MLT803(903)/MID834/MPS803(903): Technologies as Cognitive Tools

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Outline for Today

- Course objectives, outline and admin issues
- Platforms/tools
- Related concepts and theories
- Cognitive tools & productivity tools
- Break
- Hands-on

Course objectives

Participants should be able to:
- Analyze the affordances and demonstrate strategies to use appropriate cognitive tools to enhance learning in specific subject areas/domains;
- Select appropriate cognitive tools for learning; be able to justify the choice of tools in relation to classroom learning problems and assess the effectiveness of the implementation;
- Consider issues related to the integration of cognitive tools into teaching and training.

Main topics

- Definition of cognitive tool
- Affordances of technologies as cognitive tools
- Concept mapping
- CSCL
- Modeling
- Mobile learning
- VR/AR
- Emerging ICT tools as cognitive tools
- (Group project consultation and presentation)

Features of the course

- Blended learning approach
  - Face-to-face
  - Online
    - Video conferencing (synchronous)
    - Individual learning (asynchronous)
- Blended synchronous learning

Schedule

- 13 weeks
  - 10 face-to-face (F2F) sessions
  - 2 fully online sessions
    - CNY (08/2): Tools sharing
    - Concept mapping (01/3)
  - 1 online learning + video conferencing (1h) session
    - Model building
  - 7 individualized BSL sessions
    - Choose 2 sessions of no more 6 online participants
  - Theory + Practice
Course evaluation

- Individual reflections (10%*3)
  - What have you learned? (5%)
  - How to apply what you have learned into your teaching and training? (5%)
  - About 500 words
  - Completed by the mid-night of the following Tuesday
- Group assignment (30%)
  - In groups of 3-4
  - Lesson ideas
  - Use the template provided
  - 2-3 IT cognitive tools should be involved
  - Design and description of learning activities (15 marks)
  - Justification: How the affordances of the tools help to support the implementation of the learning activities and achievement of the learning objectives (10 marks)

- Participation (10%)
  - Class interaction
  - Online activities
  - Online learning and discussion
    - Creating a concept map (10%)
    - Online sharing and discussion (20%)

More information
- Refer to the course syllabus and rubrics

Platforms

- Blackboard: http://online.nie.edu.sg
  - Validate email
  - Send mass emails
- Weebly: http://cogtools.weebly.com/
- Video conferencing system: www.zoom.us

3AU/4AU

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<tr>
<td>Read the online materials</td>
<td>Read the online materials</td>
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<td>Read the online materials</td>
<td>Online discussion: give at least 2 comments and 1 reply on the websites</td>
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<td>Create a video of about 15 minutes</td>
<td>Create a video of about 20 minutes</td>
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<td>Read online materials and do online activities</td>
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What is cognition?

- Cognition is a term referring to the mental processes involved in gaining knowledge and comprehension, including thinking, knowing, remembering, judging and problem-solving. These are higher-level functions of the brain and encompass language, imagination, perception and planning.
- Cognition is the scientific term for “the process of thought” http://en.wikipedia.org/wiki/Cognition

- Getting to know others
- Upload to Weebly web site (including sit-ins)
Cognitive Psychology

- STM → LTM
- Cognitive Load Theory

Behavioral Psychology

- Skinner’s Stimulus-Response

Objectivism vs. Constructivism

- What are objectivism and constructivism?
- What are the basic beliefs of objectivism and constructivism?
- What is the difference between them?

Objectivism

- The role of educators is to help students learn the real world.
- Students are not encouraged to interpret what they see and perceive; it is the role of teachers or institutes to interpret it.
- Students are told about the world and are expected to replicate its content and structure in their thinking.

http://www.aynrand.org/objectivism/io.html

Constructivism

http://www.coolopticalillusions.com/
Constructivism

- Basic assumptions:
  - The reality is more in the mind of the knower
  - Knower constructs a reality based on his/her experiences.
  - We all conceive of the external reality somewhat differently based on our unique set of experiences
  - Constructivists emphasize authentic tasks in a meaningful context rather than abstract instruction out of context.

http://carbon.cudenver.edu/~mryder/lts_data/constructivism.html

What are cognitive tools?

- Activity: 15 mins
- Extract email addresses (as many as possible) from the txt file and put them into an excel file

Productivity tool

- Activity 2: 20 mins
- Retirement Estimator: How much do you need for your retirement?

Cognitive tools vs productivity tools

What is the difference/relationship between productivity tools and cognitive tools?

- Kirschner & Erkens (2006): Cognitive tools and mindtools for collaborative learning
Problem: There is a long list of references in the APA format. Now it needs to be changed into another format (e.g., Harvard). How?


Video Conferencing Platform

- Zoom.us Meeting
  - https://www.zoom.us/j/7767730553

For online students

- Get ready 10 mins before the lesson starts
- Use mic and camera
- Mute your mic by default
- Don’t turn off your camera
- Behave as in the classroom
- Indicate your engagement

- Video Conferencing Platform
  - Zoom.us Meeting
    - https://www.zoom.us/j/7767730553

For online students

- Indicate your engagement
- Download the Pollev app, or
  - https://pollev.com/qiyunwang619
- Respond within a minute

Hands-on: Diigo

- Choose which session to join via video conferencing: http://bit.ly/vcJan19
- Diigo: https://www.diigo.com/
  - Sign up/sign in
  - Add bookmark, images, notes
  - Create lists
  - Download the diigolet
    - Explore: highlight, sticky note, and share
  - Share:
    - How can Diigo be used as a cognitive tool?
Characteristics and various types of cognitive tools