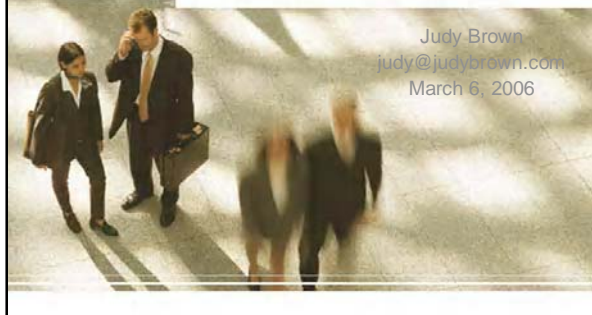


m-Learning: Mobile Industry Status — Where We Are and Where We Are Going



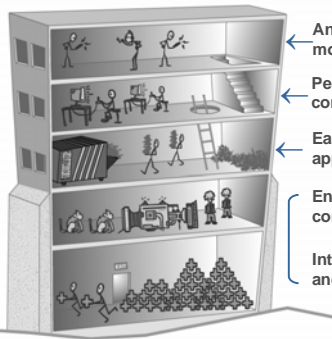
Judy Brown
judy@judybrown.com
March 6, 2006

Agenda

- Background
- Devices
- Trends
- Examples
 - Academic
 - Business
 - Location
 - Augmented Reality
- Resources



Academic ADL Co-Lab Initiatives



- ← Any time, any where mobile learning
- ← Performance before competency
- ← Easily locate the appropriate content
- ← Engage learners with competency modules
- ← Interoperability and reusability

My First Mobile Device



In praise of always-on connectivity
Mobile e-mail market heats up
 Opera Advances Mobile Portal, Widget Plans
 Mobile firms bet on wireless broadband to boost 3G
 Cell-Internet Phones
 Sony Ericsson Handsets To Feature Google Blogger
 Search
 Cellular and Wi-Fi Converge at Nokia
 Origami: Microsoft's 'OrPod' Alternative to the iPod?
BlackBerry maker, NTP ink \$612 million settlement
Podcasting finds a place in education
Mobile phone sales reached record levels in 2005
 Surf the Web. Watch TV on Nintendo DS
 Digital Books Start A New Chapter
 Research In Motion Inc. settles BlackBerry patent dispute with NTP Inc.
 The Ultra Battery
Is your cell phone due for an antivirus shot?
Sony Ericsson unwraps 3.2-megapixel blogging phone
Vodafone shows phone with VGA screen, face recognition
 The pope gets an iPod
Amaru Study Finds Consumers Want On-Demand Content on Mobile Devices
The study, done by an independent company, further discovered that, in a U.S. household with broadband access, 2.34 users per household regularly access the Internet. More than half of all respondents were significantly interested in streaming content available on-demand, a percentage that edged out shopping, American television programming, health and wellness programs or live pay-per-view events. Amaru said
Using Cell Phones to Teach Pandemic Flu Preparedness

Enabling Mobile Learning

"The mobile revolution is finally here. Wherever one looks, the evidence of mobile penetration and adoption is irrefutable. PDAs (personal digital assistants), MP3 players, portable game devices, handhelds, tablets, and laptops abound. No demographic is immune from this phenomenon."

Ellen D. Wagner
EDUCAUSE Review
May/June 2005






Mobile Learning Workshop

- Bangladesh
- Cambodia
- Indonesia
- Lao People's Democratic Republic
- Micronesia
- Mongolia
- Nepal
- Pakistan
- India
- Philippines
- Sri Lanka
- Thailand




Kenyan School Turns to Handhelds

- At the Mbita Point primary school in western Kenya students click away at a handheld computer with a stylus.
- They are doing exercises in their school textbooks which have been digitised.

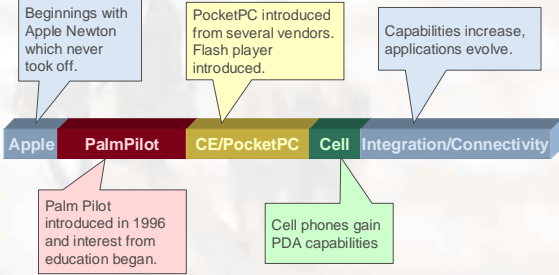


The E-slides are replacing school books in one Kenyan school



The E-slides make sure information is up to date.

Handheld/Mobile Timeline



Beginnings with Apple Newton which never took off.

PocketPC introduced from several vendors. Flash player introduced.

Capabilities increase, applications evolve.

Apple

PalmPilot

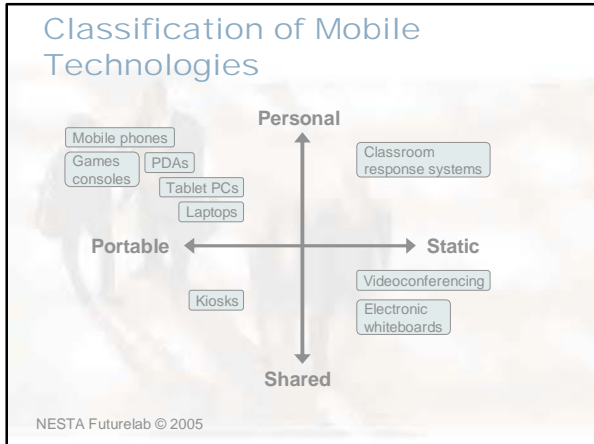
CE/PocketPC

Cell

Integration/Connectivity

Palm Pilot introduced in 1996 and interest from education began.

Cell phones gain PDA capabilities



Phone Convergence



3GSM Conference



Platforms: Tablet PC and Wearable



OQO



Nokia 770 Internet Tablet

- Linux-based Internet Tablet 2005 software edition
- High-resolution (800x480) touch screen with up to 65,536 colors
- WLAN: 802.11b/g
- Applications (in 2005 software edition)
 - Web Browser (Opera 6)
 - Flash Player version 6
 - Email Client
 - Internet Radio
 - News Reader
 - Media players
 - Image viewer
 - PDF viewer
 - File Manager
 - Search
 - Calculator
 - World Clock
 - Notes
 - Sketch
 - Games



Origami Project?

- March 9, 2006
- <http://www.origamiproject.com>
- Origami Project: the Mobile PC running Windows XP
- Wireless, Tablet-style PC
- Intel Ultra Mobile PC – March 7 <http://www.umpc.com/>



Nintendo's DS and Sony's PSP



Brandy Baker / The Detroit News

English Gym



<http://www.jp.sonymstyle.com/Nws/Mob/index.html>

Palm OS vs. Windows Mobile



Video Players



Add on Devices

- Wireless
- Cameras
- Barcode readers
- Scientific probes
- GPS
- Etc



Fly: LeapFrog Enterprises



- Gives users immediate audio feedback as they write or draw on special dotted paper.
- Translate a written English word into Spanish
- Sketch a piano keyboard and play it
- Draw a calculator to solve arithmetic problems
- The \$99 pen employs character-recognition software as it tracks positions across a page when using special paper



Other Devices

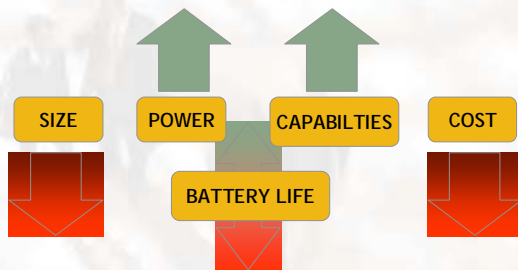


Photo Credit: Leslie Walker, Washington Post

What Features?



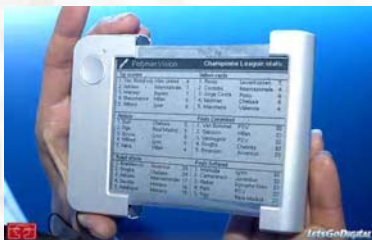
Trend: More for Less



Trends

- Everything is connected
- Everything is aware
- Everything is digital
- Everything talks to everything

Philips Rollable Display



http://www.ifa-show.com/2005/philips_review/101_philips_e-reader.html

Improving User Experience

- F-Origin IRIS
- Motion control technology
- Users can rotate the device 90,180, or 270 degrees with corresponding orientation change on the screen.



Pocket Projector

- Lumileds Lighting in San Jose, CA, prototype
- Image projected onto any white surface
- Mitsubishi lab also building a smaller projector, about the length and width of a credit card.
- Available within the next three years
- Light Blue Optics holographic miniprojector



Source: MIT Technology Review
October 2004

Cell Phone with Built-in Projector



<http://www.physorg.com/news3505.html>

Visualization / Translation



Power

"When you walk, your hips move about five to seven centimeters [about two to three inches] vertically. That's because you have a straight leg, that when you plant it on the ground, it's actually lifting you — sort of like when a pole-vaulter plants his pole and then is lifted up — in an arc as you move forward."



University of Pennsylvania

You Ain't Seen Nothin' Yet

- Viewing screens made of water vapor
- Flexible computer displays
- Inconspicuous glasses to view data
- Matchbox or pocket-sized overhead projectors
- Sanswire unveiled the first strattellite, a blimpish looking craft to provide wireless service to an area the size of Texas



m-Learning



Applications

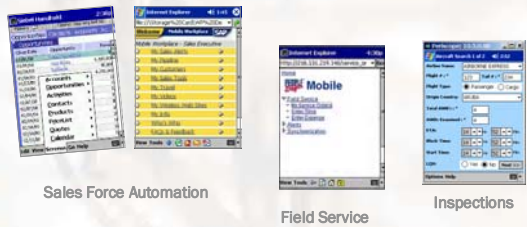


Airborne Entertainment



Windows Mobile in the Enterprise

Pocket PC Application Samples



Windows Mobile Productivity



Development Tools

- Hot Lava Software
- Zirada (Trivantis)
- Go Test Go
- Macromedia Flash

Classroom Use

- Pilot projects
- Often specific application
- Feedback
- Flash cards



Mobile Flash Cards



cellpup.com

- Create flashcards online
- Download flashcards to your phone
- Share flashcard decks



University of South Dakota

- All Freshmen plus medical school students received handhelds
- Program changed
- Deployed to departments and courses
 - Chemistry, Physics, Music, Nursing, and HPER (Health, Physical Education and Recreation)

Medical Schools

- References
- Lectures
- Notes
- Tracking



Mobile PanFlu Prep

- Interactive cell phone application
- Pandemic flu preparedness info
- Free to download
 - Cingular
 - Sprint
 - T-Mobile
- www.publichealthgames.com



UCSD Active Campus

ActiveCampus - Who's around



Ramkhamhaeng University - Thailand

- Streaming video files
- 80 courses for 1st and 2nd year students
- Special rate for unlimited usage per month
- First university in Southeast Asia to offer mobile learning classes
- Will port all courses to the mobile platform
- Using SMS for alert messages about exam results, study dates and examination times



Dr Suchart Kittanaseeree, director of Ramkhamhaeng University's Computer Institute, shows an m-learning course. The courses allow students to access lessons anywhere via DTAC's GPRS network.
— KOSOL NAKACHOL

EU m-learning project



<http://www.m-learning.org/>

Key Findings

- Learners more enthusiastic about learning
- 80% felt mobile learning games could help reading or spelling; 78% felt could improve math
- An iterative approach to development is best, and developing learning materials specifically for mobile learning is better than re-using materials developed for delivery to a PC

Student Response Systems

- Benefits: Enrich Class Room Participation:
- Triple Classroom Participation from 30% to nearly 100%



Student Response System



Pocket SCORM

Tamkang University, Taiwan



Tamkang Collaboration



Mobile Repository Access



Virtual Post-Its

- Siemens Corporate Technology in Munich
- Help highway department personnel label pothole locations for road crews
- Craft personalized guides for visiting friends
- System transmits the message, along with the GPS coordinates of the location, to a server
- Transmits when recipient comes within range



Copyright Technology Review 2005

GPS



Initial screen showing the location of the user

Clicking on the button in the first screen leads to a list of people in the vicinity

Clicking on any person in the List will show a blow up of the exact location

Location Based Services

Mobility	Finding patients, pharmacies and nearest hospitals all increases medical professional productivity
Location Alerts	Location alerts about traffic & course correction, city event recommendations while traveling, enhance daily activity
Mobile Commerce	Location smart coupons and timely sports event sale notifications based on my preferences and rules are valuable
Personalization	My routes, My maps, My location and other key information saves me and my family time and effort, not to mention comfort in knowing that I'm delayed in traffic but OK

Other Successful Examples

- Agriculture
- Journalism
- Sales training
- Corporate messages
- Reference - "cheat" sheets
- Reinforcement
- New employee orientation
- Behavioral change

It's Not Just about Handhelds

- Duke University
- Drexel School of Ed
- Georgia College and State University
- Koreaedu – College Scholastic Ability Test



iPods Everywhere...



Audio Learning & Podcasting



Arts & Entertainment (2080 Items)
Comics • Film, Music, Radio, TV, & Pop Culture • Theater, Opera, & Classical Music
More...

Business (2115 Items)
Economics • Investments & Finance • Leadership & Management • Sales & Marketing • Strategy
More...

History (2260 Items)
American History • Ancient & Medieval History • European History • Military History • Jesuits • The Future • World History
More...

Literature (2390 Items)
American Classics • Ancient & Medieval • Japanese • Science Fiction • European Classics • Poetry • Short Stories
More...

Politics (267 Items)
Contemporary Issues • Global Politics • Internal Politics • Political Figures • U.S. Government
More...

Science (469 Items)
Biodiversity • Astronomy • Biology • Environment • Mathematics • Physics • Semiotics
More...

Social Sciences (522 Items)
Cultural Criticism • Gender Studies • Multicultural Studies • Psychology • Sociology
More...

Technology (400 Items)
Biotechnology • Computers • Internet • Technology Leaders • The Digital Age
More...

Biography (1185 Items)
Artists • Autobiography • Entrepreneurs • Executives • Female • Political Figures • Religious • Sports
More...

Education & Professional (521 Items)
Careers • Journalism • Law • Medical Study • Adult Teachers • Writing
More...

Languages (536 Items)
English as a Second Language • French • German • Italian • Japanese • Spanish • Vocabulary Building
More...

Philosophy (220 Items)
Ancient & Medieval Philosophy • Ethics • History of Philosophy • Modern Philosophy • Philosophers • Political Philosophy
More...

Religion & Spirituality (2000 Items)
Buddhism • Christianity • Judaism • Other Religions • Prayer & Meditation • Religion • Science • Spirituality
More...

Self Development (2294 Items)
Goal & Motivation • Emotional Development • Training • Health & Fitness • Mind & Body • Personal Finance • Travel & Meditation
More...

Sports & Hobbies (360 Items)
Baseball • Basketball • Chess • Fishing • Golf • Football • Golf • Hockey • Soccer • Sports • Travel
More...

Travel (240 Items)
Africa • Asia • Australia • Europe • North America • South America • Travel Stories • United States
More...

Sony Network Walkman Player

iPods not the only audio option...



Augmented Reality



Mad City Murder: Augmented Reality Scientific Role Play Environments



Affordances of PDA
(Klopfer, Squire & Jenkins, 2002)

- Portability
- Social interactivity
- Context sensitivity
- Connectivity
- Individuality



Kurt Squire
Mingfong Jan

MadCity Augmented Reality

Playground

Player's Role

Player's Location

Virtual Time

Content Review

Copyright | Mingfong Jan | 2004

Participants' Comment

"I would pay for something like this outside of school!"

Copyright | Mingfong Jan | 2004

Star School Grant

- Leverage the effectiveness of augmented reality (AR) simulation games on mobile computers with global positioning systems to improve middle-school mathematics and literacy instruction and student achievement in those fields
- Target populations are under-served urban middle school students and teachers
- Partners
 - GAPPS (Games and Professional Practice Simulations) Group
 - Massachusetts Institute of Technology
 - Harvard University

Considerations

- Could have devices
- Disconnected user
- Use when needed or available time
- Modular content
- Wireless access
- Automated delivery
- Convenience
- Instant on
- Performance
- On demand
- Personal
- Responsive

Recommendations

- Look for opportunities
- Focus on user's context and needs
- Build content in modular formats
- Assess readiness
- Begin with pilot initiatives
- Follow the market and be ready to move

www.mLearnopedia.com

mLearnopedia: Your Mobile Learning Resource

Development | Events | Examples | News | Presentations | Research | Resources

Introduction

Mobile Learning

Handheld computers have several unique form factors that suggest further intriguing educational opportunities. Klopfer, Dixon, Holmbeck, and Jackson (2002) describe the properties of handheld computers that produce unique educational affordances:

- Portability** - can take the computer to different sites and move around within a location
- Social Interactivity** - can exchange data and collaborate with other people face to face
- Context Sensitivity** - can gather data unique to the current location, environment, and time, including both real and simulated data
- Connectivity** - can connect handhelds to data collection devices, other handhelds, and to a common network that creates a true shared environment
- Individuality** - can provide unique scaffolding that is customized to the individual's path of investigation.

mLearnopedia.com is an attempt to bring together the leading resources in the area of mobile learning so that we can better learn from one another. Please send any additional links that you feel may be of benefit to others in this fast growing area.

Devices

These devices can take the form of handheld computers or personal digital assistants, mobile phones including the new Smartphones, audio players (such as the Apple iPod), video players, tablet PCs, and even wearable devices. They can be connected through a device, a laptop, or a network, either wired or wireless. They can be stationary and possibly synchronized periodically, intermittently connected to a network, or always connected.

Recent Additions to mLearnopedia

- Surf the Web on Virtually Any Mobile Phone: Openm Software Announces Release of OpenMini [1/24/2006]
- Free Mobile Learning Basics Course [1/18/2006]
- 2x4ds complimentary copy (By Tsvetana)
- Kines: Sunny Shows Audio Learning to Back [12/31/2005]
- Handhelds on trial in Australian schools [12/8/2005]
- Being Mobile: Discussing Virtual Mobility for Students and Teachers [SunPACE Project]
- Mobile Technology: What's Likely and Its Impact on Education September 2005 [PDC]
- Duke University PhD First Year Experience First Evaluation Report, June 2005
- The First International Conference Mobile

Other Resources

- Learning with Mobile Devices Research and Development
<http://www.lsd.org.uk/files/pdf/1440.pdf>
- NLII Mobile Learning
<http://www.educause.edu/MobileLearning/2611>
- UNCW Project Numina <http://aa.uncw.edu/numina/>
- Mobile Learning
<http://www3.telus.net/~kdeanna/mlearning/>
- Mobile / Cell Phones in Education
<http://m.fasfind.com/wwwtools/m/2717.cfm>
- Applications and Service Platforms for the Mobile User <http://www.ercim.org>



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Questions

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<http://www.mlearnopedia.com>