in Flexible Learning

Interactive TV



- **Interact with a TV set**
- **Interact with TV program content**
- **Interact with content that is related to what is on TV**

Why should we have technology-intensive learning?

- Based on Natural learning process
- Due to cognitive makeup of the digital generation
- To develop process intelligence
- Digital technologies are the media through which knowledge is generated, stored and disseminated
- Eliminates human biases
- Train oneself for technology-intensive jobs

How is this field being promoted within the Faculty of Education, UoM?

- Programme in Educational Technology, Design and Innovation
- Promoting research about, through and about effects of EdTec
- Participating in EU projects related to the different areas
- Organising international events