

Rethinking technologies in the Knowledge Society

Dr. Pascale Hardy – pascale.hardy@supsi.ch

Dr. James Aczel – j.c.aczel@open.ac.uk

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Research in educational technology

- Teaching technologies
- 3 research approaches (Hiltz / Wegerif /OECD)
- Computer-use frameworks in education
- Learning theories
- Ethics
- Research methods
- Technology-enhanced research

Short Bio Pascale Hardy

- Professor in the Department of Business Management and Social Sciences at the University of Applied Sciences of Southern Switzerland
- Member of the Doctoral School and supervise PhDs students at the Walden University, School of Management, Minneapolis, USA.
- Leading role in a number of international research projects, with partners including the European Commission, UN, World Bank, OECD, as well as many other international and national organizations and companies of developed and developing countries.
- 1994-2007: Open University UK, Glion Institute of Higher Education Switzerland, European Network for Communication & Information Perspectives France and European Commission Joint Research Centre Spain
- PhD (2000) in Social Sciences from the Gregoriana University Rome, Italy, MBA (2005) from the Open University Business School UK, Master in Social Sciences (1994) from the University of Brussels and a Master (1992) from the Libera Università di Comunicazione e Lingue Italy
- Research interests include strategic analysis of ICTs and learning development, capacity building, knowledge management, competences and organizational learning, research strategies, future studies and scenario planning.

Short Bio James Aczel

- Chair of the global online masters course in educational technology research methods at the UK Open University
- Leading role in international research projects looking at knowledge construction in Web 2.0 communities, the influences of multiple digital representations on cognitive processes, and innovative e-learning strategies in Higher Education
- Supervisor of PhD students using data capture methods including eye-tracking, webcams and virtual reality environments
- Advisor for The Open University on exploiting new technology for teaching and learning.

Developing a technology timeline (30 minutes)

- Think back over the past 25 years or so, and try to agree in your group upon a timeline of the available digital technologies in education
 - When did different technologies become available?
 - When did their use become widespread in education?
 - How is education changed over this time?

Teaching technologies and ICT Strategies

Generation	Characteristic technologies
1. correspondence	print, post
2. multimedia	TV, radio, audiotape, videotape, CDs, DVDs simulation software, virtual laboratories, virtual fieldtrips
3. telelearning	audio/video conferencing systems
4. e-learning	webpage-based courses, document data bases asynchronous text-based conferencing, email, internet chat
5. online multimedia	online multimedia learning object repositories online audio-conferencing, online video-conferencing online interactive software, online gameworlds, remote & virtual labs online administration, automated response systems, agent technologies, distributed course development, standardised course representations
6. mobile multimedia	mobile access to online multimedia

Table 1: Generations of distance education (based on Taylor, 2001, and others)

Comparison of studies

	Research questions	Research methods	Technologies used	Findings and implications
Hiltz and Meinke (1989)				
Wegerif and Mercer (1997)				
OECD (2005)				

Ethics

- Are there any ethical issues related to the 3 papers ?

Ethics – Basic questions

- How will participants be able to give their informed consent?
- How can I guarantee confidentiality and anonymity?
- Are there any potential conflicts of interest in my research?
- Could any aspect of my research cause distress or psychological harm?
- Do I have the skills to analyse the results in an appropriate manner?
- What unintended consequences could result from publication or other publicity?

Undertaking research

- How do we select:
 - Research questions
 - Research methods
 - Research design
 - Technologies used
- Existing frameworks help to clarify how research is defined

Computer-use frameworks in education – Peter Twining (2001)

- **Achievement Frameworks** – measuring individual's progress in terms of their learning using ICT
 - *Van der Kuyl (2001) Measurement of the impact of ICT on children's education*
- **Cognitive Frameworks** – impact on an individual in terms of how they think and the interaction
 - *Laurillard (1994) Conversational Framework or Pelgrum & Plump (1991)*

Computer-use frameworks in education 2 – Peter Twining (2001)

- **Software Frameworks** – type of software that's being used
 - *Web, desktop, mobile or game, spreadsheet, wordprocessor*
- **Pedagogical Frameworks** – nature of the interaction around computer use (relationships between teacher, student and computer)
 - *Squires & McDougall (1994) Perspectives Interactions Paradigm*

Computer-use frameworks in education 3 – Peter Twining (2001)

- **Evolutionary Frameworks** – progression and change in how ICT has been rolled out in education systems, particularly classroom or teacher's practice
 - *Sanholtz (1992)*

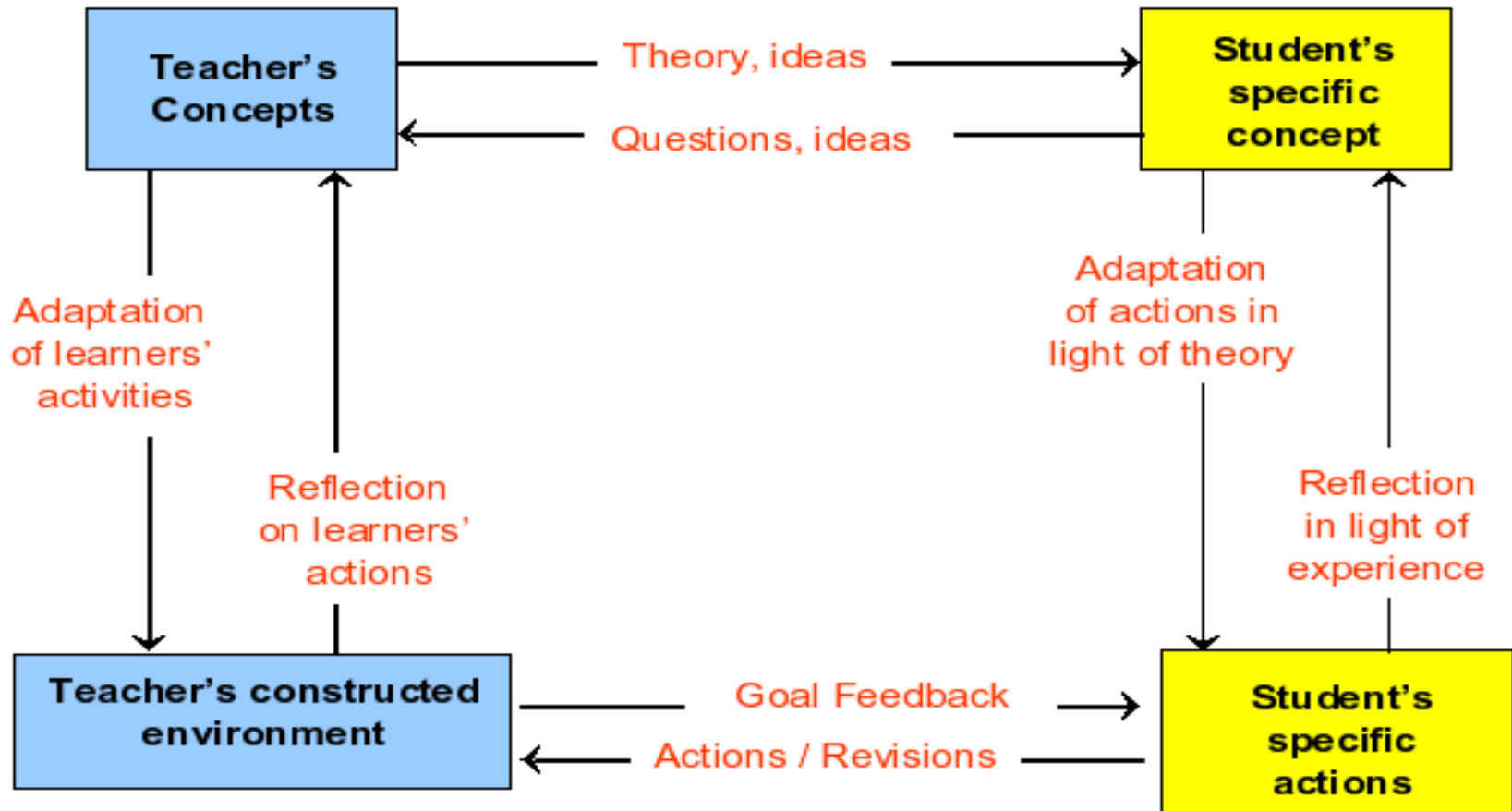
Reflection on Twining frameworks

- Could you classify the 3 papers according to Twining's frameworks?

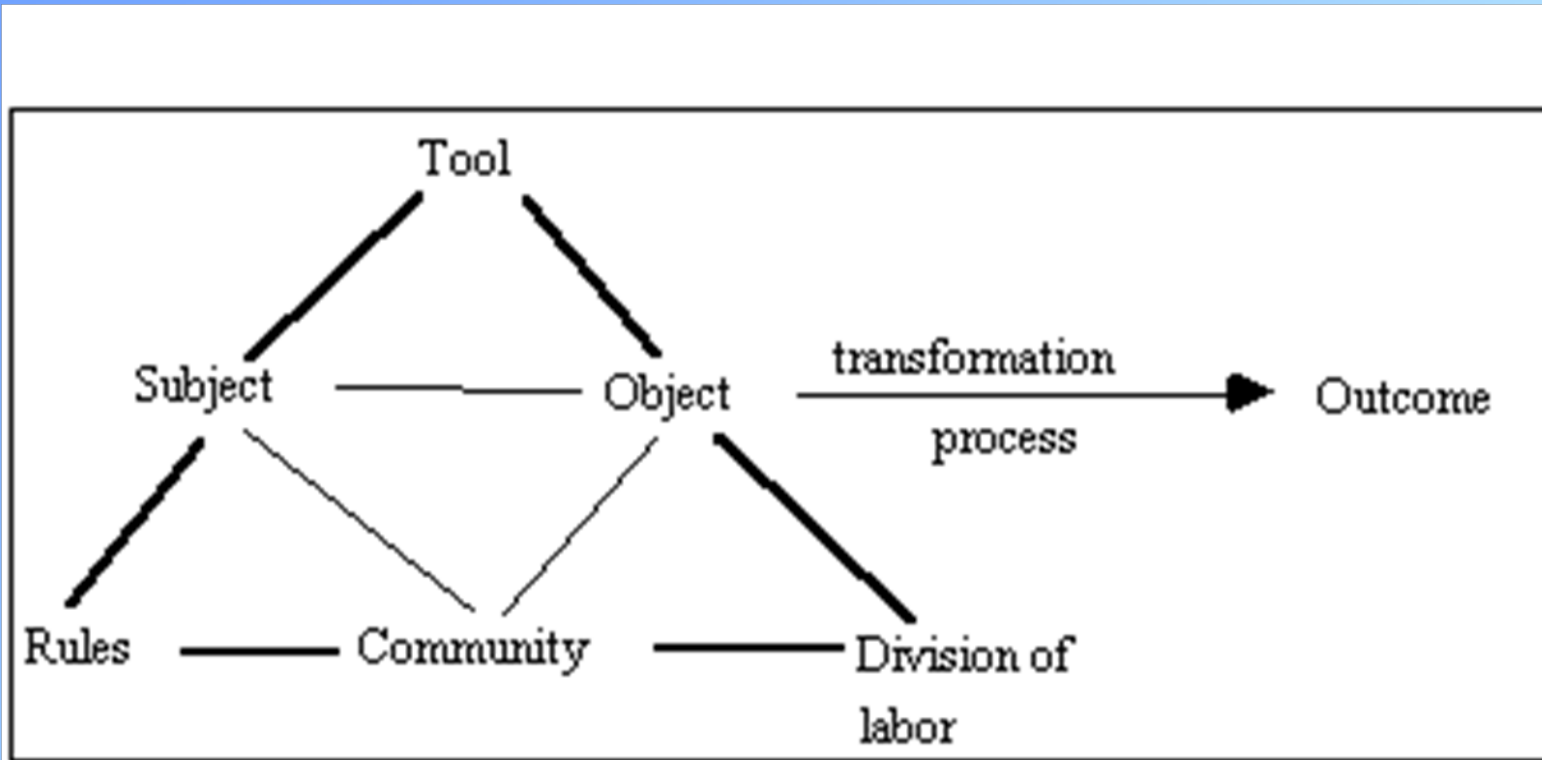
Learning theories

- **Cognitive approach** – the impact of technologies on the individual learner
- **Socio cultural theory**
 - Mediated learning – everything we do is “done through” cultural artefacts
 - Distributed learning – learning as forms of participation in social activity
 - Situated learning – learning situated within our current context

Laurillard Conversational Framework (1994)



Activity theory – Engeström (1997)



Mapping pedagogy and tools for effective learning design – Conole et al (2004)

- Read the paper
- Classify the 3 papers read so far using Conole's framework

Research Methods

- Tools of social sciences – Madge (1953)
 - Documents
 - Observation
 - Interview
 - Experiment

Research methods 2 – Woodley (2007)

Non interventionist	Observation	Watching and noting down what happens
	Participant observation	Attempt to become one of the group under observation
	Documents, artefacts and records	Researchers completely “detached”
Semi interventionist	Asking questions	People are asked about their attitudes, motivations and behaviour
	Other people’s data	Researchers use existing databases
Interventionist	Experimental	Behaviour is actually influenced or controlled
	Quasi-experimental	Less control

How new ICTs are affecting research in educational technology – Woodley (2007)

- **Same method but better** – E.g. electronic surveys
- **Same method but different results** – by communicating electronically we may gain “different” answers
- **The effects of sheer power** – In Leshed & Kaye study (2006) thousand and thousands of blog entries were analysed
- **Combining power and new ideas** – Power of the computer plus imaginative techniques in order to look at learning behaviour in new ways

Blogging as Social Activity, or would you let 900 million people read your diary? – Nardi et al (2004)

- Can you classify this study using Twining's or Conole's frameworks?
- How convinced were you about their findings?
- How far do you think that they can generalise from their results?
- How have they used new technology in their research? What new things could they do now since technology has changed since 2004?

Technology-enhanced research: educational ICT systems as research instruments – Cox (2007)

- Can you classify this study using Twining's or Conole's frameworks?
- How has technology been used to enhance research here?
- How might Technology-Enhanced Research, as outlined by Cox, have been useful in the 3 studies we looked at yesterday?