HOW CAN TABLET TECHNOLOGY CHANGE LEARNING AND TEACHING?

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What is the Welten Institute doing in Mobile Learning?
Research Lines and topics

#1 Mobile and ubiquitous learning content
*Ubiquitous access to learning support and distributed multi-format learning content.*

- Mobile Video and Audio Content (YouTube EDU, iTunes U), Cloud-based learning content, Mobile data collection and aggregation, eBooks and tablet content.

#2 Orchestration of seamless learning support
*Instructional design of nomadic and seamless learning support.*

- Ubiquitous LMS access, Mixed Reality Games, Excursions and Field Trip systems, Mobile Augmented Reality, Mobile Learning Games, Object and location-based service access.

#3 Situated learning experiences
*Connect the Learning and the real World, context-aware learning systems, sensor-based learning support.*

- Experience sampling apps, Sensor-based learning apps, Situated and ambient displays, Context-aware social media, Tangible and smart-objects for learning
Mobile Learning Applications Domains

• **eHealth and healthcare**
  EMURGENCY: performance support and notification system, Handover procedures, Reference apps for daily practice

• **Law and Management education**
  OpenScout, OUNL iPad pilots, UNHCR mobile simulated games

• **Architecture and creative industries**
  MACE location-based content and social media, Cloud-based cooperation methods in design and architecture

• **Cultural Heritage**
  Mixed reality field trips with Cultural Sciences

• **Logistics**
  SALOMO: Situation Awareness and Mobile data collection

• **Language learning**
  ELENA, PhD projects

• **Teacher education and networking**
  mobile social networking apps
Service and research portfolio

- **How to innovate?**
  *Innovation workshops* for mobile media and learning in the OUNL *Learning Innovation Laboratory*, Desirability and technology acceptance studies of innovative solutions, Open innovation policy, open source frameworks

- **How to learn best?**
  Educational and instructional design for blended and ubiquitous learning
  Evaluation of increased awareness, efficiency, effectiveness.

- **How to implement your mobile learning support?**
  Prototyping mobiles cross-platform and with embedded technologies. Mashup and visualisation technologies for integrated solutions. Customized mobile solutions integrating legacy software.

- **What is my return on investment?**
  Piloting and evaluation of new solutions, following standardized methods. Usability and acceptance studies (mobile eye-tracking).

- **How to optimize your existing processes for mobile?**
  Content engineering and automation for mobile and multi-platform delivery. Multi-platform access to legacy systems integrated with daily practices.
general issues ... about iPads
A Magazine Is an iPad That Does Not Work
no mouse ... but a
sensors for immersion

http://motionmathgames.com/
... exploration
MAEVE
MACE | EVERYVILLE
interactive installation at the Venice Biennale '08

collaborative: The MACE experience
Building "A Young Lady's Illustrated Primer" http://goo.gl/gX7fwl, BlogPost Beat Schwendimann
different forms of content ... the end of the book as we know it.
change of the book... multimedia
change of the book... hypermedia
change of the book... adaptive hypermedia, gamification

The pop-up warns you:
"If you want to read this, you'll lose 20 points"

Le pop-up vous prévient:
"Si vous voulez lire cela, vous perdrez 20 points"
does it make a difference?
Enhancement Learning Technologies

Mobile, Seamless, Ubiquitous

Personalised and Collaborative

Sensors and Context-Aware

BigData, and Analytics

Enhancement

Awareness Curiosity ... Knowledge Reflection
Impact on hidden variables
Acceptance model iPad pilot

- Attitude & Social Influence
- Effort Expectancy
- Performance Expectancy
- Anxiety
- Self-Efficacy
- Facilitating Conditions

Behavioral Intention to Use the System

Correlations: 0.64 (0.05)*, 0.58 (0.05)*, 0.71 (0.05)*
Changing learning practices

• Additional learning contexts due to weightless learning material
• Use of small time-slots
• Pervasive access to learning material
• Combination of learning resources
• Effects on study strategies (annotations, marking, exchanging)
• Effects on in-class-lectures
some empirical evidence ... on different levels.
Media-comparison

- Woody, Daniel & Baker (2010): Preference for traditional books, no effects on learning results
- Rockinson-Szapkiw, Holder, & Dunn (2011): Higher motivation to study instructional material for eBook-group

<table>
<thead>
<tr>
<th>Measure</th>
<th>E-book</th>
<th>Print books</th>
<th>Tukey significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often they used the activities or online resources</td>
<td>4.76 (2.14)</td>
<td>4.44 (2.42)</td>
<td>p &gt; .05</td>
</tr>
<tr>
<td>How often read section summaries</td>
<td>5.61 (2.33)</td>
<td>6.13 (2.07)</td>
<td>p &gt; .05</td>
</tr>
<tr>
<td>How often answer study questions</td>
<td>4.76 (2.37)</td>
<td>5.26 (2.07)</td>
<td>p &gt; .05</td>
</tr>
<tr>
<td>How often read captions and charts</td>
<td>4.93 (2.07)</td>
<td>5.94 (1.92)</td>
<td>p &lt; .05</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>5.33 (2.07)</td>
<td>6.83 (1.53)</td>
<td>p &lt; .01</td>
</tr>
</tbody>
</table>

Note. Participants used a 9-point scale (1 = never, 9 = always) to respond to questions.
Reading/Literacy studies

• Korat (2010) shows significant effects of eBooks for word reading and story comprehension (kindergarten level)

• Jones & Brown (2011) show no significant effects of eBooks for comprehension tests with 3rd graders

• Nie et al. (2011) study: 28 students of master’s programme occupational psychology & education, flexibility, new strategies, better use of time, cost saving
strategies to support the transition ...
#1 link to subject specific practice and extend it ...
Some rights reserved by stefans_box.
Equations

\[ \frac{x^4 + y^4 + z^4}{10} = 50 \]

\[ z = \frac{y^2 - x^2}{16 - 25} \]

Cartesian example - Hyperbolic paraboloid

\[ \theta = \frac{\sin(\Phi + r)}{2} \]

\[ z = \frac{100 \cdot \sin(7 \cdot r)}{(1 + r)^2} \]

a grapher
Hierin is $G$ het gewicht van het ongeboren kind in gram en $t$ het aantal weken van de zwangerschap.

Volgens de formule wordt het geboortegewicht van 3480 gram veel later bereikt dan de 280 dagen (= 40 weken) die we in de figuur aflezen.

$G = \frac{3200}{(1 + 63 \times 0,69^{t-20})} + 300$

Een teniswedstrijd


Antwoord:
* $P($sterkste speler wint 10 keer$) = 0,94$
tot de $10^{\text{e}}$ macht
* Het antwoord: (ongeveer) 0,54

referee books


drill&practice
Other Apps

- fxPad by Chirsoft
  Released: over 2 years ago

- Graphing Calculator 3D by Alterme Inc
  Released: over 2 years ago

- Elevated Math by Elevated Lab Press
  Released: 9 months ago

- My Grapher HD - Multipurpose by Base 12 Innovations
  Released: 9 months ago

- Math Graph for iPad by The Bear Flag Republic
  Released: 9 months ago

- MyCalculator Pro - Plot graphs by Pomegranate Software
  Released: almost 3 years ago

- Free Graphing Symbolic Calculator by Daniel Alm & Thomas Osthege
  Released: over 2 years ago

- Graphbook by Pomegranate Software
  Released: about 2 years ago

- Graphing Calc by HWADO
  Released: 12 months ago

- Math Graph Pro for iPad by The Bear Flag Republic
  Released: 9 months ago

http://appadvice.com/appguides/show/graphing-apps-for-ipad

swiss army knife
serious game console

http://global.com2us.com/game/SliceIt
#2 choose generic functions and apps and kickoff a grassroots project ...
choose relevant functions for tablet

- planners, notifications, news, schedules
- personal information collections
- contextualised information filtering
- mobile games relevant to curricula
- let them play
planner

http://www.mika.gl/

http://www.omnigroup.com/

http://iapps.stanford.edu/

http://moodle.org/
function: data collection

http://www.evernote.com/

http://audioboo.fm/
function: information in context

http://www.weatherpro.de/

http://www.barcoo.com/

http://nikeplus.nike.com/plus/

http://www.aroundmeapp.com/

http://www.wikitude.com/de/

http://www.google.com/mobile/goggles
function: instant messaging, micro-blogging

IM groups

http://www.whatsapp.com/

http://twitter.com/

hashtags, twitterlists

http://www.facebook.com/

pages, groups, ...
#3 build on existing pedagogical models and orchestrate them with distributed tools …
BRIDGING THE WORLD AND THE CLASSROOM

RAFT

Task Widget allows to see all tasks and contents of a currently running field trip.

Navigation Widget allows to view a map of a field trip and to navigation Tasks.

Messaging Widget gives all participants of a field trip an instant messaging tool.

Sensing Widget allows to capture sensor data (GPS, other Sensors,..) and connect it to contents.

Conference Widget allows to video conference from field and classroom.

Content Widget allows to view the contents of the LMS and the collect images and data from field trip devices.

Metadata Widget allows to edit and add context data to the field trip data.
Inquiry process, authentic data, formal to informal

Enhancement

inquiry engine, mobile data collection, learning analytics

weSPOT...
The weSPOT inquiry model follows 6 phases.

The inquiry can begin in each of the phases and connections to all other phases are possible.
Demo inquiry for review

Description:
This inquiry demonstrates how the weSPOT workflow engine integrates with the ARLearn data collection framework.

Owner: Stefaan Ternier
inquiry members: 1
Open membership

Help: Data Collection

Phase 3 - Data Collection
Last updated 8 days ago by admin
Guide, Data Collection

The data collection phase refers to testing a hypothesis and seeing whether the real world behaves as predicted by the hypothesis. Scientists test hypotheses by conducting experiments, which determine whether observations of the...
some research directions …
next with eBooks?
augmented learning spaces
# integrated learning eco-systems of tabs - pads - boards

http://www.designbynotion.com/metamirror-next-generation-tv/
THANK YOU!

M.M. SPECHT

13th World Conference on Mobile and Contextual Learning

Nov. 3-5, Kadir Has University, Istanbul, Turkey

We invite you to the 13th World Conference on Mobile and Contextual Learning. This year, the conference has the focus topic “Mobile as mainstream – towards future challenges in mobile learning” and we are expecting a wide range of contributions.