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Exploring m-Learning Academic Initiatives in North America and Europe

Judy Brown

May 17, 2005



Mobile Learning

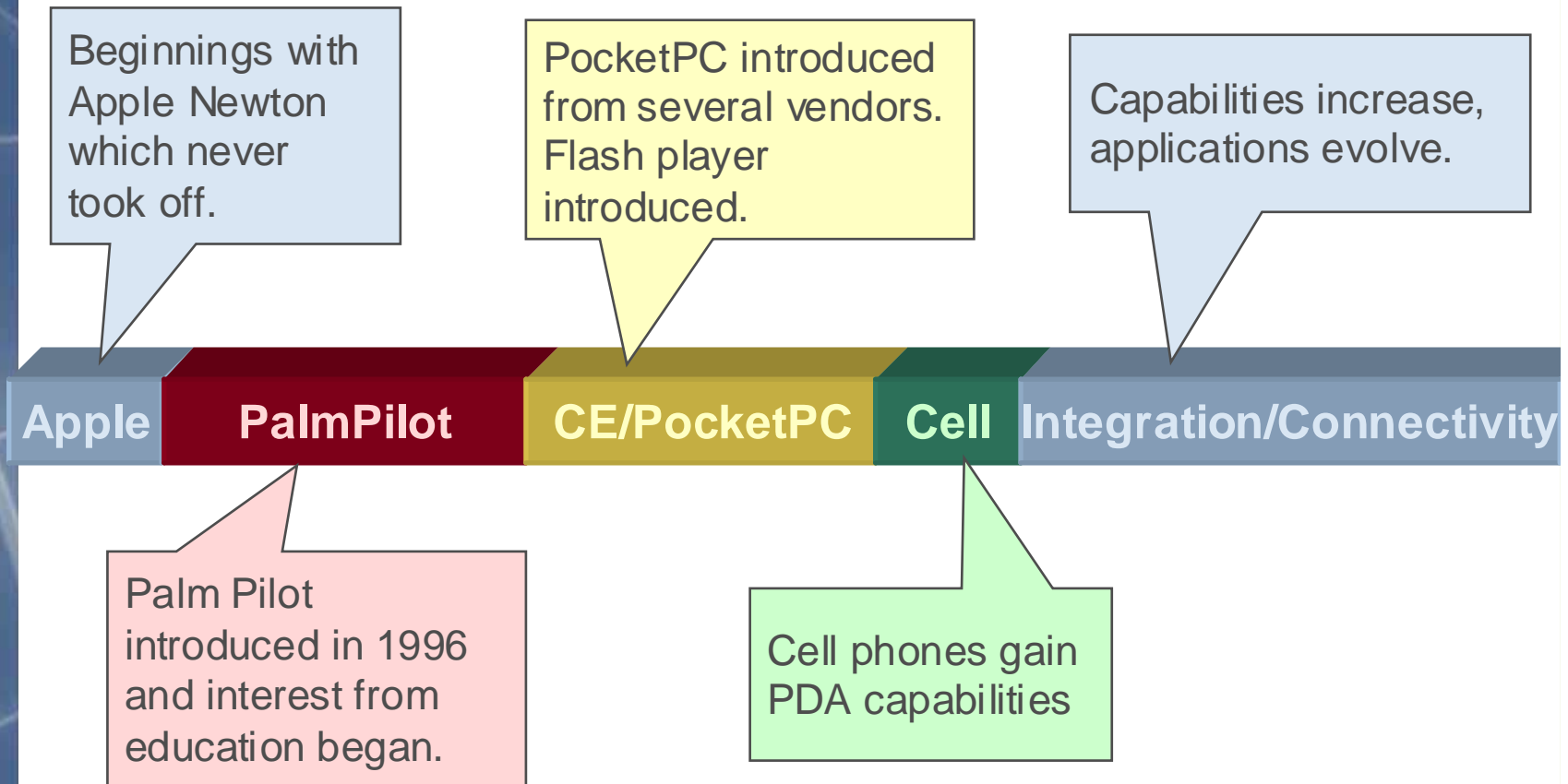
- Background
- K-12
- Higher Ed
- Recent News
- Examples
- Questions

My First Mobile Device





Handheld Timeline





Connectivity

- WAN - Wide Area Network (think phone coverage)
- LAN - Local Area Network (think building/campus)
- PAN - Personal Area Network (think PDA-printer)



Evolution of Thinking

- Computer replacements
- Full courses
- Individual applications
- Data collection
- Collaborative opportunities
- Connectivity

Various Devices



Lots of Choice



Photo Credit: Leslie Walker, Washington Post



Processors

"[Soon,] cell phones will be small super computers. Already today we offer processors up to 624 MHz; one GHz is not too far away. This means, processors for the cell phone today are as powerful as a notebook processor in 2000."

David Rogers, Intel



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.



Classroom Use

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

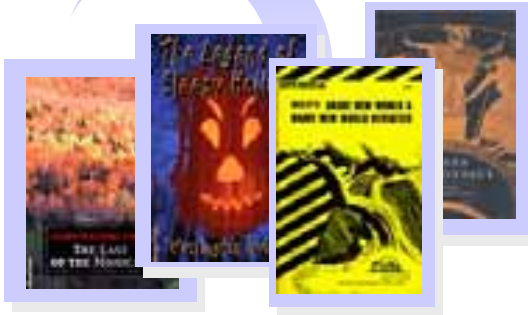


Typical Reaction

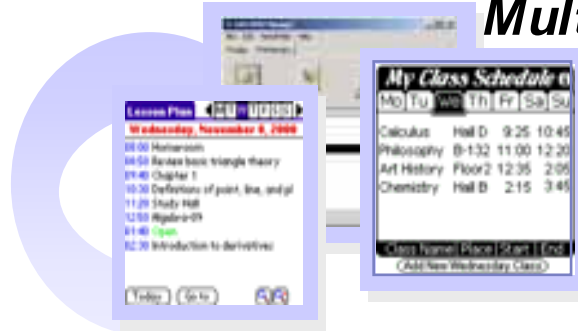
- Excitement
- Concern
- Disillusion
- Acceptance
- New applications
- Enthusiasm

Applications

Content



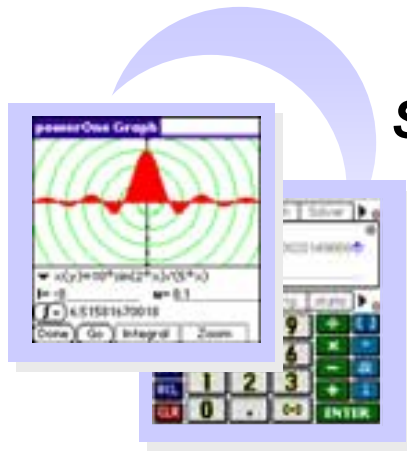
Productivity & Administration



Multimedia



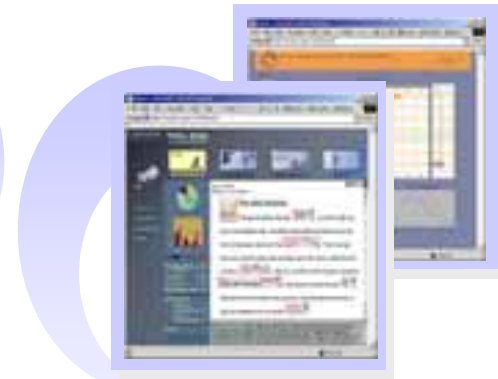
Math & Science



Art & Music



Assessment

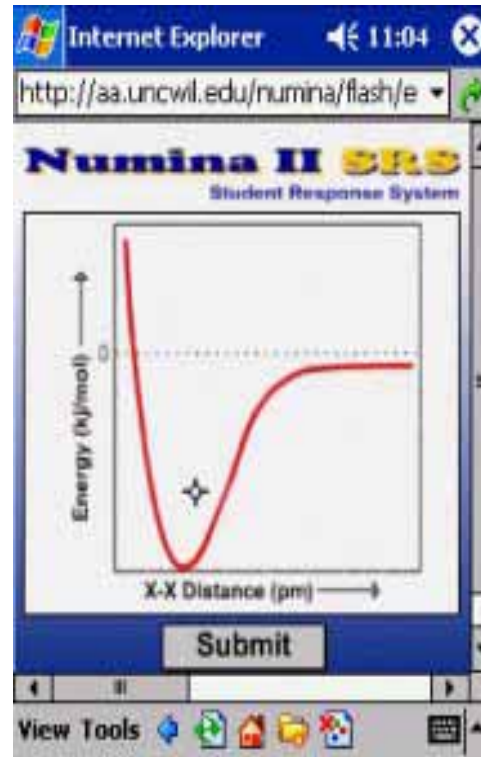


Add on Devices

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



ImagiProbe by Imagiworks



Internet Explorer 11:04
http://aa.uncwil.edu/numina/flash/e

Numina II SRS
Student Response System

A) incorrect Correct

B) incorrect Correct

C) incorrect Correct

D) incorrect Correct

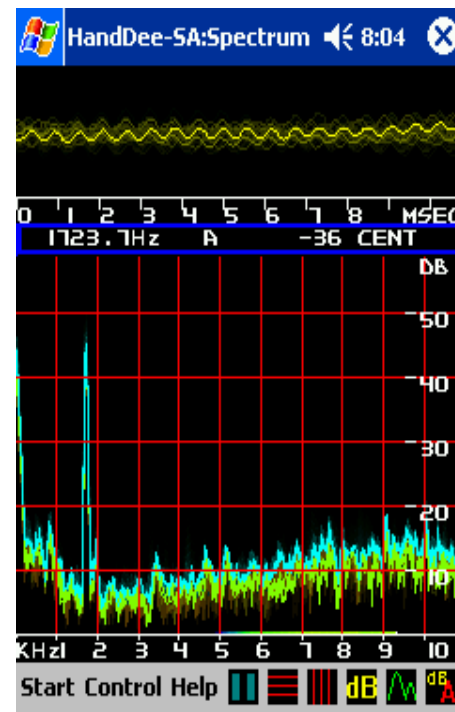
E) incorrect Correct

Submit

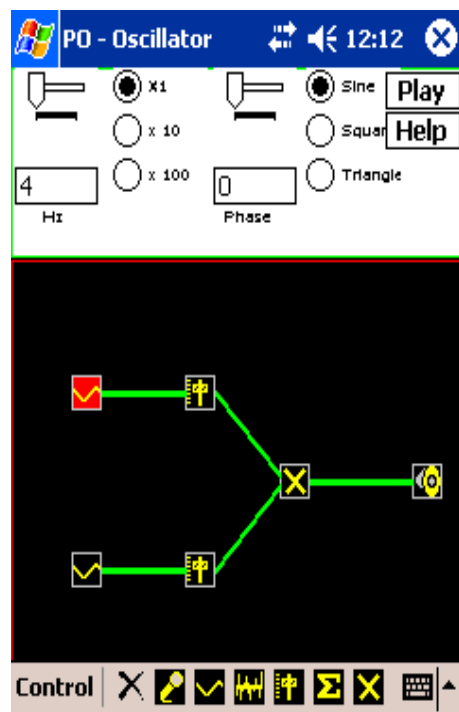
View Tools



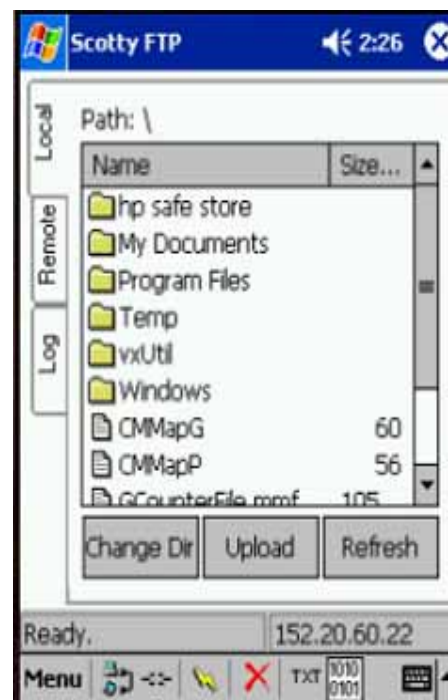
Pocket HyperChem



Handee Spectrum



Pocket Oscillator

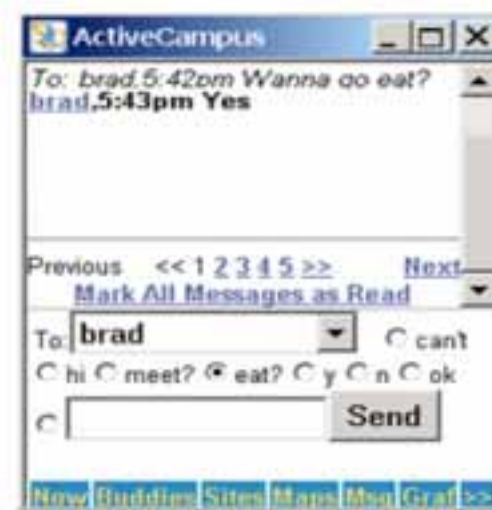


Scotty FTP



UCSD Active Campus

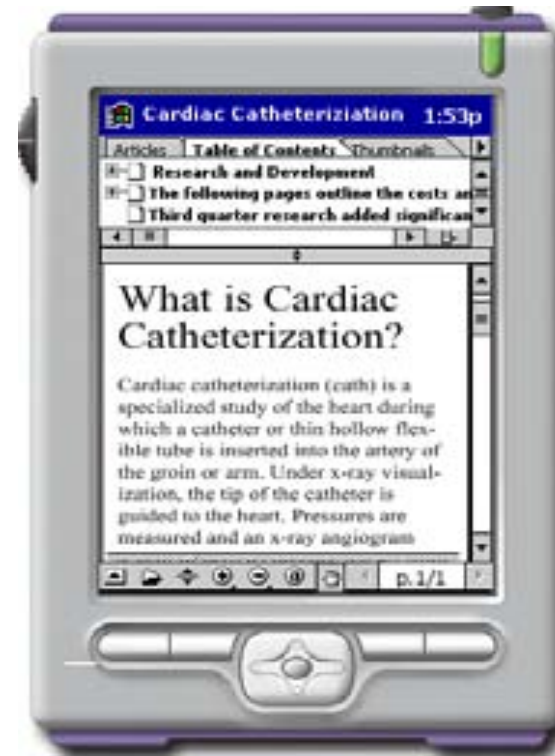
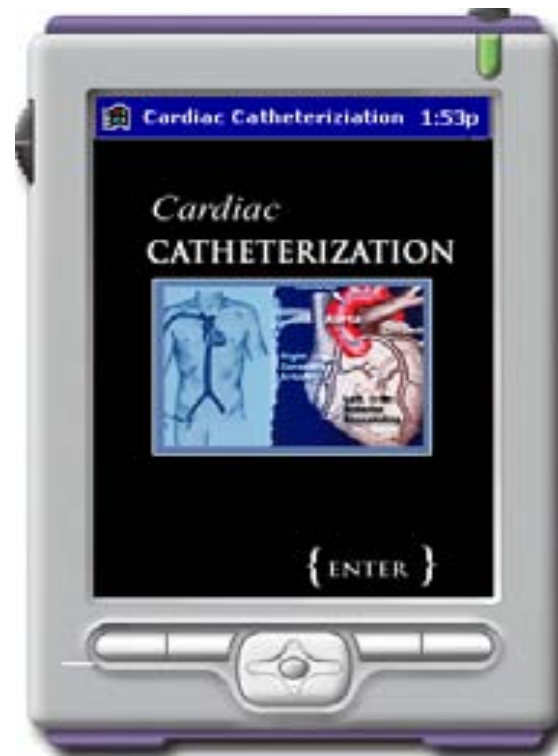
ActiveCampus - Who's around





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)

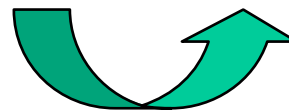


Medical Procedures

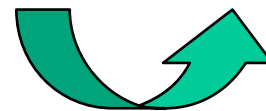




Initial screen showing the location of the user



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



It's Not Just about Handhelds

- Duke University
- Drexel School of Ed
- Georgia College and State University

- Koreaedu – College Scholastic Ability Test



Medical Schools

- References
- Lectures
- Notes
- Tracking

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



Key Observations on Mobile Learning

- helps learners to improve their **literacy** and **numeracy** skills and to recognise their existing abilities
- can be used to encourage both **independent** and **collaborative** learning experiences
- helps learners to identify areas where they need **assistance** and **support**
- helps to **combat resistance** to the use of ICT and can help bridge the gap between mobile phone literacy and ICT literacy
- helps to remove some of the formality from the learning experience and **engages reluctant learners**
- helps learners to **remain more focused** for longer periods
- helps to **raise self-esteem**
- helps to **raise self-confidence**



10 Open Recommendations to Foster the European Content Industry Towards the Lisbon Target

1. Better balancing of public investment
2. Supporting Europe's cultural and linguistic diversity
3. Managing Intellectual Property Rights and Licensing Conditions
4. Maintaining fair competition while exploring new business models based on PPPs
5. eContent for all: take-up by all citizens and enterprises
6. EU level harmonization: towards a Common Core of Content
7. The importance of interoperability and open standards for content repository, exchange, re-usability and re-localization: more R&D is needed on these topics
8. The issue of Granularity: impact on personalisation features
9. How to measure and improve quality of learning materials?
10. Need for advanced broadband for the development of rich content



Other EU Resources

- MOBIlearn.org (www.mobilearn.org)
- *“Mobile Learning: A Handbook for Educators and Trainers”*
by RoutledgeFalmer, Taylor & Francis Group,
London
eds. Agnes Kukulska-Hulme and John Traxler



Other Successful Examples

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



Augmented Reality





Mad City Murder: Augmented Reality Scientific Role Play Environments

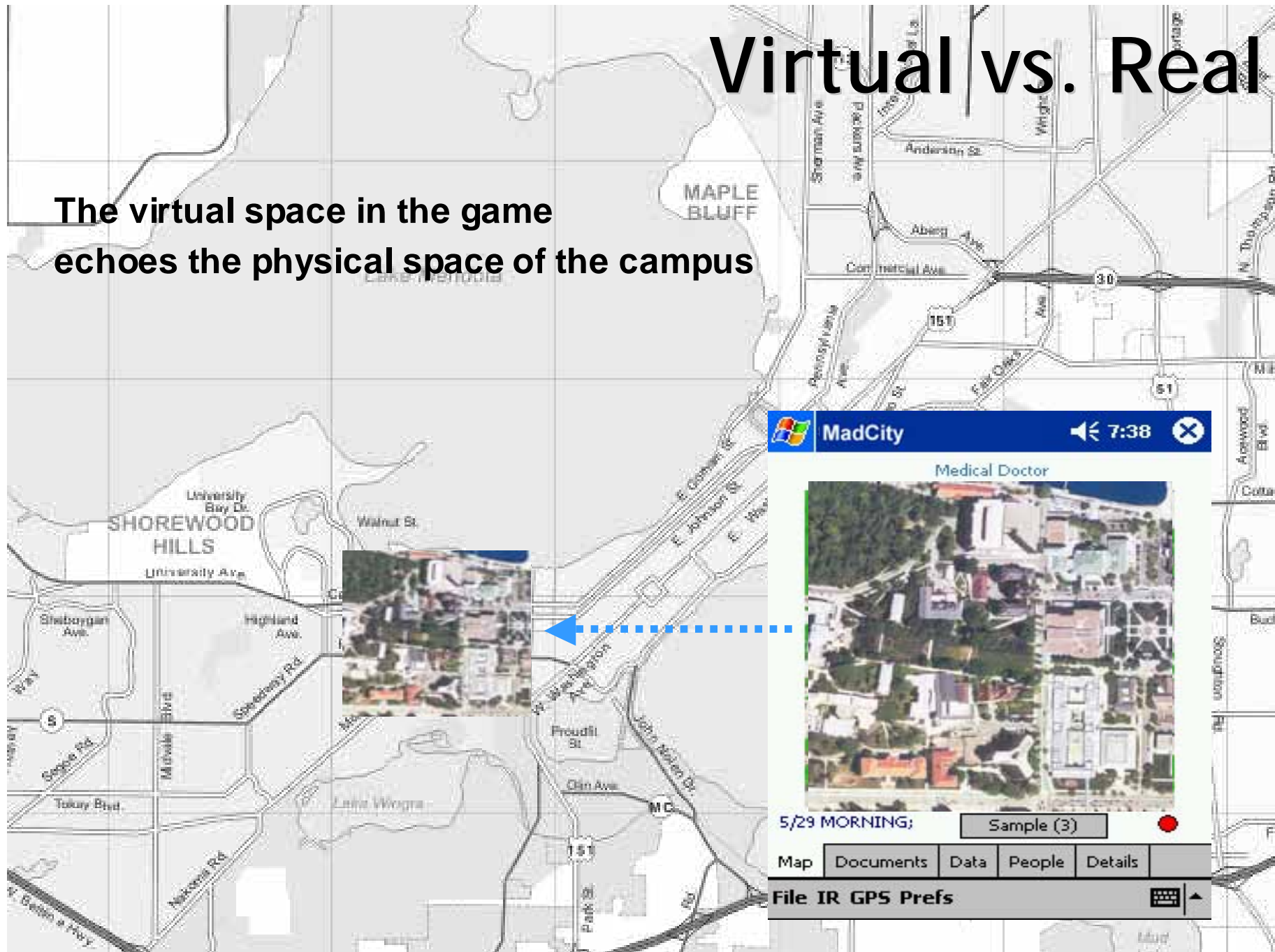
Affordances of PDA
(Klopfer, Squire & Jenkins, 2002)

Portability
Social interactivity
Context sensitivity
Connectivity
Individuality

Kurt Squire
Mingfong Jan

Virtual vs. Real

The virtual space in the game echoes the physical space of the campus





Where do players play?

- Physical environment
- Players need to explore the physical environment for clues
- They play in the PDA and in physical reality at the same time



MadCity Augmented Reality

Playground



Player's Role

Player's Location

Virtual Time

Content Review



Factors

Job Security

Watershed

Spring Rain

Fishing



Run-offs

Friendship

Mercury

Alcohol Drinking

TCE

Overweight & Health Issues

Algae bloom

Life Insurance

PCB

Family

Food Chain

Catfish

Sediment

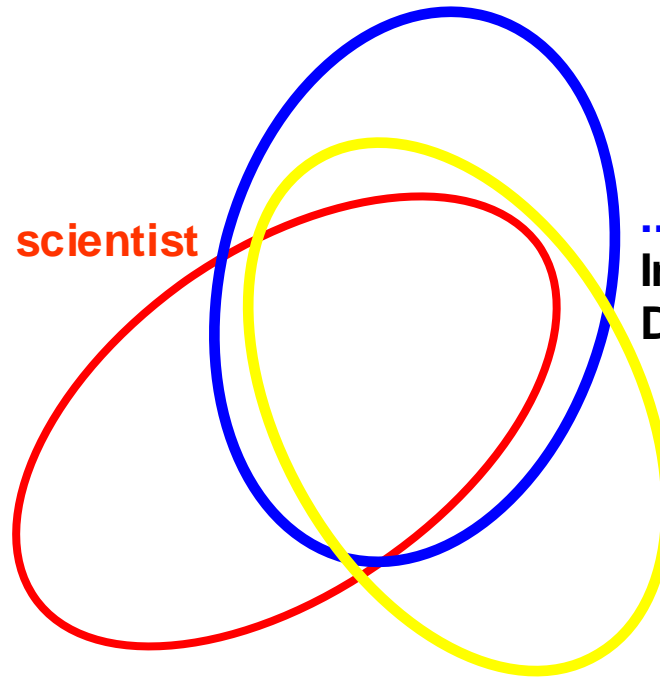
Water quality

Walleye

Game Design- Players

Each player will perceive the case in a particular perspective and can do something others can't.

...Environmental scientist
Interview people
Take samplings



...Medical Doctor
Interview people &
Diagnose symptoms

...Government official
Interview people
Official documents

Unless they collaborate with the others, they could not formulate a holistic view about the case



Participants' comment

“Before I never would have picked up a book on TCE, but now, I definitely would.”



Participants' comment

“We are using technology, thinking with complicated science content, what more could you want?”



Participants' comment

“I would pay for something like this outside of school”



From the Teacher...

The students that you worked with all have a history of poor school performance and have difficulty learning in a traditional school environment / classroom. As you probably gleaned, some of them also have issues with communication! **The fact that they were engaged and excited for an extended period of time is a great sign for the power of your design and the associated technology and delivery system.** You are definitely on to something! The students I talked with on Monday are very interested in trying to create a game that they can share with other students at our school. Is there any way that we can get rights to the engine that you used to create Environmental Detectives? I would need to learn how to create and manage the content for a game before I started working with the students. And since you are the resident expert... Perhaps I could help you beta test the other games that you plan to develop in return for some technical training?



Next Steps

- Run more sections with new engine
- Taken Off Campus – virtual tour mystery game investigating landmarks to solve puzzle of stolen valuables
- History time travel game to reverse history flow learning about great architecture and area history

Use engaging backstory, differentiated character rolls, reactive third parties, guided debriefing, synthetic activities, and embedded recall/replay to promote both engagement and learning.



Laptop Recent News

Maine "Technology Learning Initiative"	Students and teachers in 7th and 8th grades	iBooks
University of Maine College of Education and Human Development	Students working toward teacher certification	iBooks
Cobb County, GA School District "Power to Learn" program	All teachers PK-12 + 4/14 demonstration high schools	17,000 -> 63,000 iBooks



Other News

Manteo ThinkPad Learning Project (NC)	Free wireless – junior and senior high students	ThinkPad
Michigan “Freedom to Learn” program	Last Fall – 6 th grade students statewide	HP notebook
Indiana	Statewide desktops for high school students	Special desks



Resources: www.mLearnopedia.com

mLearnopedia: Your Mobile Learning Resource

[Intro](#) | [Development](#) | [Events](#) | [Examples](#) | [News](#) | [Presentations](#) | [Research](#) | [Resources](#)

Introduction



Mobile Learning

Handheld computers have several unique form factors that suggest further intriguing educational opportunities. [Klopfer, Squire, Holland, and Jenkins \(2002\)](#) describe five 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 desktop, a laptop, or a network, either wired or wireless. They can be standalone and possibly synchronized periodically, intermittently connected to a network, or always connected.



Other Resources

- Learning with Mobile Devices Research and Development
<http://www.lstda.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/>

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Questions

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