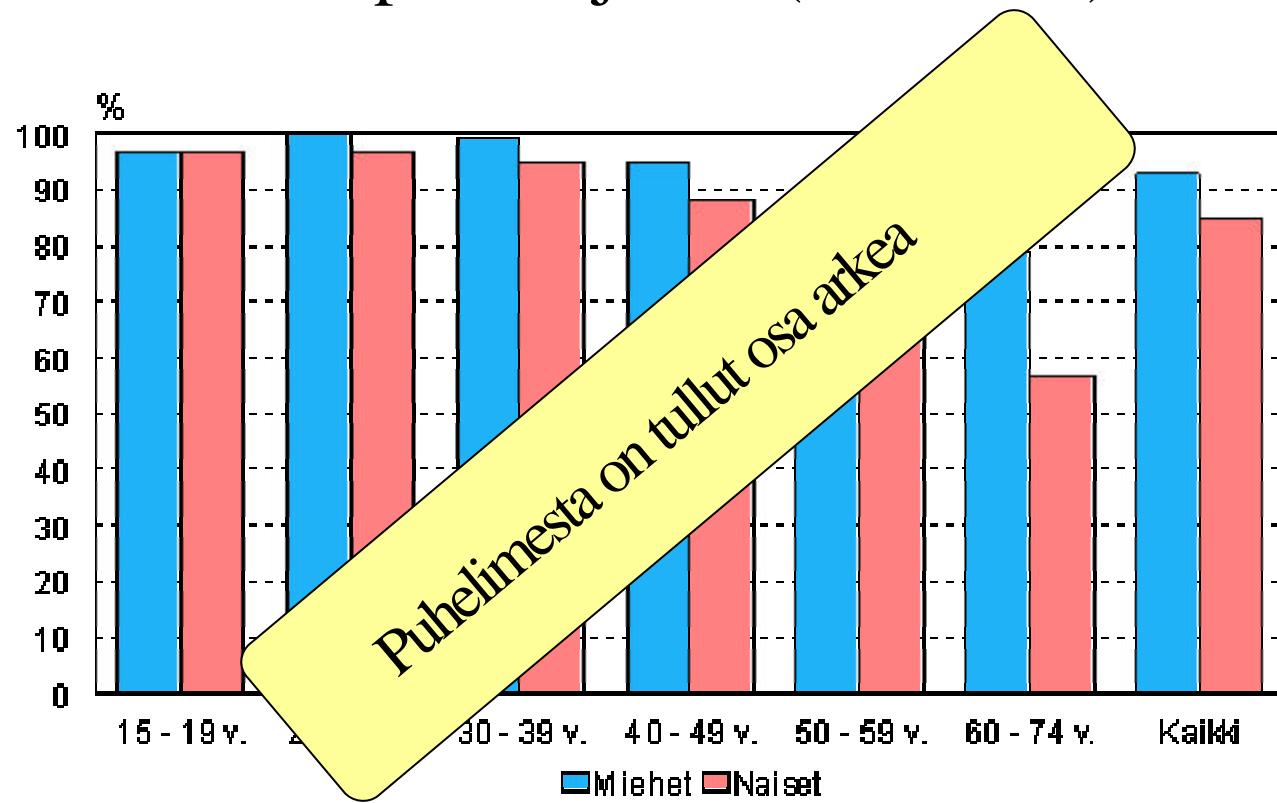


Ubiquitous and context-sensitive cognitive tools as pervasive support for learning and thinking

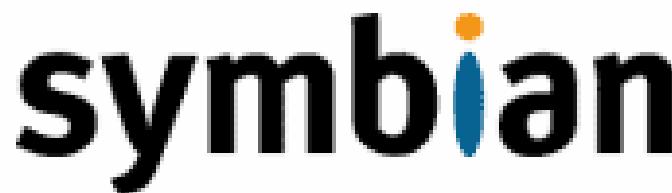
Suomeksi:
Langattomat sovellukset & tutkimuksen
uudet ideat

Matkapuhelin omassa käytössä marraskuussa 2002 sukupuolen ja iän (15 - 74 v.) mukaan



Lähde: Tilastokeskus, Verkkokauppatutkimus, marraskuu 2002

..itseasiassa puhelimesta onkin tullut tietokone



Symbian OS - the mobile operating system



Mobile Community



..tai tietokoneesta puhelin



Meille teknologiauskovaisille:

”Instructional methods make the difference in how well students learn, not the message or the delivery technology”
(Clark, 1983)

=> pelkkä opetuskin riittää joko tekniikan kera tai ilman.. tekniikka ei itseisarvo

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

=> simulaatiot, virtuaalitodellisuudet jne mahdolistavat enemmän

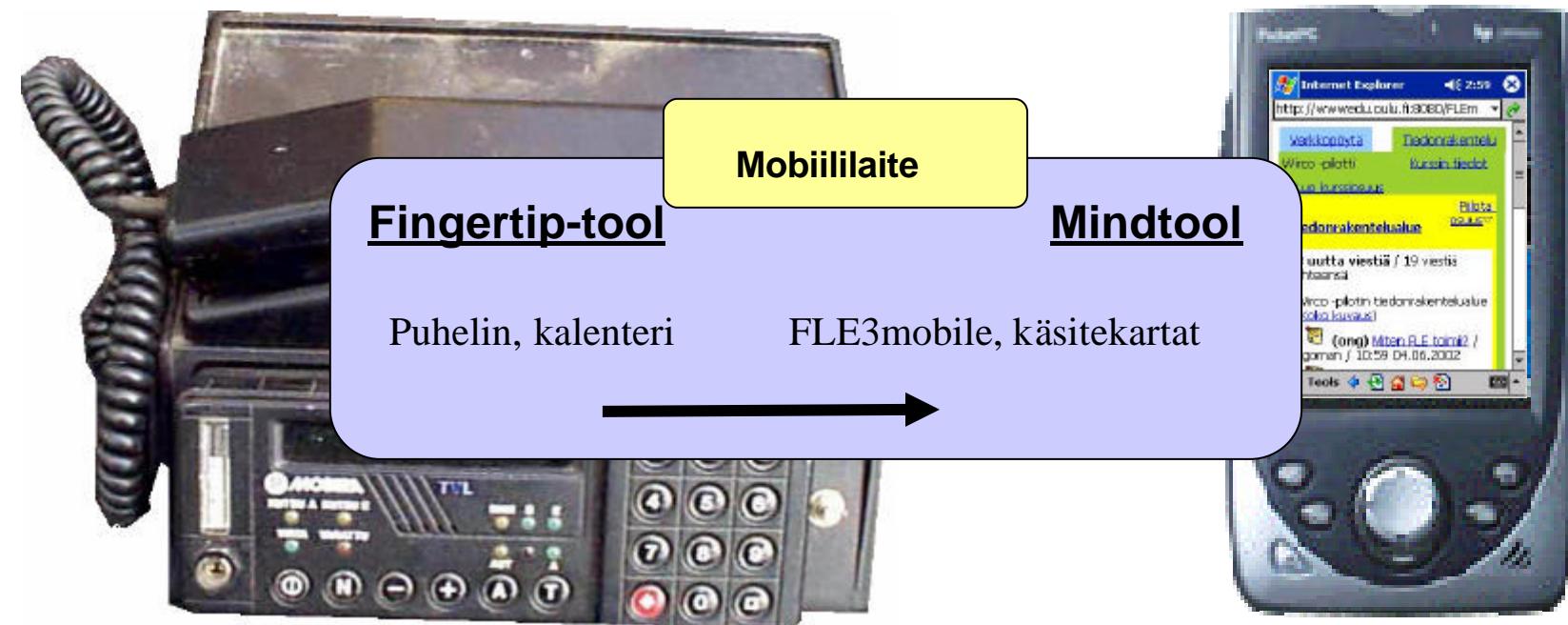
Theoretical introduction

- Collaborative learning (Dillenbourg, 1999; Roschelle & Teasley, 1995)
- Knowledge building and (Scardamalia & Bereiter, 1999)
- Distributed collaboration (Salomon, 1993; Perkins, 1993; Roschelle & Pea, 2002)
- "Cognitive tools" (diSessa, 2000; Lajoie, 2001)

Aims

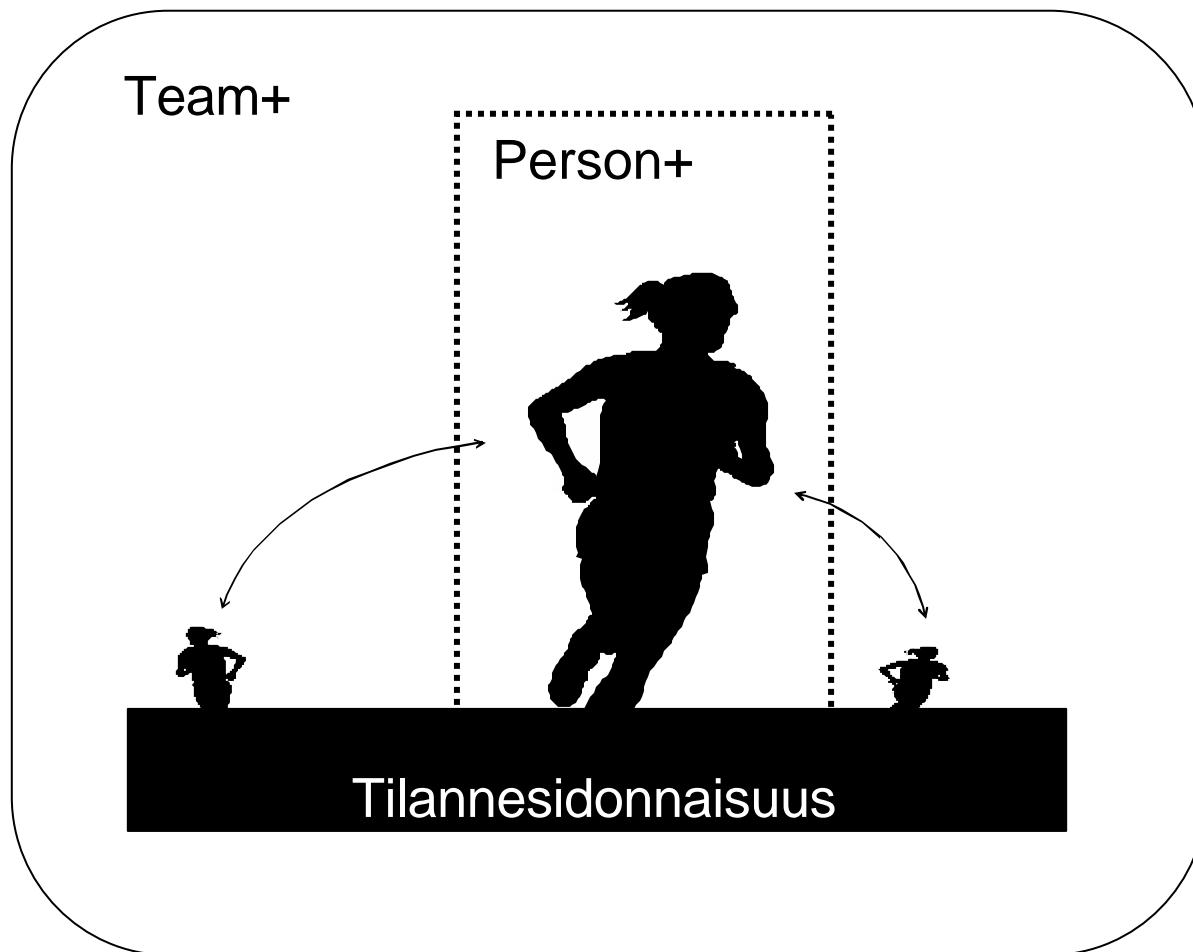
- 1) Develop a model for scaffolding everyday cognitive activities with mobile tools.
- 2) Gain new knowledge how collaborative learning and knowledge sharing (at the downtown context, campus and nature) can be scaffolded with innovative mobile technology.
- 3) Develop mobile enhanced collaborative inquiry learning model for biology and science
- 4) Analyse what kind knowledge is shared and what kind of collaborative argumentation exists?

Mobiililaite asiantuntijuuden tukena



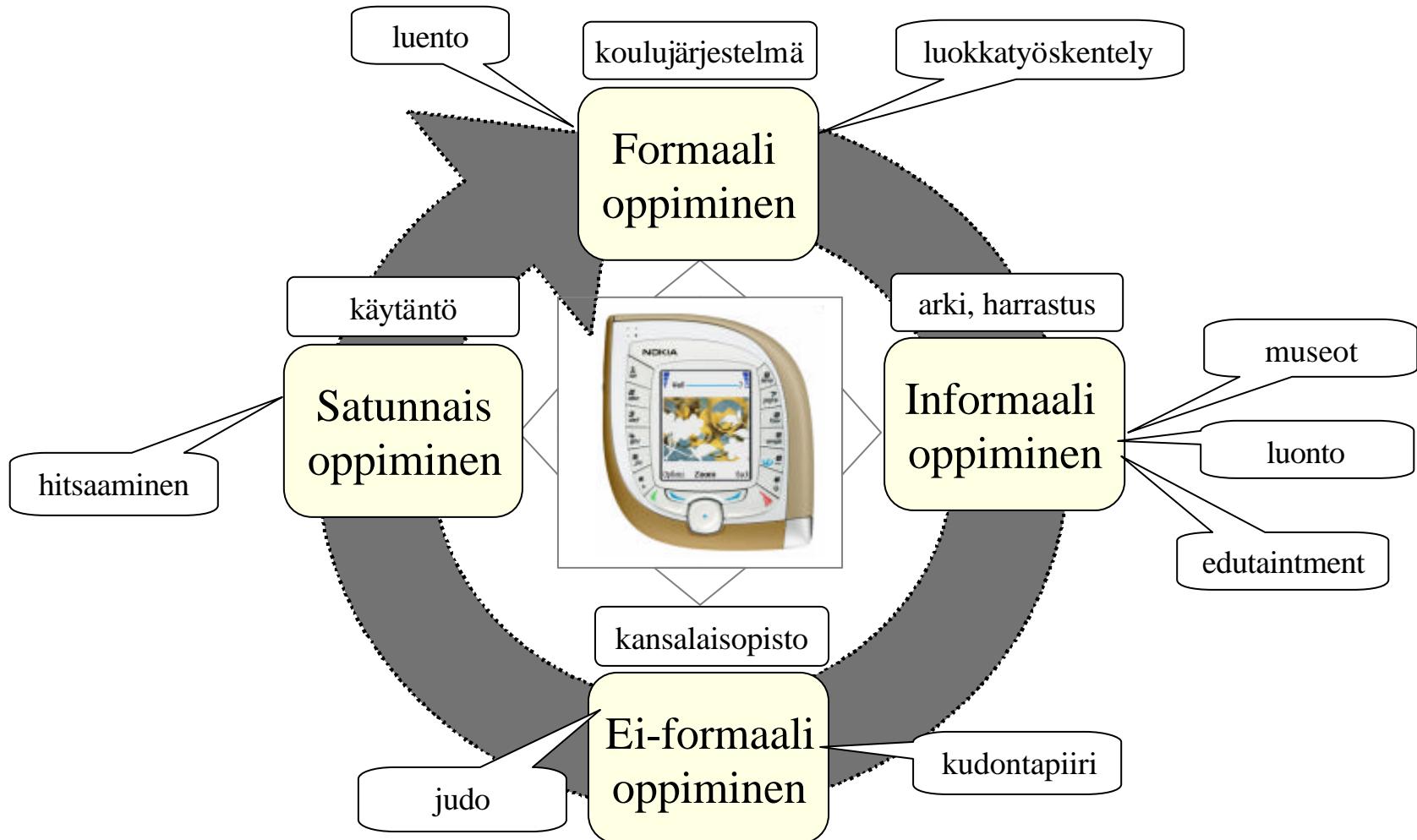
(Perkins, 1985, Jonassen, 2000)

...Osana isompaa kokonaisuutta



Perkins, 1993

Elinikäinen oppiminen



Mobiilioppiminen 1/2

Technology:

- Mobile learning is a learning with new kind of devices
- ”e-learning simply becomes m-learning, without any particular changes in content”

Knowledge

- Mobility changes the definition of knowledge
- ”m-learning will characteristically aim at specific kinds of knowledge, namely knowledge that is location-dependent and situation-dependent”

Ubiquitous

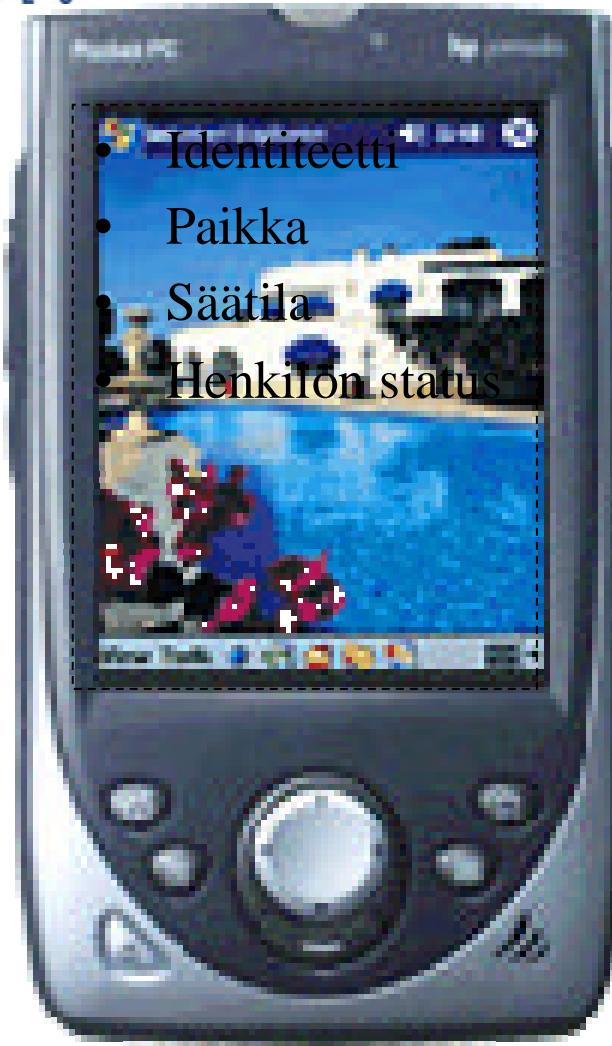
- We learn ubiquitously
- ” Mobile communication is enhanced everyday communication; and just as our everyday conversation is indifferent towards disciplinary boundaries, so, too, is m-learning”

Nyiri, 2002

Mobiilioppiminen 2/2

- Roschelle (2003) identifies three educational application areas for WILDs (Wireless Internet Learning Devices)
 - Classroom response – students can use their devices to respond to questions and contribute to discussions
 - Collaborative data gathering – devices are used to collect and collate data for later use
 - Participatory simulations – the devices offer the students a chance to take part in more interactive simulations of dynamic systems, learning through being part of the system itself

Paikka- ja kontekstitietoinen tulevaisuutemme



- Laitteet voivat hyödyntää esim. paikkatietoa, paikkatietojärjestelmiin tallennettua informaatiota, käyttäjään/ympäristöön sijoitettuja sensoreita, käyttäjän itsensä asettamia muuttujia
- ”Älykkääät palvelut”
- Mahdollistaa mallintamisen
=> mEdutainment: (Colella, 2002; Price, S., Rogers, Y., 2003)

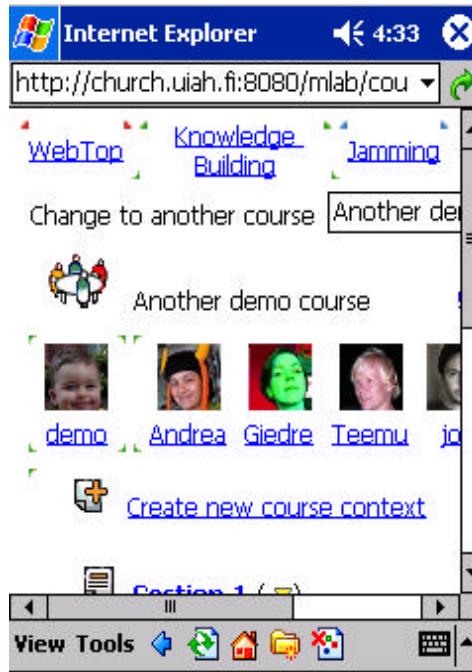
Mobiilipalveluita ja Mobiilioppimista

Oman jatko-opiskelupolku varrelta
poimittua..

Soveltavaa tutkimusta..

- FLE3mobile (2002)
 - Goman & Laru, 2002; Laru & Järvelä, 2003; Laru & Järvelä (2004)
- Rotuaari (2003-2004)
 - Laru & Järvelä (2004); Laru, Tolonen & Järvelä (2004)
- Virtuaalikampus (..)
 - Laru, Tolonen & Järvelä (2004)
- Lehtiset Luonnossa / Mobiili luontopolku (2004)
- KAL/MOSIL (Mobile Support for Integrated Learning) – EU huippututkimusverkosto

FLE3mobile – kokeilu, kevät 2002



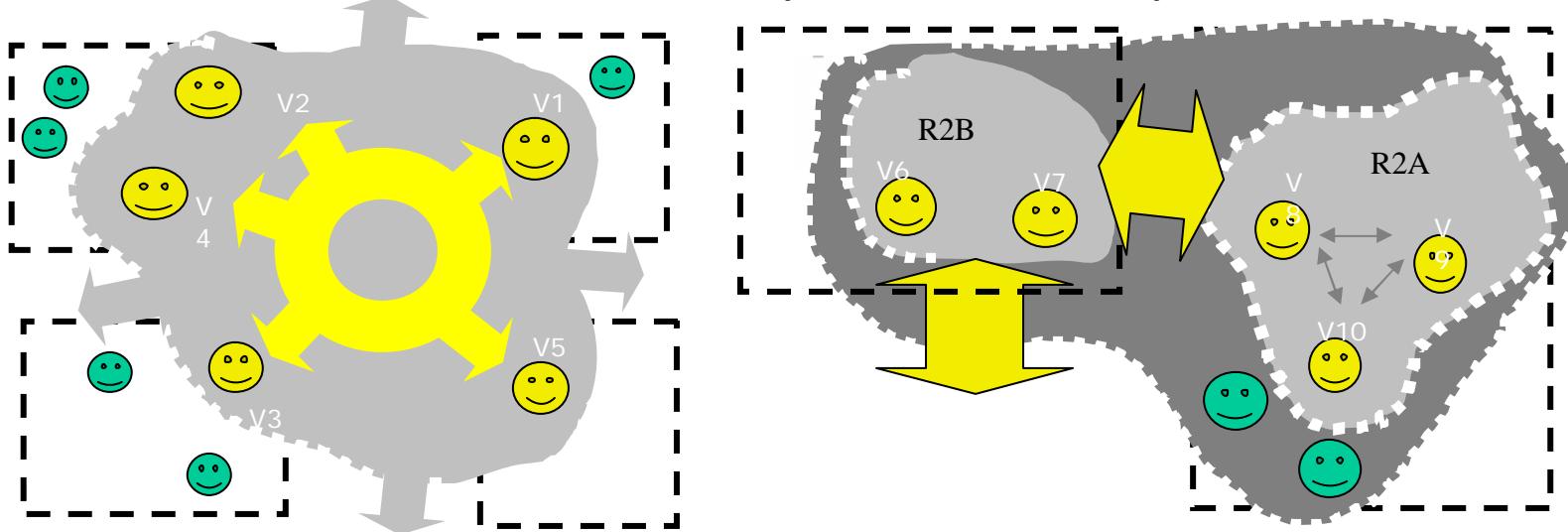
FLE3



FLE3mobile

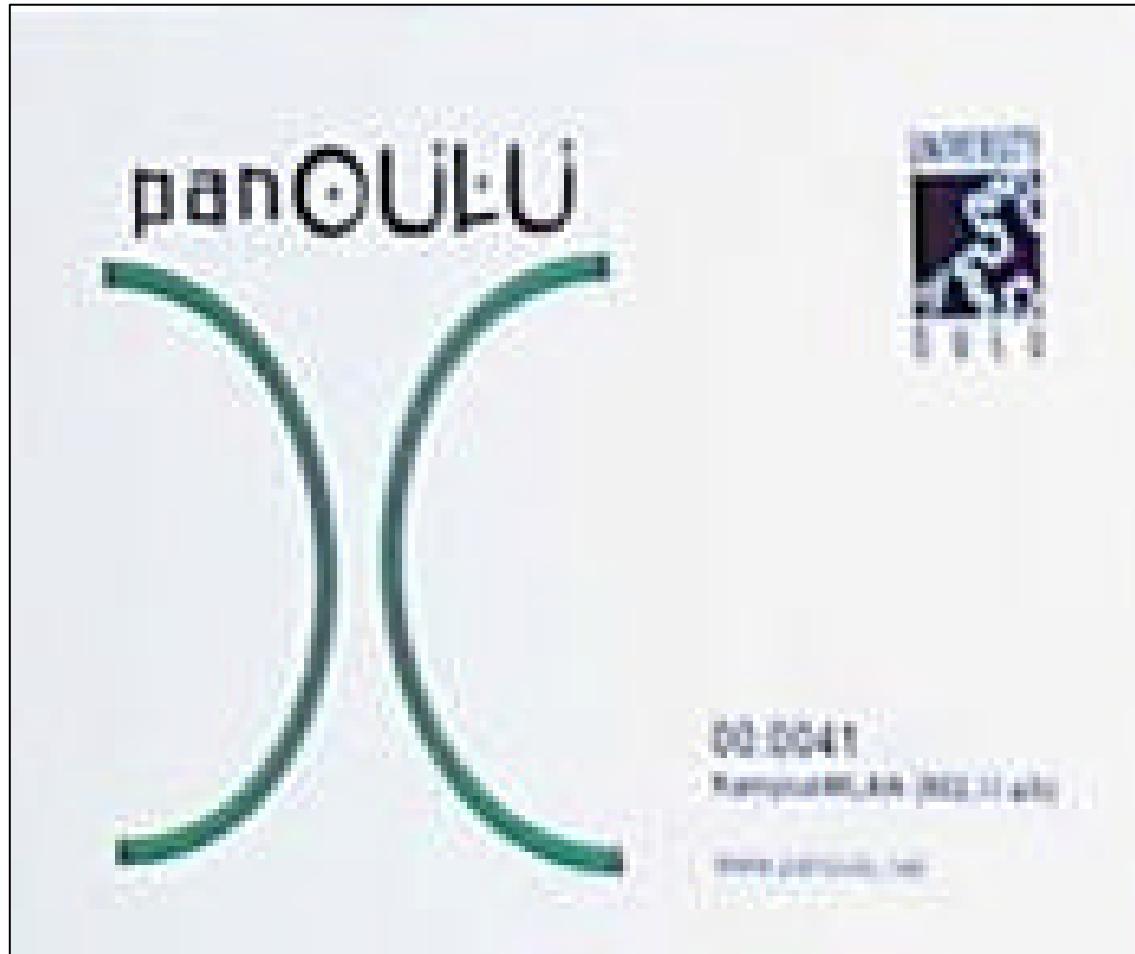
Tuloksia kokeilusta

- Mobiililaite tarjoaa selkeän työskentelyn tuen
- Yhteisöllistä vuorovaikutusta ei kuitenkaan muodostu itsestään (tavat, kulttuuri ym.) (Malarney, 2000)



http://www.naturpolis.fi/julkaisut/tyopaperit/Laru_Goman.pdf

KampusWLAN (PanOulu)



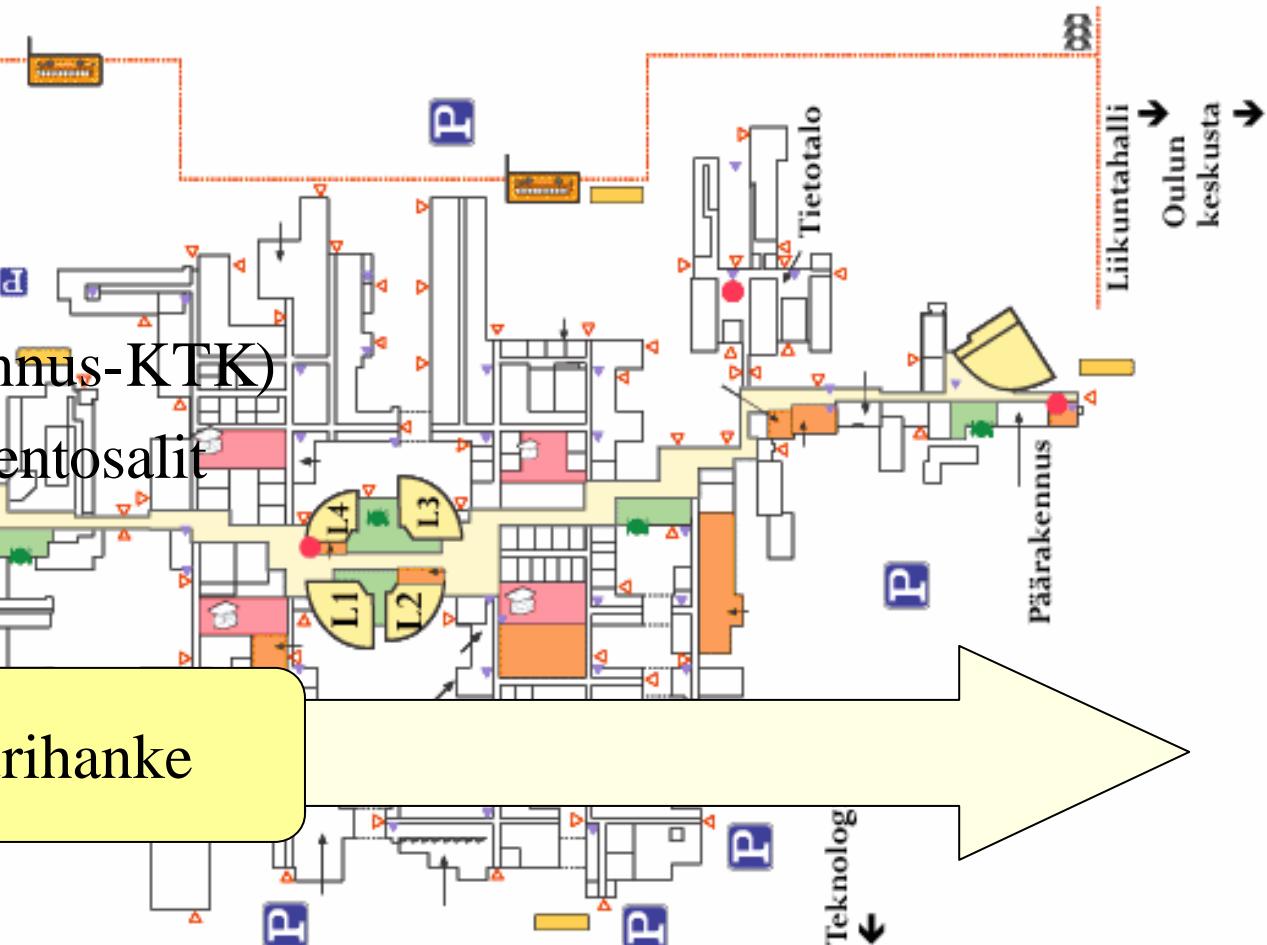
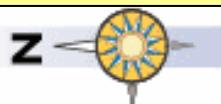
KampusWlan peittoalue

Verkko kattaa

- Linnanmaan keskusväylä (Hallintorakennus-KTK)
- Suurimmat luentosalit
- Pääkirjasto

Liiteellinen puutarha

Infrastruktuurihanke



SmartLibrary

HP 5450

- 240 x 320 pixels
- WLAN



Internet Explorer 15:31

http://www.kirjasto.oulu.fi/oulapda

Search: tolkien
Search results: 60 hits

6

Title: The Father Christmas letters. J. R. R. Tolkien.

Author: Tolkien, J. R. R..

Published: London. G. Allen & Unwin. 1976.

ISBN: 0-04-823130-4 (sid.).

Collection: P LAINAUS

Call number: P L 820/89engl Tolkien J. R. R.

Availability: Available

Locate (Demo, requires SmartLibrary-software)

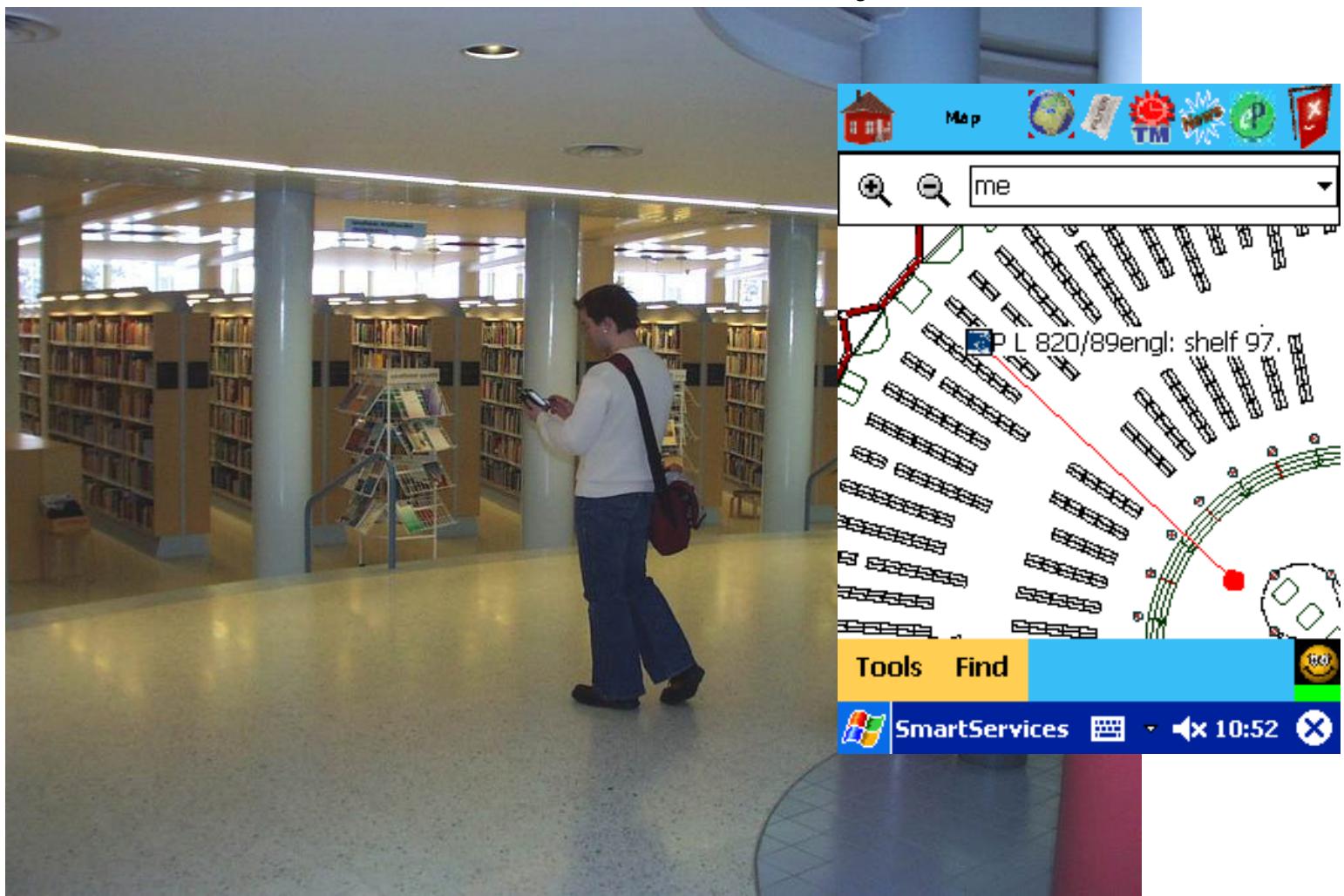
View Tools

search result

map-based guidance

Aittola, Ryhänen and Ojala, 2003

SmartLibrary



SmartRotuaari



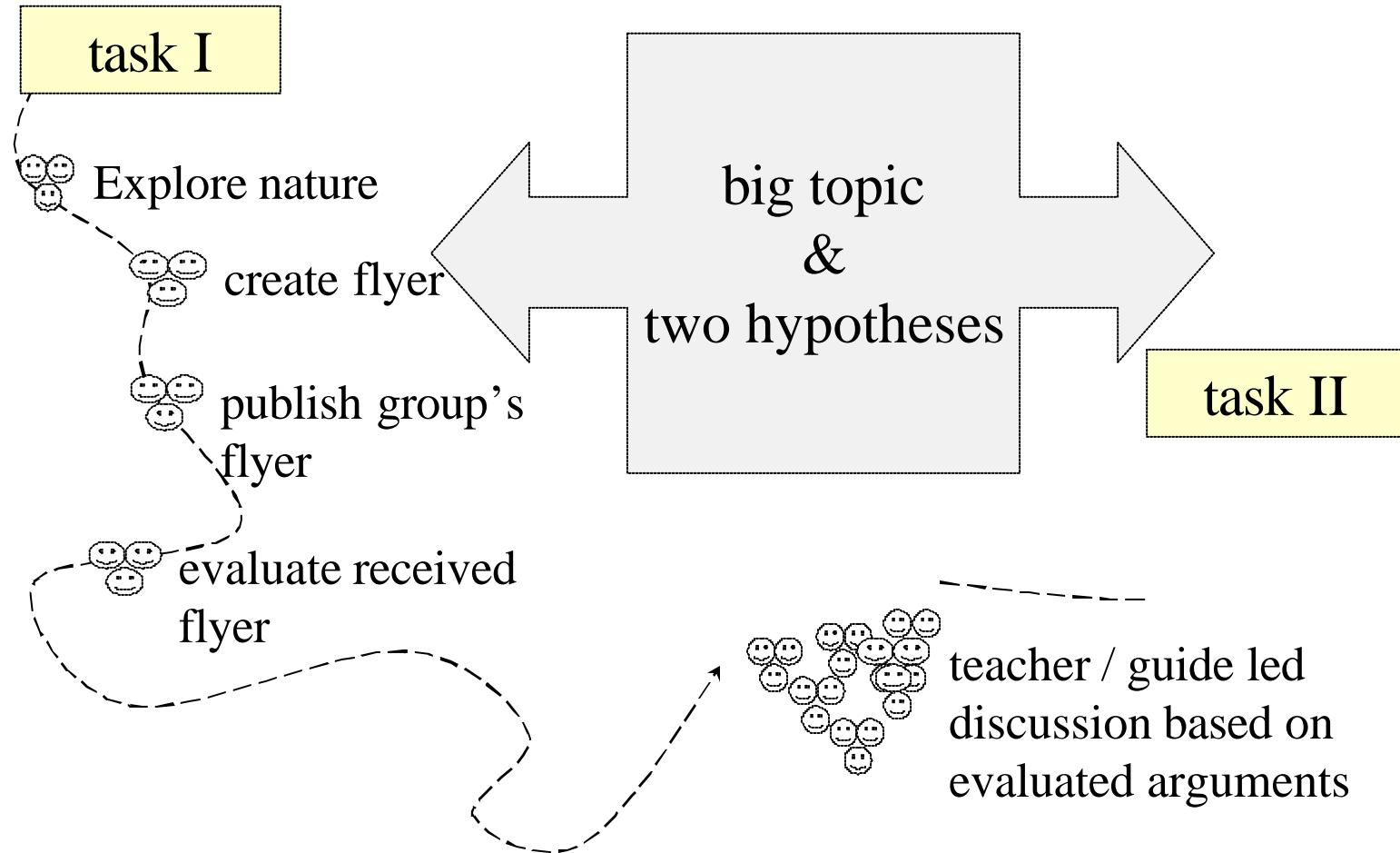
Projektiin tavoitteena tulevaisuuden kontekstitietoisten mobiilipalveluiden teknologian ja ansaintalogiikoiden kehitys ja **empiirinen evaluointi** todellisessa käyttöympäristössä

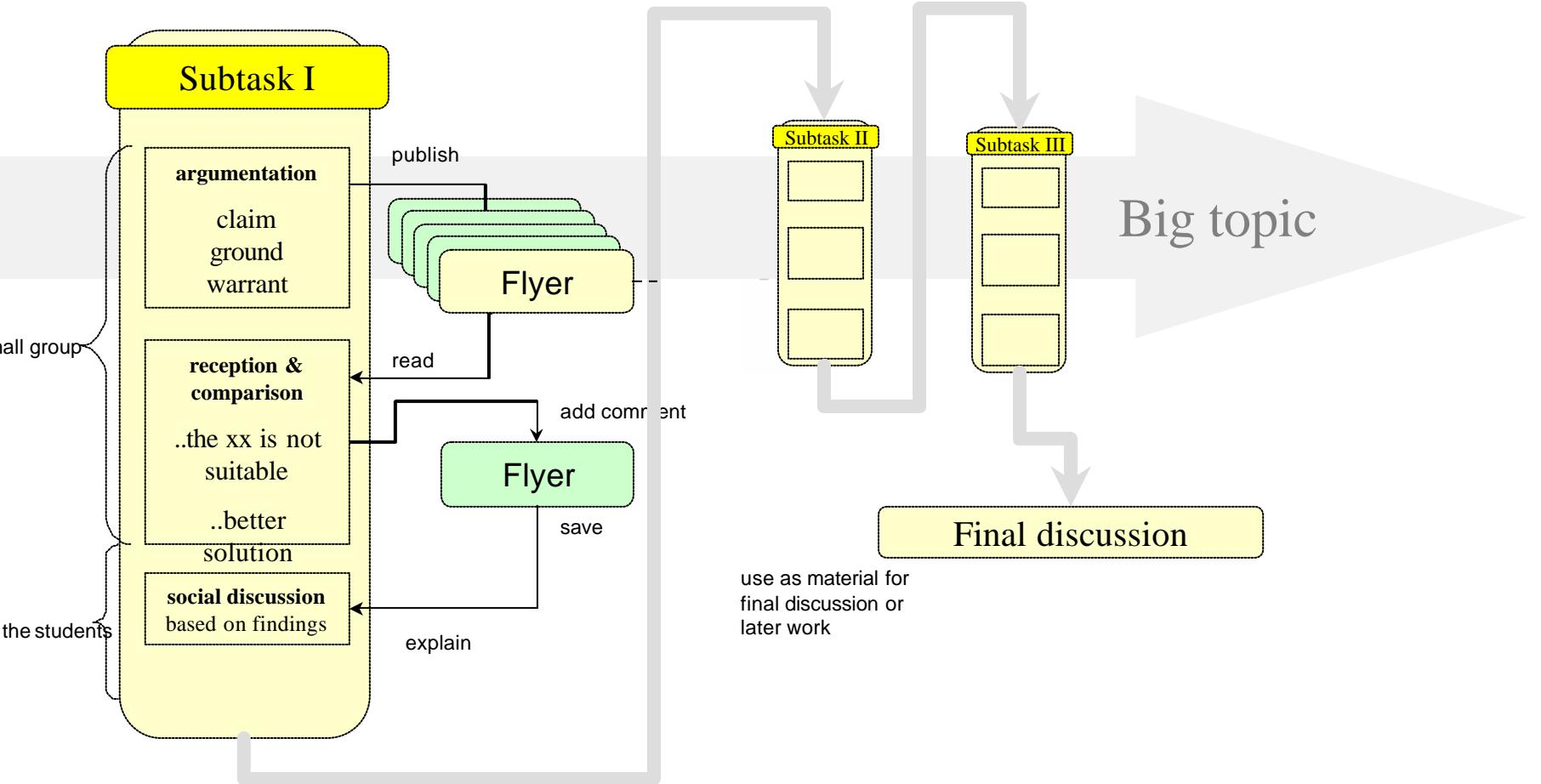
- Mobiilisovellukset ihmisen tukena informaaleissa oppimistilanteissa (miten pääsen kauppaan X?)
- Merkityksellisyys, kognitiivinen tuki

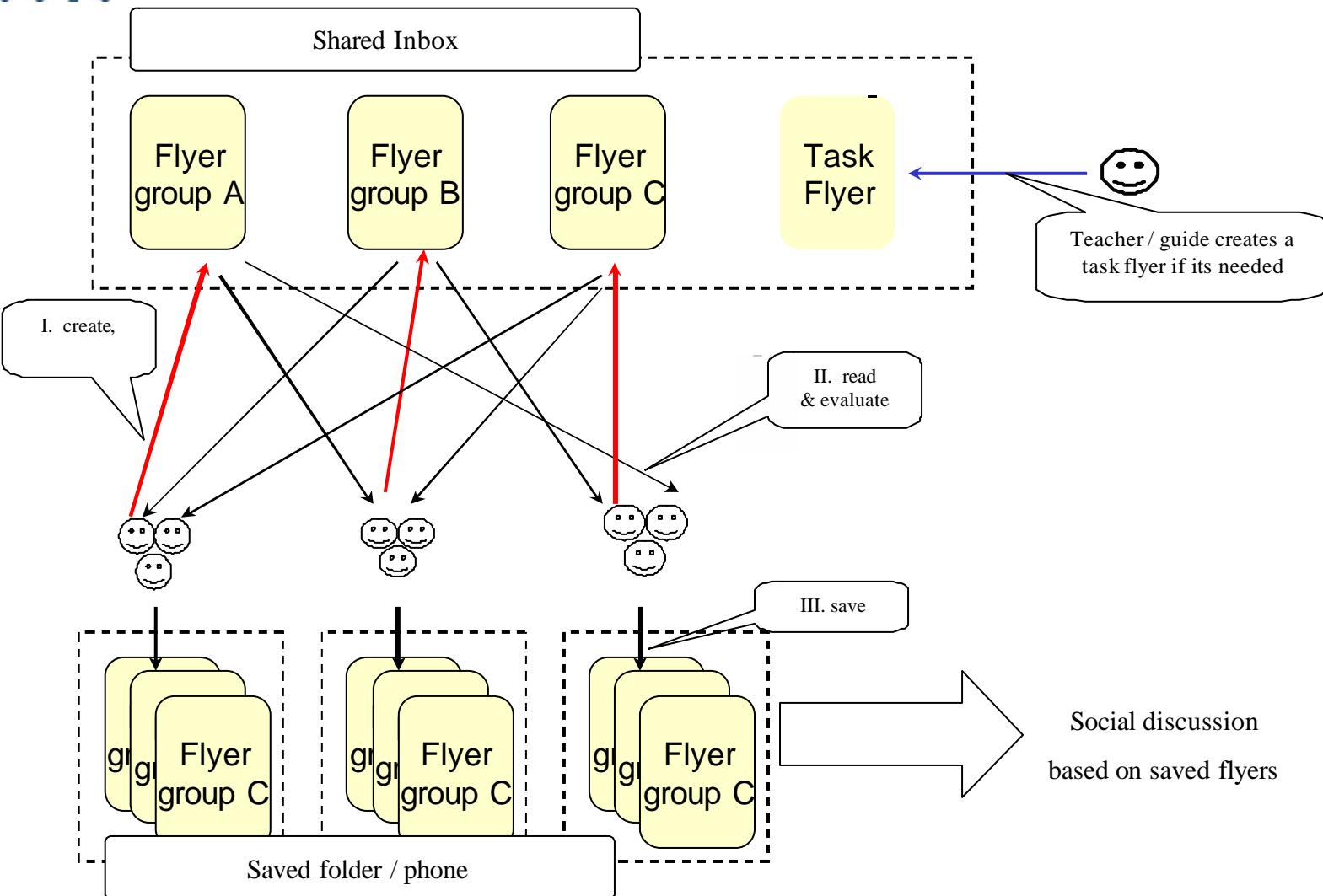
SmartRotuaari



Mobiili luontopolku..







Mobiilihankkeita muualta

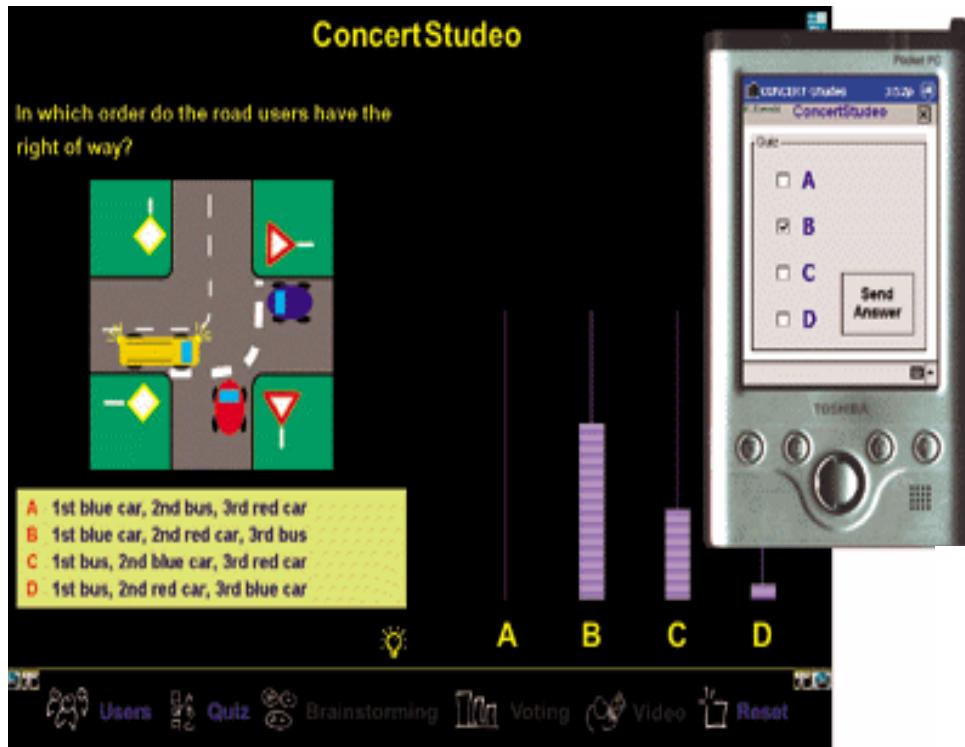
Tate Modern Multimedia Tour



Multimedia Tour allowed background information about the works on display to be provided to visitors in a variety of different media on a portable screen-based location sensitive device.

www.tate.org.uk, 2003

ConcertStudeo



- New forms of interaction and cooperation in face-to-face learning.
- how support of computers can improve traditional methods as well as the development of completely new cooperation tools that hardly rely on computers.

(Dawabi, 2003)

DigitalEE

- supported environmental learning
- DigitalEE enabled to make collaborative interaction and share time and space in mobile cyberspace



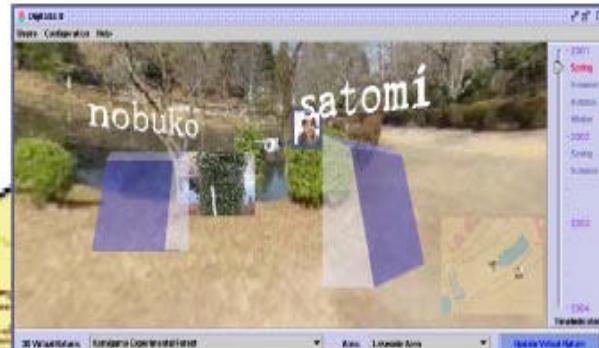
(c) Masaya Okada, Akimichi Yamada, and Mizuki Yoshida,
Graduate School of Informatics, Kyoto University, 2000.

Okada et. al, 2003

Concept of the system



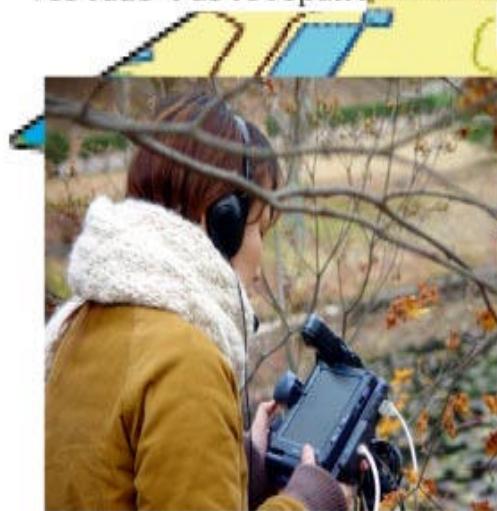
Virtual Participant



Integrated Communication Space



Real Participant



Real Participant



Shared Nature Experience



Real Participant

Ambient Wood Project

a New Conceptual Framework For CSCL

- The conventional view of CSCL has centred primarily around desktop computers (constraints of desktop computing)
- Previous research in CSCL has focused primarily on one form of collaboration => variety of different collaborative combinations

Ambient Wood



Childrens were required to relay their discoveries back to a second adult facilitator



The Periscope enabled children to view augmented digital information on display

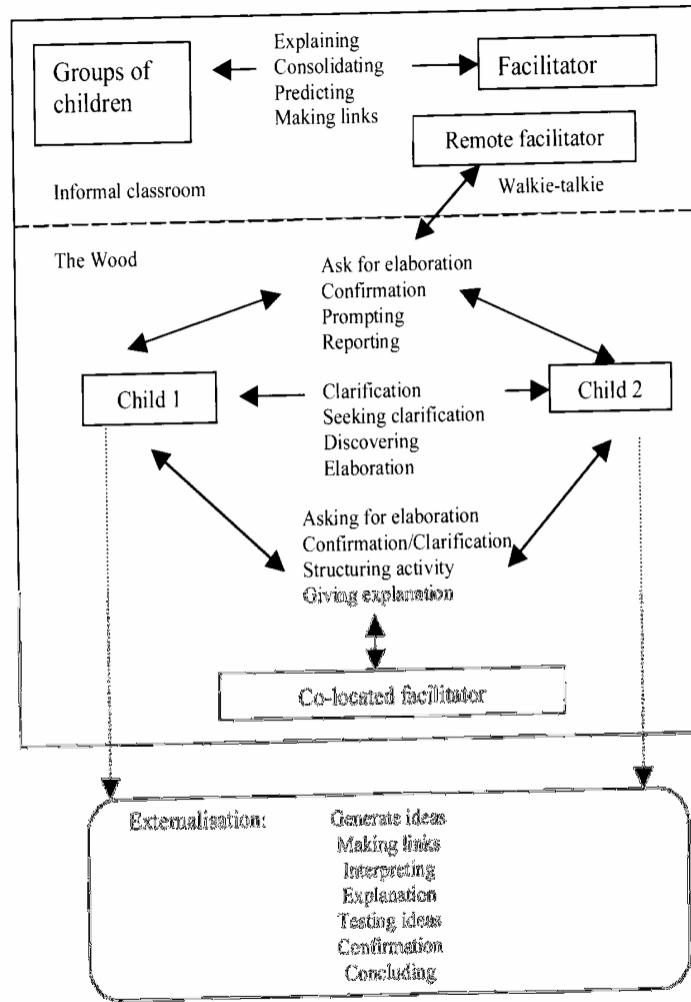


Figure 2. Extended framework of collaboration eliciting externalisation

Interact Lab, Cognitive and Computing Sciences, University of Sussex, Brighton,
UK. Department of Computer Science, University of Nottingham, Nottingham, UK.

Knowmobile <http://www.intermedia.uio.no/prosjekter/knowmobile/>

Knowmobile - report 5 (loppuraportti) http://www.intermedia.uio.no/publikasjoner/rapport_5/knowmobile.pdf

LINKKEJÄ

1: <http://cc.oulu.fi/~jlaru/mlearning>

the M-learning Project <http://www.m-learning.org>

BIBLIOGRAFIA

2: www.refworks.com
(kysy tunnuksia minulta)

Microsoft Education <http://www.microsoft.com/education>

Mobile Learning Solutions <http://www.microsoft.com/education/?ID=MobileLearning>

MOBILearn <http://www.mobilearn.org>

Short summary of project <http://www.mobilearn.org/MOBILearnWeb.doc>