

”Teknologia ja uudet sovellukset mobiiliavusteisessa oppimisessa”

TieVie asiantuntijakoulutuksen lähiseminaari
26.8.05

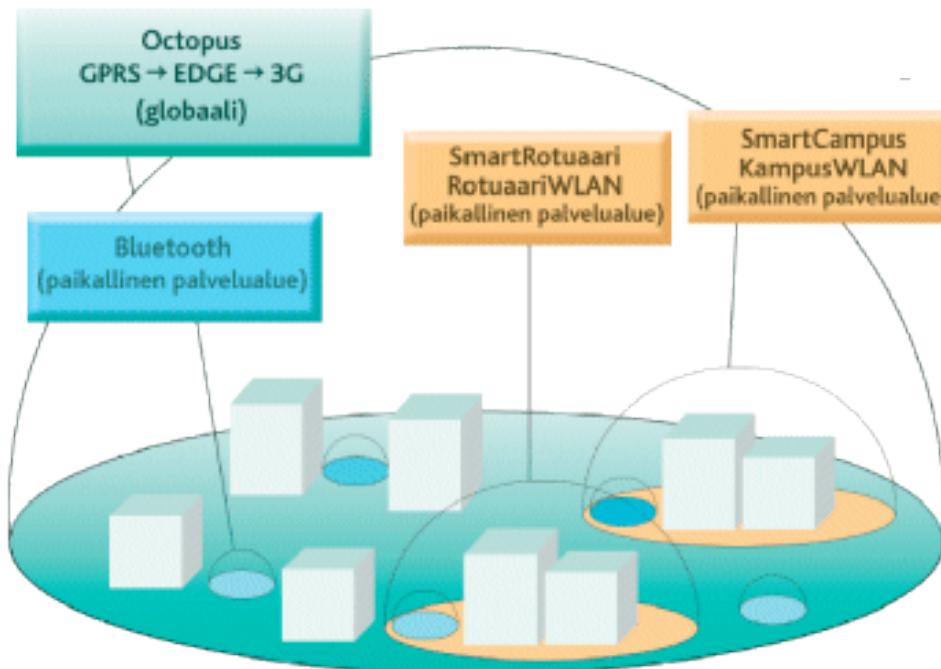
Jari Laru, koulutusteknologian tutkimusyksikkö

Esityksen rakenne

vilkaisu teknologiaan
”mobile learning” - kokeillaan googlea
yleisiä väittämiä
teoreettinen viitekehys
mitä mobiililaite itse mahdollistaa
palanen todellisuutta ja omia kokemuksia

Tekniikasta..

In-Statin mukaan 42 prosenttia haastatelluista olisi halukas ostamaan matkapuhelimen, jota voitaisiin ohjata puhekomennolla. Neljä kymmenestä ilmoitti olevan erittäin kiinnostunut kännystä, jolla pääsisi kiinni wlan-verkkoihin.. (Tietokone Online 14.4.2005)



<http://www.rotuaari.net>

Computational power will be available everywhere, will be ubiquitous, or ubiquitous computing (Weiser, 1991).

People will view and use many of them as rather specialized information appliances (Norman, 1998)

Easy way: mobile learning (1/2)

The screenshot shows a Google search results page for the query "mobile learning". The results are categorized under "Web" and show approximately 21,900,000 results found in 0.07 seconds. The results include various links such as "Mobile Learning Links (Jari Laru)", "e-Learning Centre: Mobile and wireless learning", "Mobile Learning", "ML2005: Conference home page", and "Ferl - Introduction to Mobile Learning (M Learning)". A sponsored link for "Mobile Learning" from www.hotlavasoftware.com is also visible on the right side.

mobile learning – Google Search

http://www.google.com/search?client=safari&rls=fi-fi&q=mobile+learning&ie=UTF-8&oe=UTF-8

mobile learning

Results 1 - 10 of about 21,900,000 for mobile learning. (0.07 seconds)

Web

Mobile Learning Links (Jari Laru)
Purpose of this page is to store interesting links about mobile learning. ... The Design and Implementation of a Mobile Learning Resource Sharples, ...
cc.oulu.fi/~jlaru/mlearning/ - 44k - Cached - Similar pages

e-Learning Centre: Mobile and wireless learning
Optimising your sales workforce through mobile learning ... And we must carefully examine the wireless, mobile learning experience as it rapidly develops, ...
www.e-learningcentre.co.uk/eclipse/Resources/mlearning.htm - 74k - Cached - Similar pages

Mobile Learning
Mobile Learning is the use of mobile or wireless devices for learning on the ... General information on Mobile Learning Projects involved in the Learning ...
www.learningcitizen.org/mobile_learning.shtml - 16k - Cached - Similar pages

ML2005: Conference home page
Mobile Learning is not only a new technology; it is also an exponent of new ... several highly dynamic mobile applications between learning, tourism and ...
www.iadis.org/ml2005/ - 20k - Cached - Similar pages

Ferl - Introduction to Mobile Learning (M Learning)
Describes the mobile technology available today, compares the devices currently on offer, lists the benefits that the technology could bring to education, ...
ferl.becta.org.uk/display.cfm?page=65&catid=192&resid=5194&printable=1 - 50k - 23 Aug 2005 - Cached - Similar pages

EDUCAUSE REVIEW | May/June 2005, Volume 40, Number 3
And why shouldn't mobile learning accept its place in the spotlight as the ... The mobile

Sponsored Links

Mobile Learning
Palm OS, Pocket PC & Blackberry learning and content creation tools
www.hotlavasoftware.com

Easy way: mobile learnin (1/2)

The screenshot shows a web browser window with the title "m-learning: How to stream your institution's existing IP Radio station". The address bar contains the URL http://mlearning.rave.ac.uk/mlearning/how_to/radio.htm. The page content features a Sony Ericsson mobile phone displaying a video player interface. The background of the page has a sunset sky. The text "m-learning®" is prominently displayed, followed by "with live & non live video & audio on demand" and "By Adam Bur...". Below this, there are four stages: "Stage: 1 Exporting your work", "Stage: 2 Streaming your work", "Stage: 3 View it on your phone", and "Resources How to go further...". A large blue button at the bottom says "How to stream your institution's existing IP Radio station:".

Teknologia mahdollistaa..

”Significant advances in media technology has provided technological affordances that could support instructional strategies that wouldn’t be possible without the technology” (Kozma, 1991)

Application may be kind of ”Trojan Mouse”
In that may serve as a catalyst for change
(Papert, 1993)

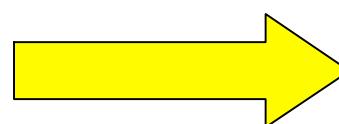
Mietintätehtävä:

Mitä ”mobiilioppiminen” mielestäsi on /
voisi olla tällä hetkellä?

Yleisiä väittämää

1. “Aika ja paikka eivät ole enää esteenä”

- **Desktop:** Applications for collaboration free teaching and learning from the physical boundaries of school and the time constraints of class schedules.. (Edelson et al. 1999)
- **Mobile:** They enable a transition from the occasional, supplemental use of portable associated with computer labs to frequent and integral use of portable computational technology (Soloway et al. 2001; Tinker & Krajcik, 2001)



Entä sitten?

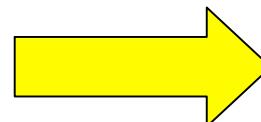


2. “Teknologia mahdollistaa laadukkaan oppimisen”

”New application that are labeled as ’collaborative appear frequently.”

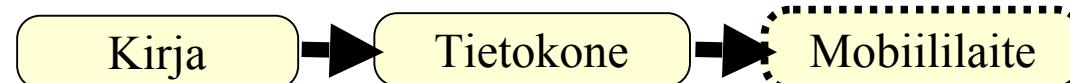
”It’s very difficult for educators to identify and evaluate the ones that actually foster collaborative learning in education”

(Roschelle & Pea, 1999; Lipponen & Lallimo, 2004)



Mobiilisovellusten kohdalla tilanne vielä pahempi, aihe on osittain vielä liian ”muodikas”

3. ”Tehdään tämä sama myös kännyställe”



- **VAARA:** ”e-learning simply becomes m-learning, without any particular changes in content” (Kosken, 2001; Nyiri, 2003)
- “In order to harness the benefits of handheld learning tools, it’s important to understand the challenges of designing and using supportive educational software within constraints of handhelds” (Luchini, Quintana, Soloway, 2004)

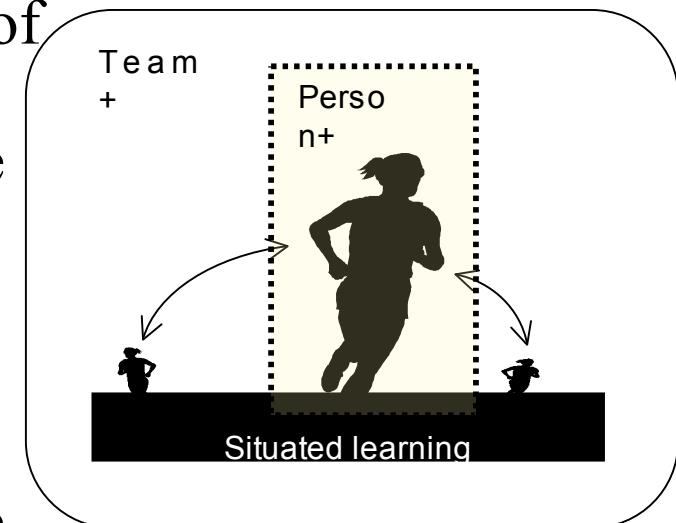
My theoretical framework

Researchers have learned that improving education is not simple matter of adopting new technology, the important thing is how technology is being used in educational setting, its pedagogical implementation (Roschelle, 2003).

Distributed cognition
Cognitive tools
Situated learning

Distributed cognition (1/2)

- Cognition is viewed not as a property of individuals, but as distributed or “stretched over” an extended cognitive system, which may include the individual, other people, artifacts, and tools (Hutchins, 1996; Pea, 1993)
- An important feature of distributed cognition is that the emphasis is on the performance of the extended cognitive system (person plus environment) rather than on the performance of the individual (Perkins, 1993)



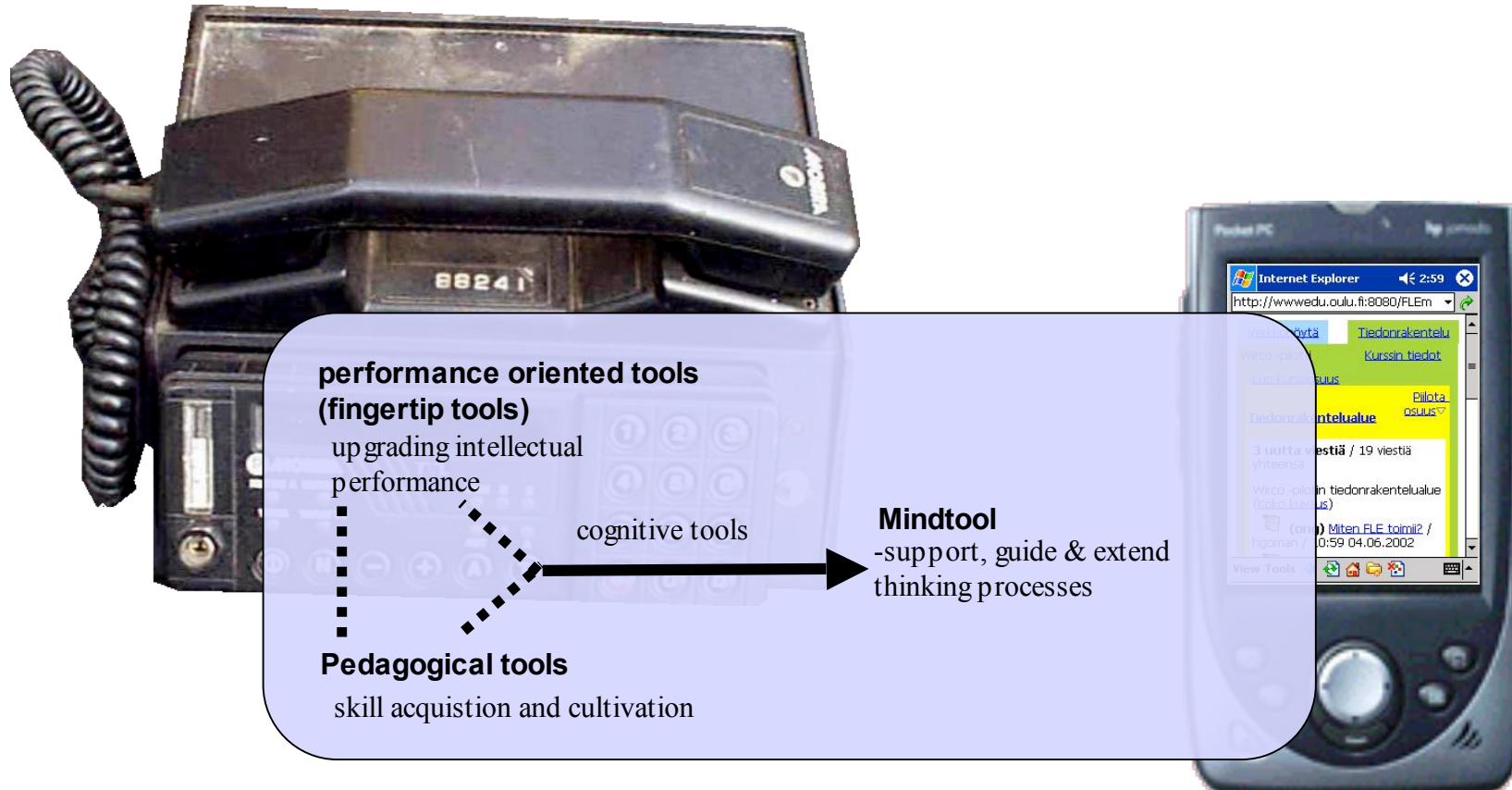
Distributed cognition 2/2

- ICT tools become partners in distributed cognition because they:
 - share the cognitive burden of carrying out tasks (Salomon, 1993) that humans are not very good at, such as performing complex calculations, storing and retrieving information, visualizing data, and in general transforming abstract content into more concrete forms
- In this conceptual framework computer technologies are not considered as mere conveyors of information, but as cognitive tools and partners in cognition (Hutchins, 1991)

Cognitive tools (1/3)

- Appropriately designed computer-based learning environments can be considered as cognitive tools that aid cognition through interactive technology that expand mind (diSessa, 2000; Jonassen, 1996; Jonassen & Reeves, 1996; Kommers, Jonassen & Mayes, 1992; Lajoie, 1993; Lajoie & Derry, 1993; Pea, 1985; Perkins, 1985; Salomon, Perkins & Globerson, 1991)
- Cognitive tools help students during thinking, problem solving, and learning by providing opportunities to:
 - 1) practise knowledge in the context 2) share the cognitive load 3) generate and test hypotheses 4) support cognitive processes (e.g. memory) 5) empower learners to design their own representations 6) support co-operative & collaborative learning 7) scaffold learning through diagnostic feedback 8) reify students' problem solving...

Cognitive tools (2/3)



(Jonassen, 2000; Perkins, 1985,
Salomon, 1993)

Mindtools as cognitive tools 3/3

- Mindtools are applications, like:
 - databases
 - spreadsheets
 - expert systems
 - systems modeling tools
 - microworlds
 - computer conferencing...
- Mindtools are knowledge construction tools that **learners learn with, not from** - Learners function as interpreters, organizerts and designers of their personal knowledge

(Jonassen, 2000)

Situated learning

- In the situated learning approach, knowledge and skills are taught in contexts that reflect how the knowledge will be used in real-life situations.
- This strategy is based on the premise that knowledge is not independent, but fundamentally situated, being in part a product of the activity, context, and culture in which it is developed (Brown et al. 1988).

device

tool

context

= "mobile learning"

Mobile devices & Cognitive tools (appropriate assemblages of devices for knowledge work than conventional learning)

desktop paradigm: "...that knowledge is only visible in two kinds of places in typical CSCL activities: a student's head or a computer display (Roschelle & Pea, 2003)

Wireless Internet Learning Devices (WILD)s (Roschelle & Pea, 2003)

- .. "should support computational media with cognitively empowering representations" (mindtools)
- .. "should support network communication both among local peers and to distant servers"
 - directed communication via physical gesture (infrared beaming, rfid tags)
 - peer-to-peer and multicast network topologies (wlan, bluetooth)
- Features and capabilities of the devices provide opportunities to design multiple kinds of collaborations to support learning (Price, Rogers, Stanton, & Smith, 2003).

Affordances of WILD applications

1. **augmenting** physical space (activity is not limited to space within the screen)
2. **leveraging** topological space (simulations, representations, probes) (e.g. mindtools)
3. **aggregating** coherently across all students participating individually (coherent representations, every student has a role)
4. **conducting** classroom performances (teacher's new role)
5. **act becomes artifact** (interaction will be captured, pedagogocial models can be directly enacted)
⇒ Augmented activity spaces emerge (Roschelle & Pea, 2003)

Palanen todellisuutta ja omia kokemuksia

Esteitä (mobiili)opiskelulle

Sosiaalinen vuorovaikutus kyllä käynnistyy kunhan teknologia sen mahdollistaa..

Ollaan kiinnostuneita vain kognitiivisista prosesseista ja unohdetaan muu.. (sosiaalinen tausta, ryhmädynamiikka..)



Eräitä yrityksiä ratkaista ongelma:

- WILD (Wireless Internet Learning Devices)
 - Roschelle & Pea, 2002
- LCD (Learning Centered Design)
 - Luchini, Quintana, Soloway, 2004
- Integrated learning & Scripting
 - Dillenbourg & Jermann 2004
 - MOSIL (Eu NOE Kaleidoscope JEIRP)



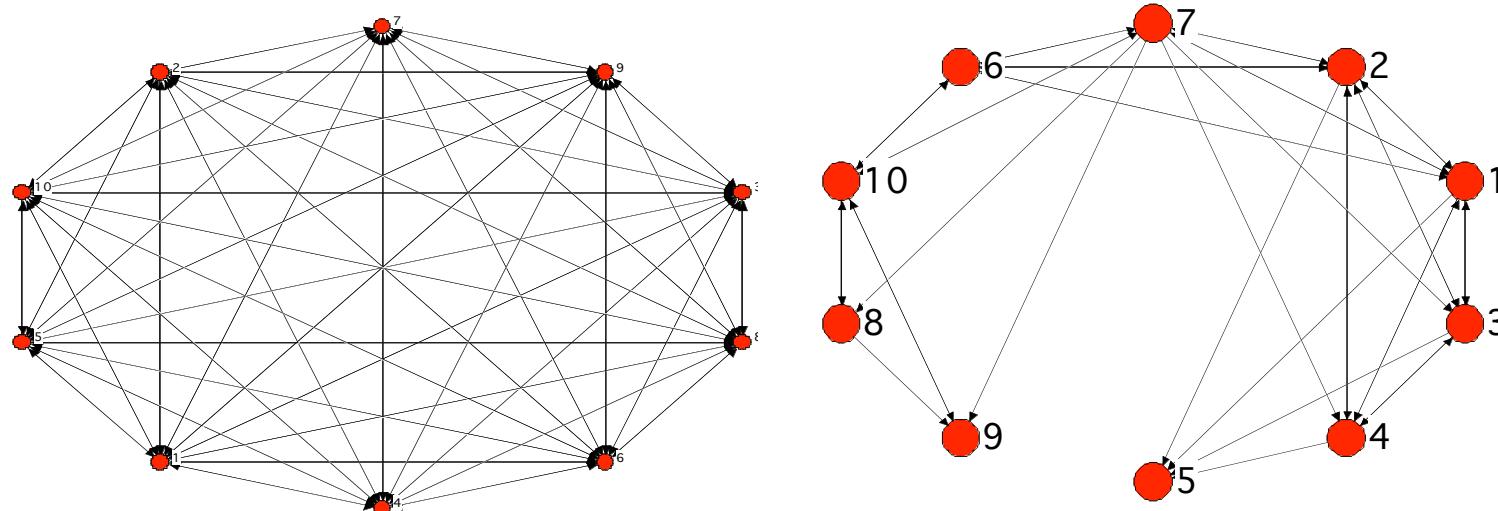
.. Pitäisikös sovelluksessa olla pedagoginen malli sisäänrakennettuna?

- Procedural facilitation (Bereiter & Scardmalia, 1987)
- Internal Scripts (Dillenbourg, 2002)

The image displays two screenshots of educational software. The left screenshot shows a web-based application titled "Our environment". It features a header with user profiles for Giedre, Kati, Anna, Jiri, Lasse, and Pasi. Below this is a section titled "Climate change" containing "5 new notes / 13 notes". A discussion thread is shown with posts from users Kati and Anna. The right screenshot shows a Pocket PC device displaying the same software via Internet Explorer. Both screenshots illustrate how the pedagogical model is implemented in a mobile learning environment.

Goman & Laru, 2003; Laru & Järvelä, 2004

..pelkkä sovellus ei kuitenkaan saa käyttäjiä toimimaan toivotulla tavalla



Hypoteesi (FLEmobile)

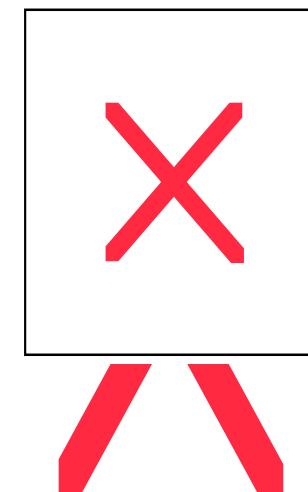
Goman & Laru, 2003; Laru & Järvelä, 2004

Pitäisikös sovelluksen käyttöä ohjata pedagogisen mallin avulla ulkoa käsin?

Phases of the flyer script

- External scripts (Dillenbourg, 2002)

	<p>or two participants choices. Students appropriate mobile devices and</p>
Phase 2	<p>Introducing the activity The main collaborative inquiry flyer. Introduction flyer can be story used motivating childrens. After receiving first flyer, two together with the students.</p>
Phase 3	<p>Task(n): creating arguments: The task is presented in the flyer group has to found arguments to exploring the context of the act. When their argument is founded based on finding [Laru, J., Järvelä, S., Stegmann, K. (2004)] Into argument flyer has to be included: [this activity is scaffolded with sentence-openers]</p>



Lisää mobiiliprojekteja

- <http://cc.oulu.fi/~jlaru>
- Konferenssijulkaisut (proceedings, esim. CSCL, Mobilearn)
- Bibliografiat
- Portaalit
- Hakukoneet
 - google (älä käytä termiä ”mobile learning”)
 - nelli
 - dplp
- Kirjasto (teoria)