New learning and teaching models emerging from 1-to-1 computing

Univ. Prof. Dr. Peter Baumgartner

Supported by

Stephan Waba & Erich Herber

Danube University Krems (DUK)

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Outline

- **Educational theory**
- **1-to-1 computing with netbooks**
- **Educational scenarios with netbooks**
- **Bm:ukk project: Goals & methodology**
- **Framework for a taxonomy**

Proposition I (Inglehart 1997)

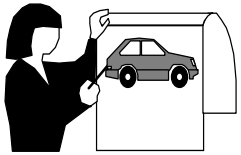
The predominant educational assumptions of a society are not invented freely but reflect the predominant cultural values of this society.

Proposition II (Baumgartner/Payr 1999)

Every piece of Educational Software, Authoring Tool or Learning Management System (LMS) implements a certain kind of learning theory.

Every function of the software has underlying (tacit) pedagogical assumptions.

Transfer



- factual knowledge, “know-that”
- Transfer of propositional knowledge
- to know, to remember
- Production of correct answers
- Verbal knowledge, Memorisation
- to teach, to explain

Tutor

- procedural knowledge, "know-how“
- Presentation of pre-determined problems
- to do, to practice
- Selection of correct method and its use
- Skill, Ability
- to observe, to help, to demonstrate

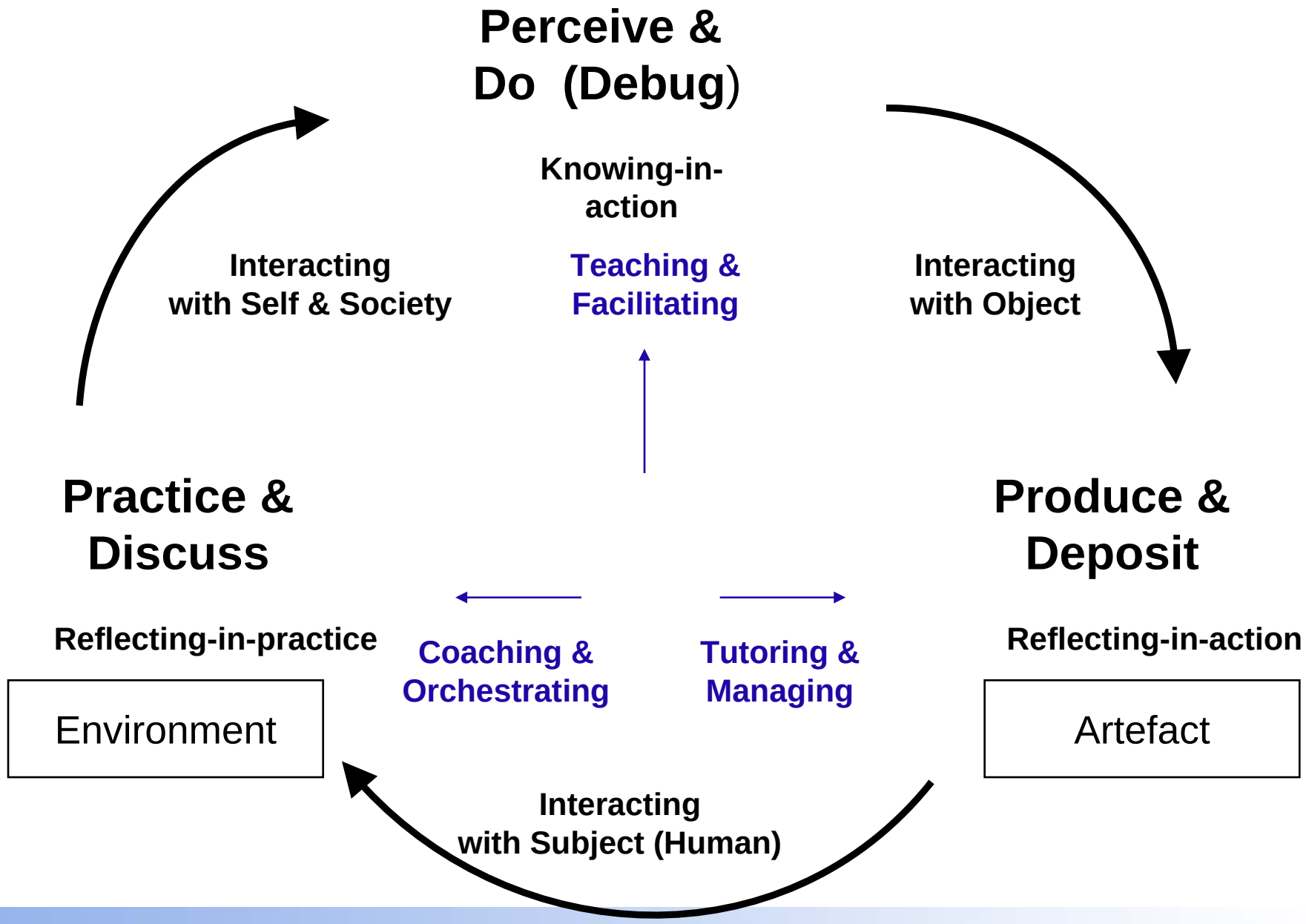
Coach

- social Practice, "knowing-in-action“
- Action in real (complex and social) situations
- to cope, to master
- Realisation of adequate action strategies
- Social Responsibilty
- to cooperate, to support

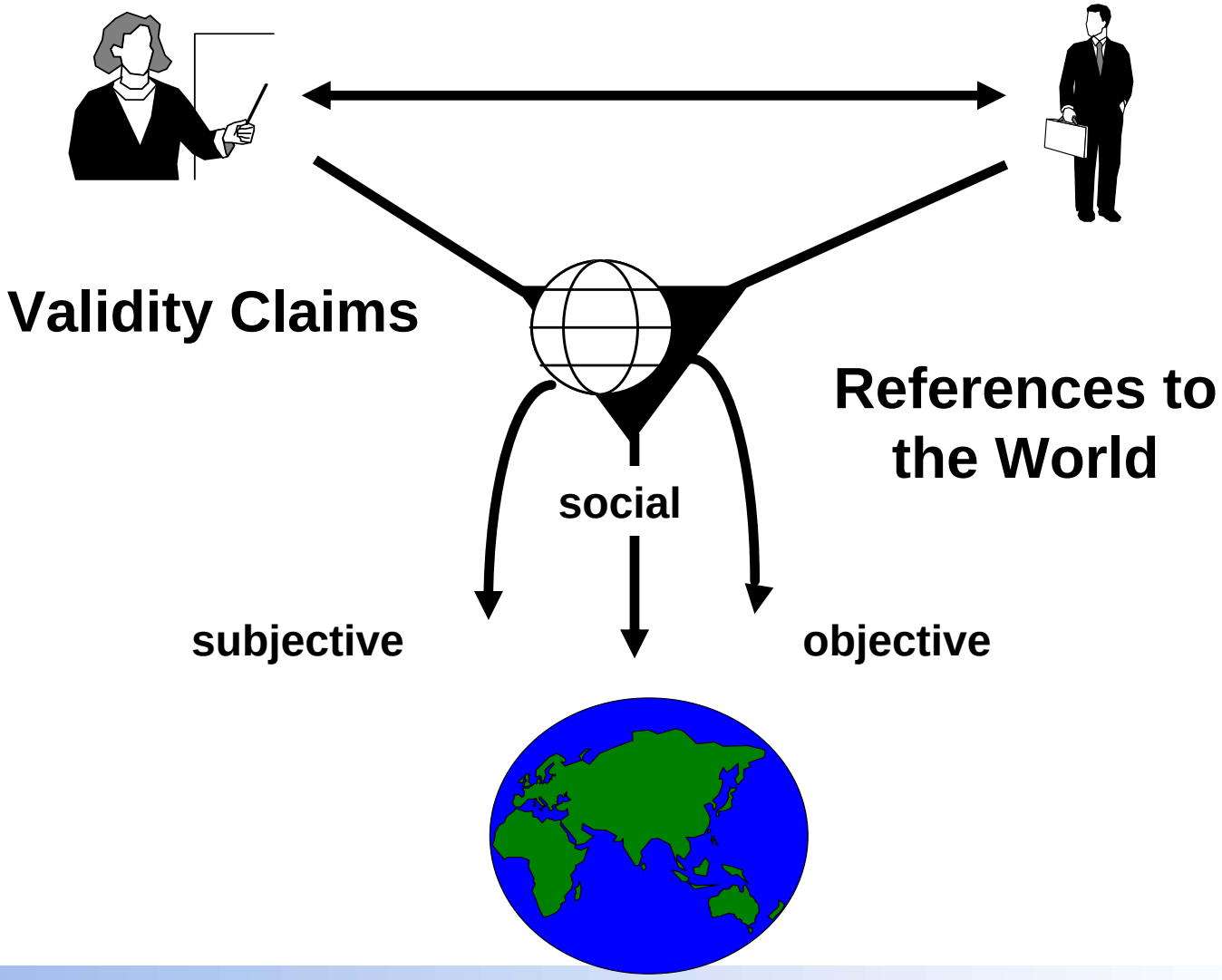
Teaching I

Teaching II

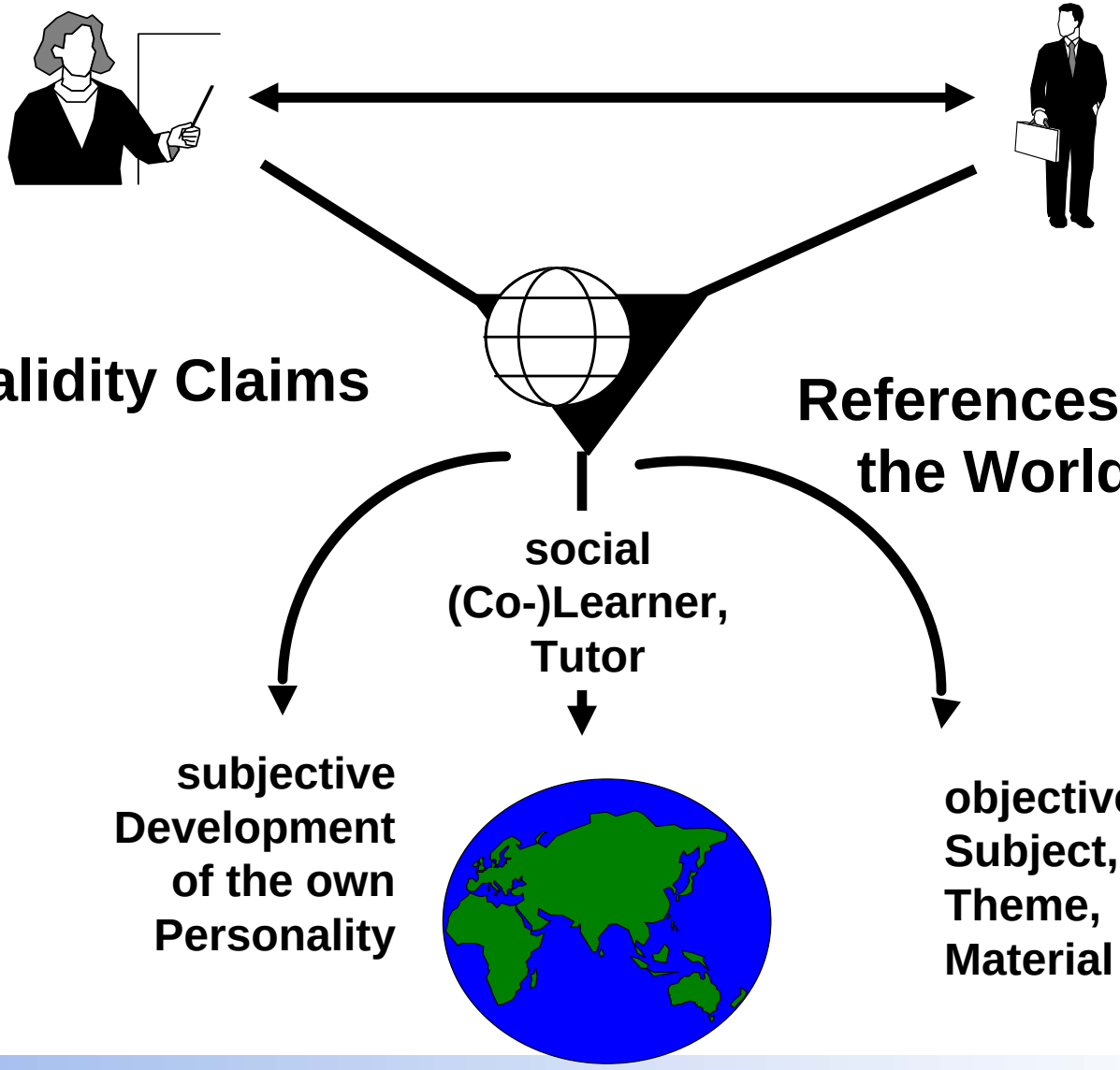
Teaching III


Perceive &
Do (Debug)
Knowing-in-
action
Interacting
with Self & Society
Teaching &
Facilitating
Interacting
with Object
Practice &
Discuss
Produce &
Deposit
Reflecting-in-practice
Coaching &
Orchestrating
Tutoring &
Managing
Reflecting-in-action
Environment
Artefact
Interacting
with Subject (Human)

Theory of Communicative Action



Educational Setting



Educational objectives with Netbooks

1. **Supporting self responsible learning**
2. **Encouraging cooperative learning and experiments**
3. **Establishing key competences (information technology, ability to communicate and cooperate)**
4. **Providing access to worldwide knowledge (Internet)**
5. **Changing learning in schools due to individual devices for each student (1-to-1 computing)**

Netbooks: the 5P-Computers

1. **Portability: small & lightweight**
2. **Power: less dependent from plugs, thus supporting new scenarios (mobility)**
3. **Performance: suitable for innovative projects & multimedia tools for creative learning approaches**
4. **Price: relatively cheap**
5. **Providing world wide access: continuous internet connection (UMTS – mobile internet)**

Proposition III
(bm:ukk netbook project, 2009)

Five advantages of netbooks over notebooks – each of them relatively small – results in a huge qualitative difference for education. Netbooks have the potential to realise 1-to-1 computing everytime & everywhere.

Scenarios supported by digital media

1. **Computer areas in classroom**

Scenarios supported by digital media

1. **Computer areas in classroom**
2. **Computer labs**

Scenarios supported by digital media

1. **Computer areas in classroom**
2. **Computer labs**
3. **Trolley with laptops and peripherals**

Scenarios supported by digital media

1. Computer areas in classroom
2. Computer labs
3. Trolley with laptops and peripherals
4. Notebook classes

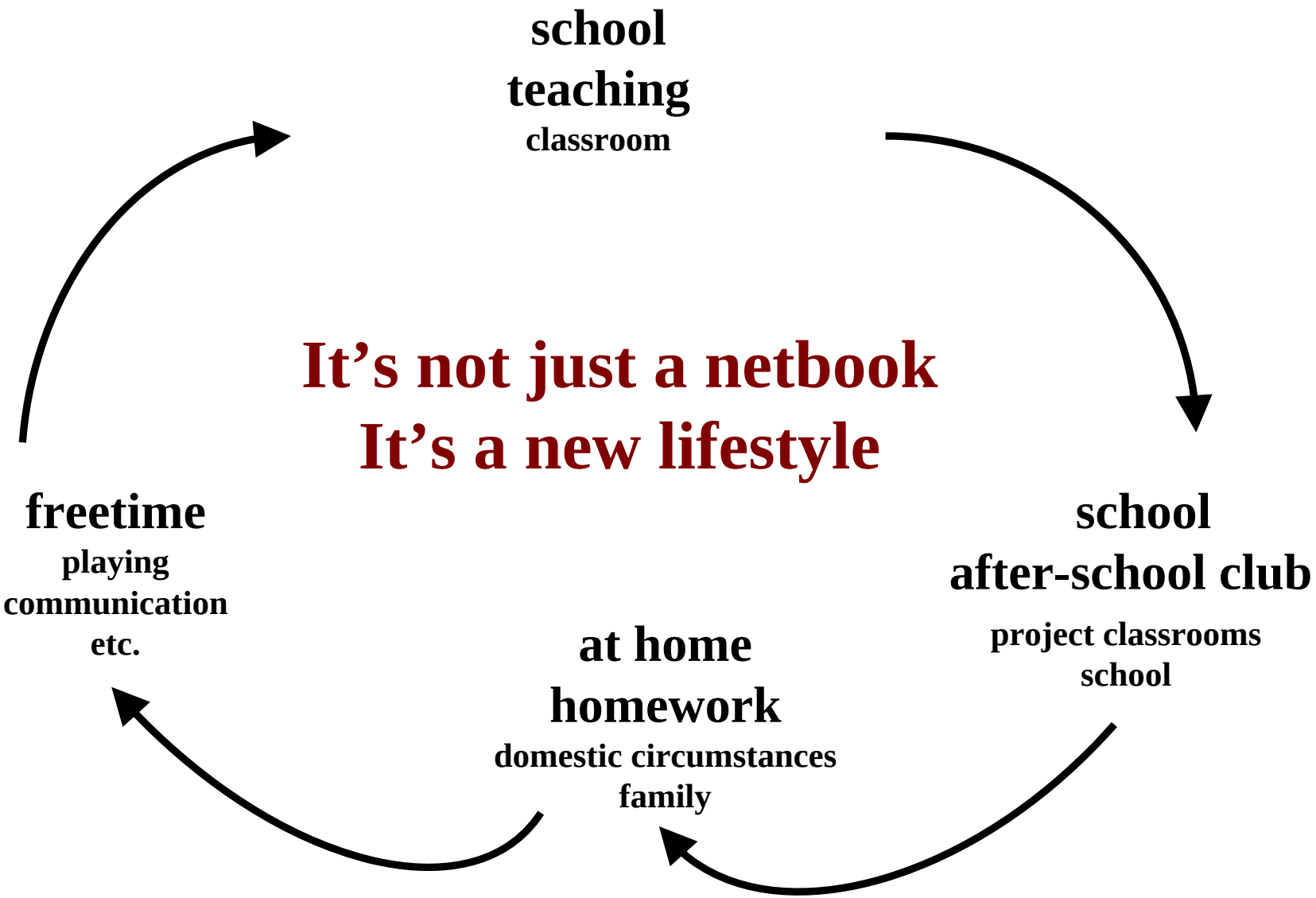
Scenarios supported by digital media

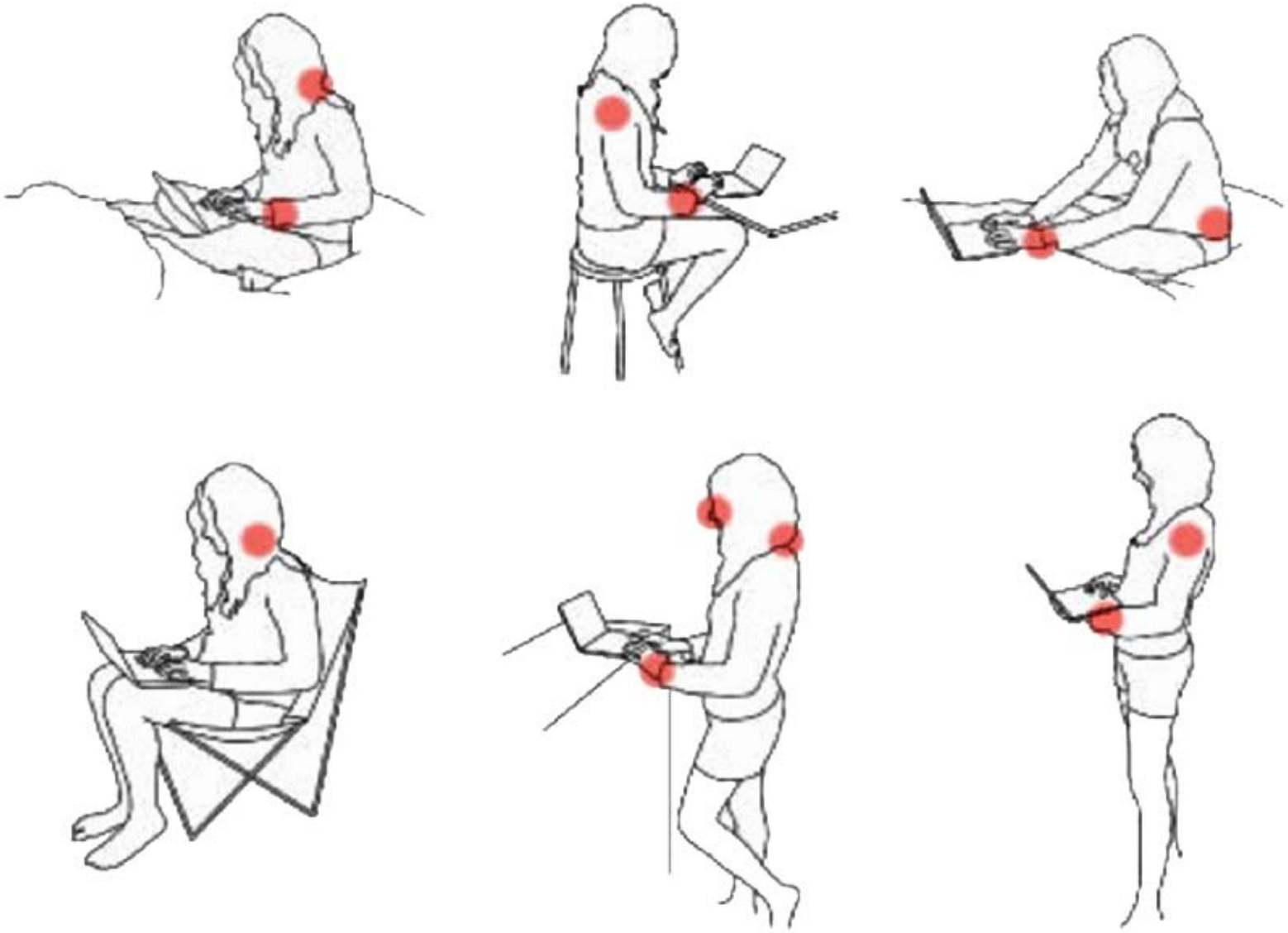
1. Computer areas in classroom
2. Computer labs
3. Trolley with laptops and peripherals
4. Notebook classes
5. Netbook classes

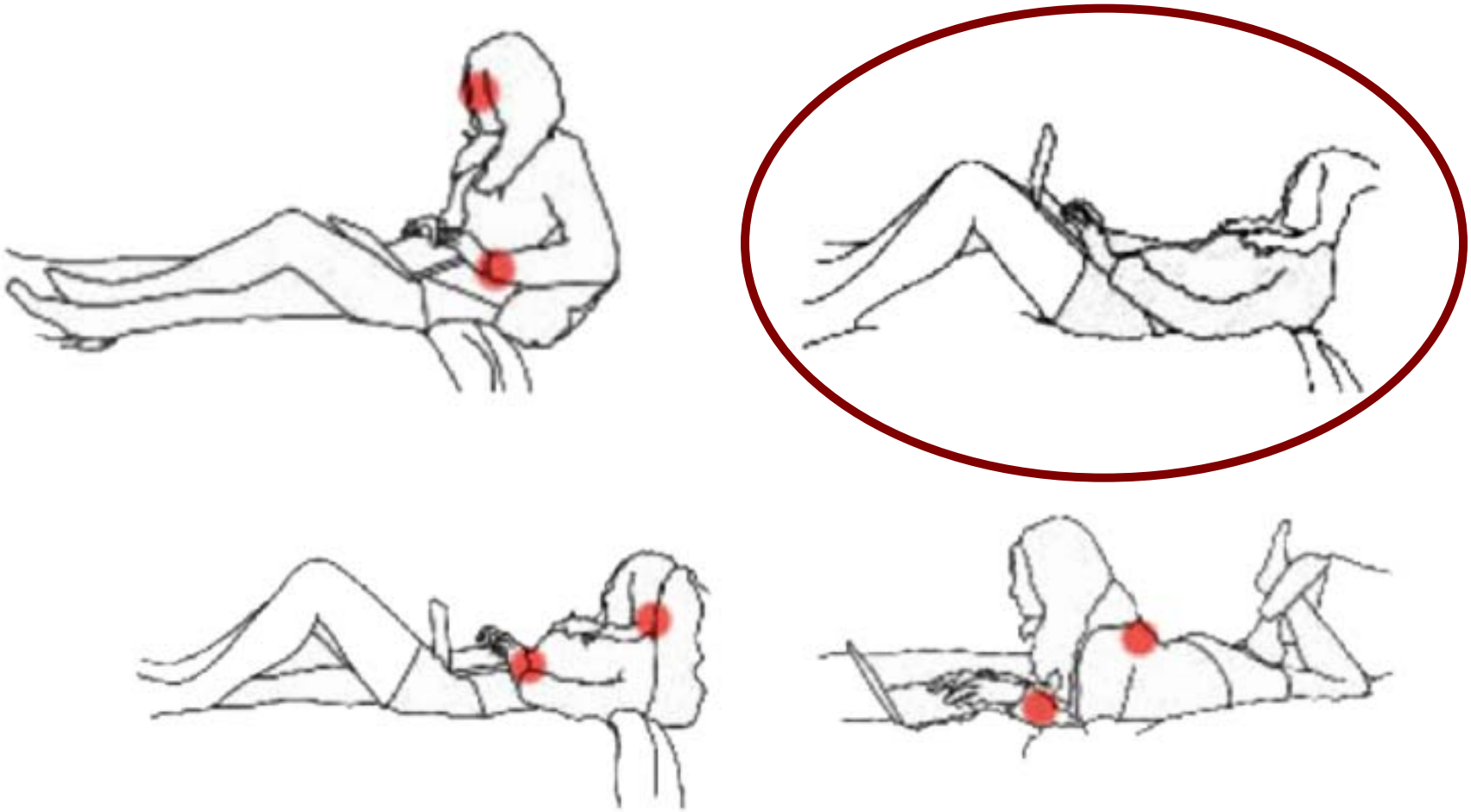
Scenarios supported by digital media

1. Computer areas in classroom
2. Computer labs
3. Trolley with laptops and peripherals
4. Notebook classes
5. Netbook classes
6. (PDA/smartphone classes)

360° learning







Malouf, Dave. Case Study: Freescale Netbook Design at SCAD. core77, design magazine & resource. http://snipurl.com/netbook-postures

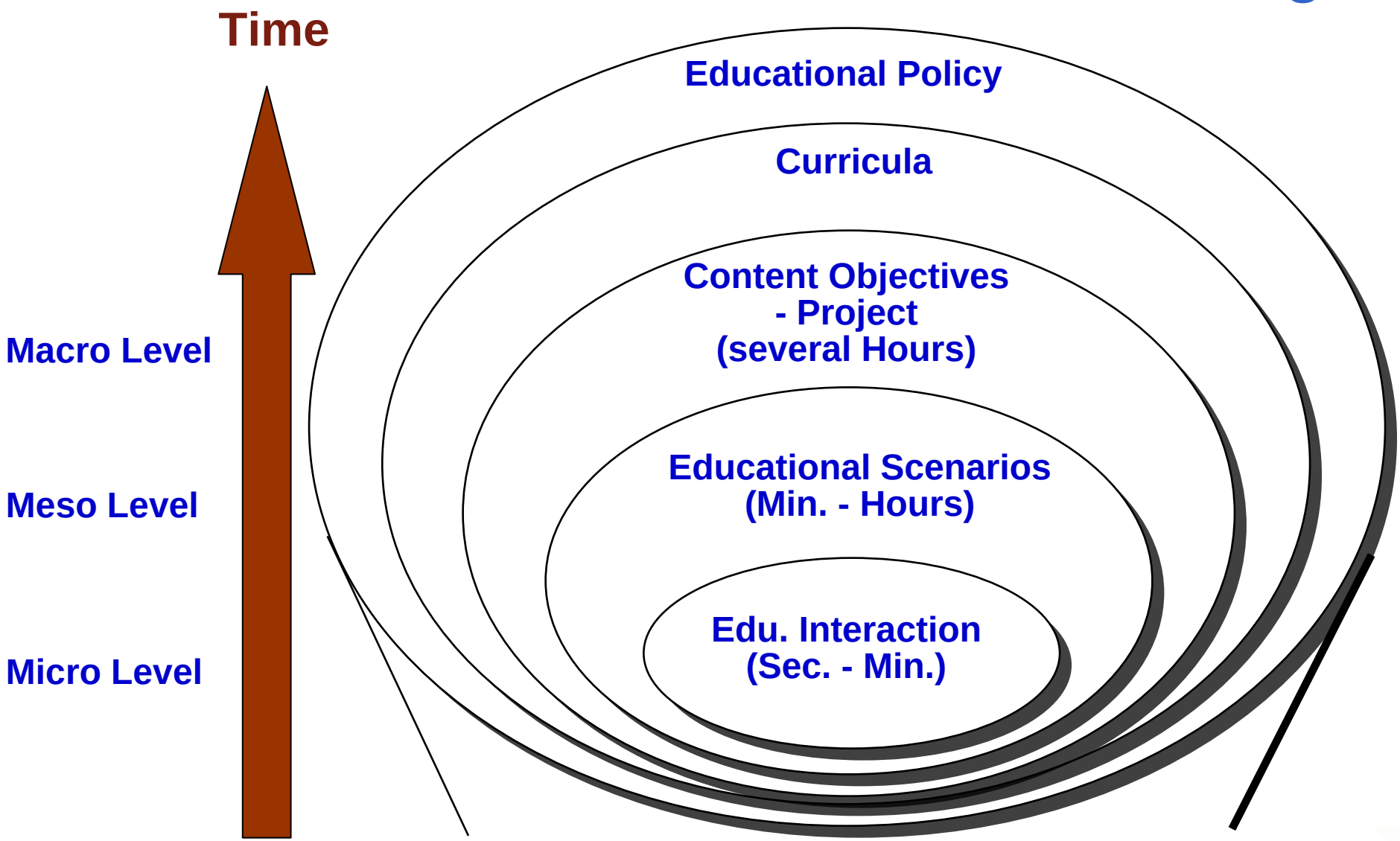
Ideas for educational scenarios in and around the classroom

With netbooks, students are much more mobile within the classroom, the school or the neighbourhood

With a mobile internet connection, students can always participate in online learning scenarios no matter where they are

Mobility

Levels of Educational Design



What are Educational Scenarios?

- **Definition:**
  - **Script which describes the necessary environment, facilities and course of action of a scene**
- **Holistic situation – situated learning:**
  - **Space, Time, Social interaction**
  - **With spatial, temporal and social aspects focussed by subject (content)**

doing research
in the library

Staying in
touch via VoIP

carrying out
street interviews

taking photos
where the action happens

compiling information
in the classroom

Reflecting on ideas: Open Learning

Students work with materials

- alone or in small groups
- according to their own speed and preferences

interactive tasks on netbooks

Reflecting on one‘s learning: Log

Students write about their learning continually

- to document their work
- to learn from their experience

Netbooks may support note-taking individually or collaboratively

Producing content: Patchwork text

Students collect a series of shorter texts produced in the course of a semester instead of a formal essay

(http://www.guardian.co.uk/education/2003/jun/10/highereducation.uk)

Netbooks may help keeping and compiling a multimedia portfolio

Producing content: Mobile Podcasting

Using Netbooks to …

- record statements and interviews right at the place of action
- Arrange and mix recorded material to create a radio feature

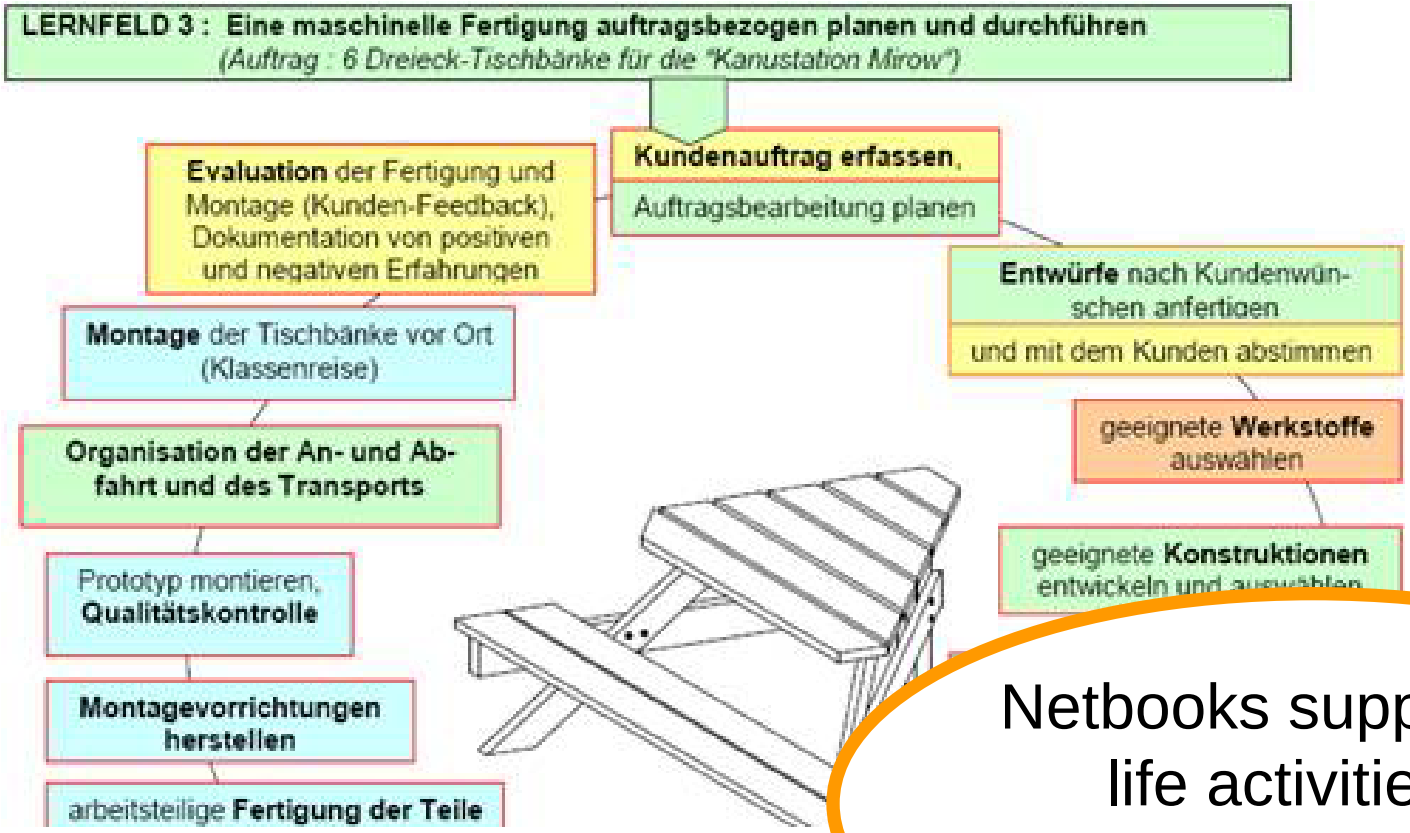
Netbooks as a mobile production tool for creative tasks

Creating content: Multimedia Quiz

Students process information actively and in a creative way by developing questions and answers for their own quiz programme

Netbooks can be used as a research tool and a presentation tool at the same time

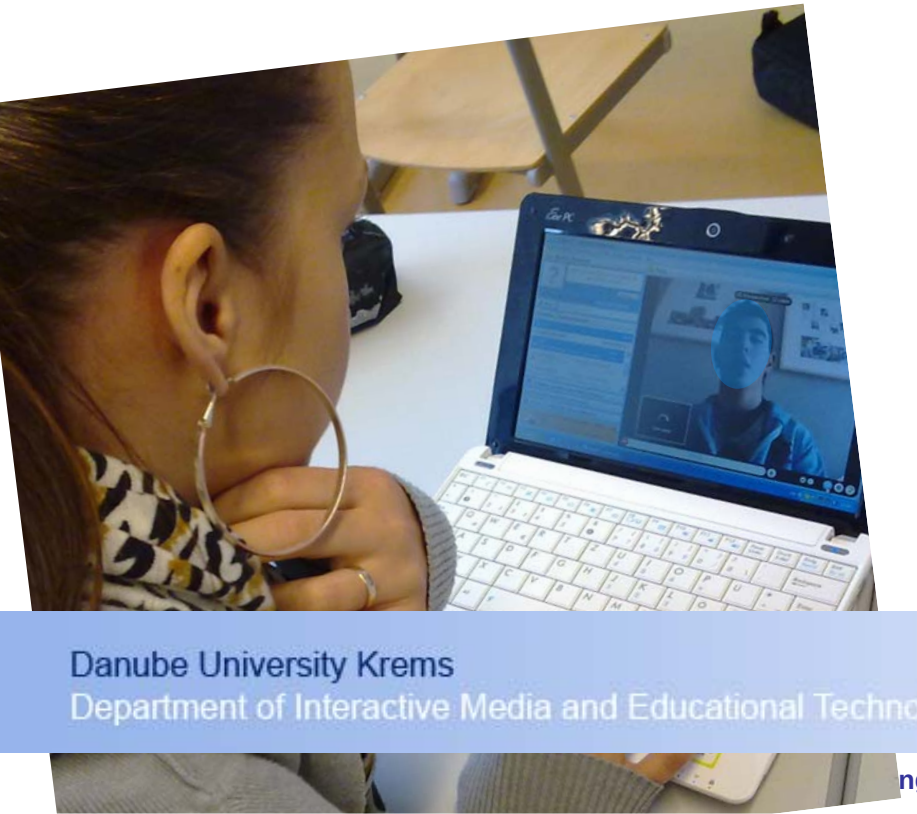
Trying out real life information management



Netbooks support real life activities in authentic situations

Reflecting on ideas: Participating in school twinning projects

- Students collaborate with students from other schools, even across borders



Using built-in microphone, webcam and internet connection

Pilot Project ‘Netbooks in Education’

Austria, 2009-2010 (bm:ukk)

Phase 1
Pilot Project
Sep 2009 – Feb 2010

- 6 pilot schools, with Notebook experience
- secondary education

Focus:
introduction & new developing methodological approach

Phase 2
Extended Project
March 2010 – June 2010

+ 3 schools

- primary & secondary

Focus:
data collection for research on 360° learning lifestyle

Phase 3
Dissemination
Sep 2010 – June 2011

- 20 additional schools
- advancement of frameworks in favour of 1:1 computing

Focus:
educational governance
educational scenarios

Pilot Project ‘Netbooks in Education’

Austria, 2009-2010 (bm:ukk)

IT Steering Committee bm:ukk
(President: Heidrun Strohmeyer)
(CEO: Christian Dorninger)

Project Coordinator
(Christian Schrack, bm:ukk)

Pilot schools
HAK Bruck/Leitha
BHAK Steyr
HAK Tamsweg
BS ETM Wien
HLW/T Wien 21
BG/BRG Feldkirch

Associated schools
(Hawle/Stemmer; bm:ukk)

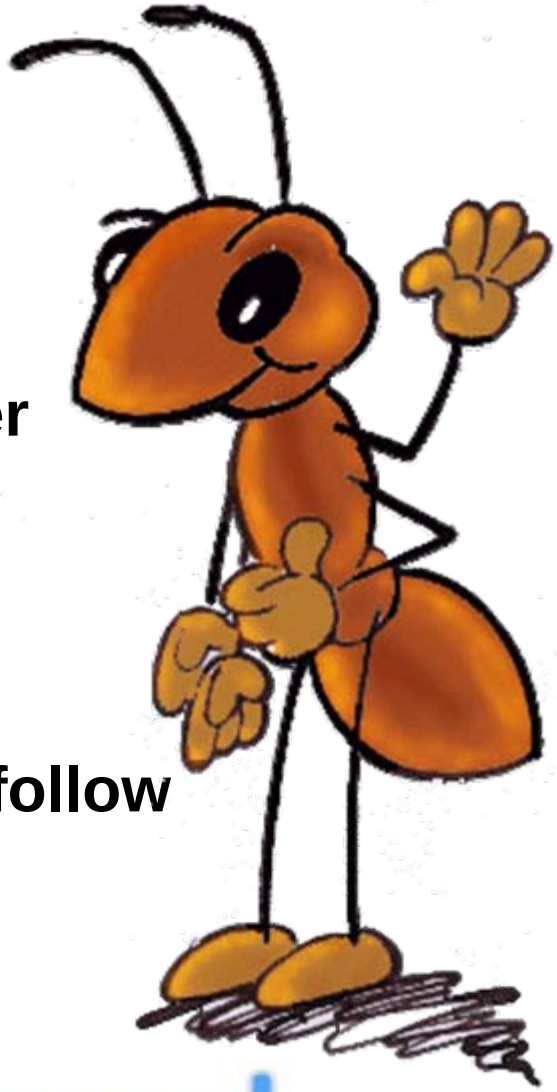
Project Phase 2

Additional schools
Project Phase 3

Expert Monitoring & Educational Research
(Peter Baumgartner & Team, DUK)

Research method ANT

1. Actor-Network Theory (ANT)
2. Observing actors like an ethnographer (Bruno Latour)
3. „Following the actors“
4. Enabling actors to produce traces to follow



Microblogging

closed system
installed on university servers

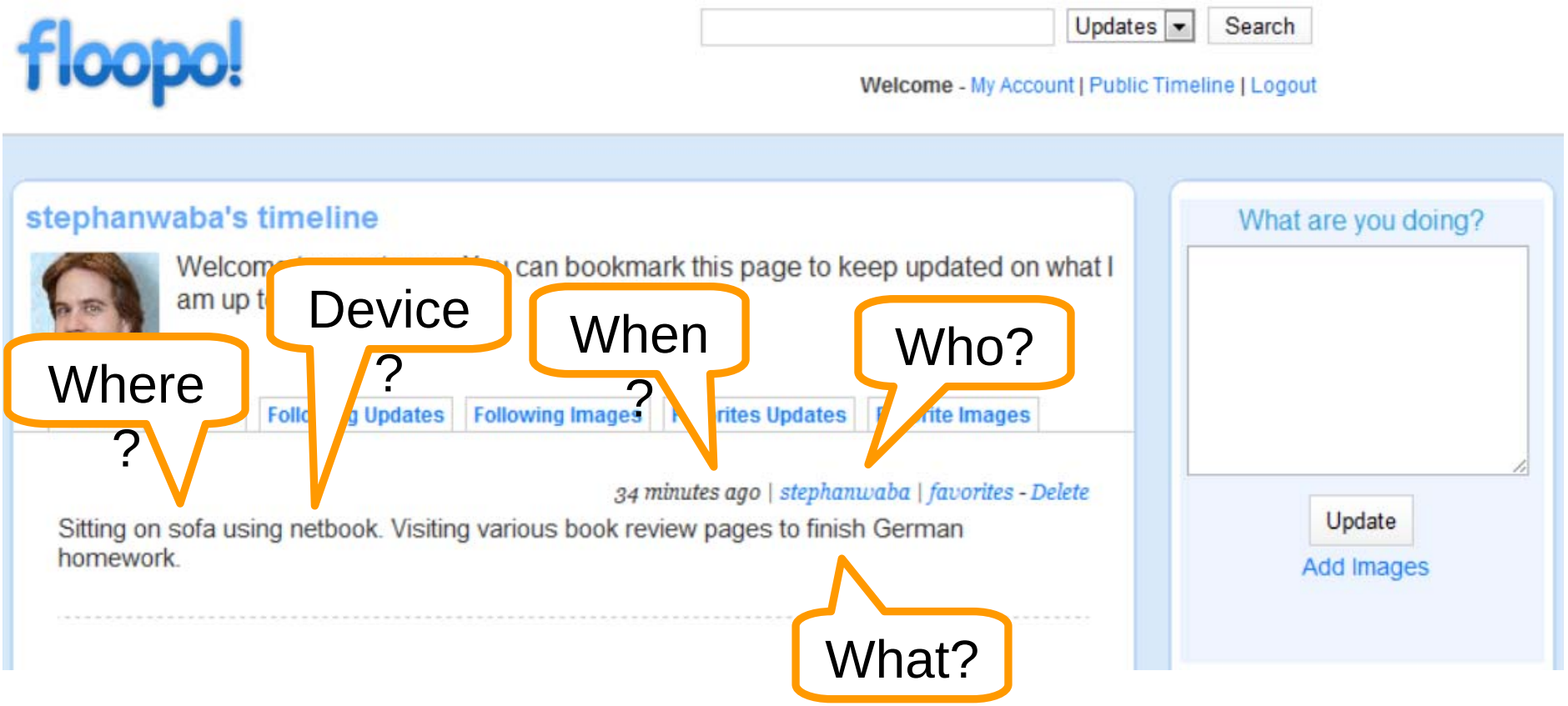
How does it work? (I)

- **Actors document usage of netbooks in microblog:**
  - **easy to do**
  - **quick**
  - **Live**

www.floopo.com

- **In the classroom and outside of the classroom**
- **Messages are archived and data-mined**
- **Sampling > Analysis > Trends > Interviews**

How does it work? (II)



International Netbook Projects

Where they are …

Pilot Project ‘Netbooks in Education’
Austria, 2009-2010
netbooks.bildungstechnologie.org

Netbook Project Hamburg
Germany, 2009-2010
www.uni-hamburg.de

Acer-EUN Educational Netbook Project
Europe, 2010-2011
http://www.netbooks.eun.org

Netbook Project (The Magellan Initiative)
Portugal, 2009-2010

Netbook Trial ‘In Their Hands’
Australia, 2009-2010
www.education.vic.gov.au

International Netbook Projects

What they look at …

Pilot Project ‘Netbooks in Education’

360 degree learning
& lifestyle

Netbook Project Hamburg

Individualisation of learning processes

Acer-EUN Educational Netbook Project

Collaborative learning across borders

Netbook Project (The Magellan Initiative)

National government initiative for technological innovation

Netbook Trial ‘In Their Hands’

Collaborative learning across schools

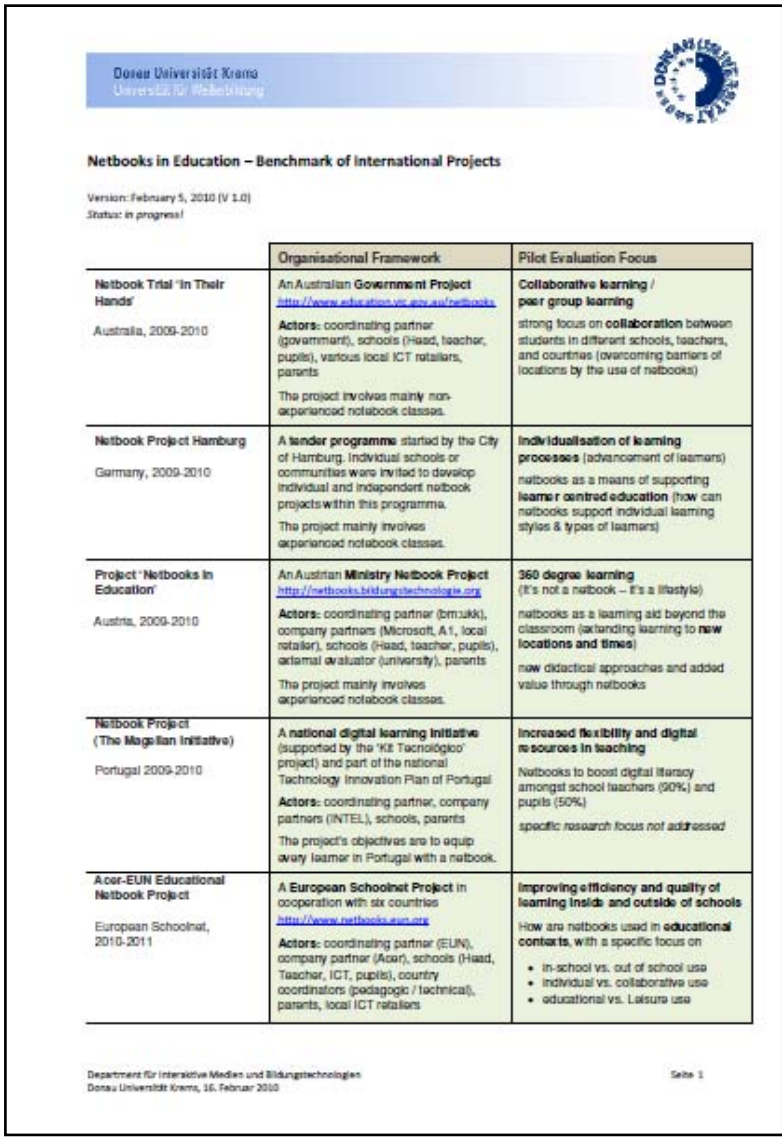
International Netbook Projects

We looked at these projects …

and started to develop a

Proposal for a Framework Taxonomy for Netbook Projects

- Organisational Framework
- Technical Framework
- Pedagogical Framework
- Scope of Project
- Ownership & Finance Model
- Pilot Evaluation Focus



Donau Universität Krems
Universität für Weiterbildung

Netbooks in Education – Benchmark of International Projects

Version: February 5, 2010 (V 1.0)
Status: in progress!

	Organisational Framework	Pilot Evaluation Focus
Netbook Trial 'In Their Hands' Australia, 2009-2010	An Australian **Government Project** http://www.education.vic.gov.au/netbooks **Actors:** coordinating partner (government), schools (Head, teacher, pupils), various local ICT retailers, parents The project involves mainly non-experienced notebook classes.	**Collaborative learning / peer group learning** strong focus on **collaboration** between students in different schools, teachers, and countries (overcoming barriers of locations by the use of netbooks)
Netbook Project Hamburg Germany, 2009-2010	A **tender programme** started by the City of Hamburg. Individual schools or communities were invited to develop individual and independent netbook projects within this programme. The project mainly involves experienced notebook classes.	**Individualisation of learning processes** (advancement of learners) netbooks as a means of supporting **learner centred education** (how can netbooks support individual learning styles & types of learners)
Project 'Netbooks in Education' Austria, 2009-2010	An Austrian **Ministry Netbook Project** http://netbooks.bildungstechnologie.org **Actors:** coordinating partner (bmukk), company partners (Microsoft, A1, local retailer), schools (Head, teacher, pupils), external evaluator (university), parents The project mainly involves experienced notebook classes.	**360 degree learning** (It's not a netbook – it's a lifestyle) netbooks as a learning aid beyond the classroom (extending learning to **new locations and times**) new didactical approaches and added value through netbooks
Netbook Project (The Magellan Initiative) Portugal 2009-2010	A **national digital learning initiative** (supported by the 'Kit Tecnológico' project) and part of the national Technology Innovation Plan of Portugal **Actors:** coordinating partner, company partners (INTEL), schools, parents The project's objectives are to equip every learner in Portugal with a netbook.	**Increased flexibility and digital resources in teaching** Netbooks to boost digital literacy amongst school teachers (90%) and pupils (50%) *specific research focus not addressed*
Acer-EUN Educational Netbook Project European Schoolnet, 2010-2011	A **European Schoolnet Project** in cooperation with six countries http://www.netbooks.eun.org **Actors:** coordinating partner (EUN), company partner (Acer), schools (Head, Teacher, ICT, pupils), country coordinators (pedagogic / technical), parents, local ICT retailers	**Improving efficiency and quality of learning inside and outside of schools** How are netbooks used in **educational contexts**, with a specific focus on • in-school vs. out of school use • individual vs. collaborative use • educational vs. Leisure use

Department für Interaktive Medien und Bildungstechnologien
Donau Universität Krems, 16. Februar 2010

Seite 1

http://www.blended-education.net/netbooks/taxonomy

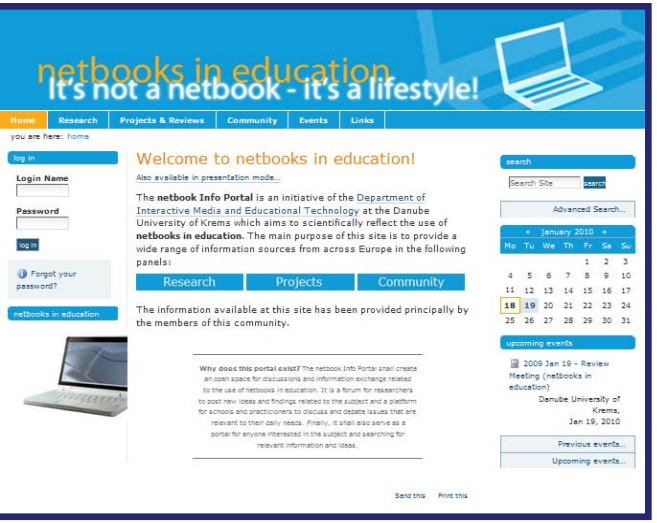
International Netbook Projects

International Community

Research

Projects

Community



www.education.vic.gov.au

www.uni-hamburg.de

www.schoolinfo.ca

wsgfl.westsussex.gov.uk

netbooks.bildungstechnologie.org

www.bmukk.gv.at

netbooktrial.wikispaces.com

www.connectingeducation.com

delicious.com/vuorikari

connecteducation.blogspot.com

www.eun.org

edtechie.wordpress.com

www.hpl.hp.com

portal.acm.org

www.guardian.co.uk

www.blended-education.net/netbooks

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Danube University Krems
Department of Interactive Media and Educational Technolgy