Mobile Learning: Solutions & Challenges

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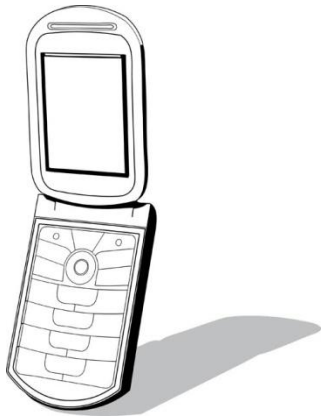
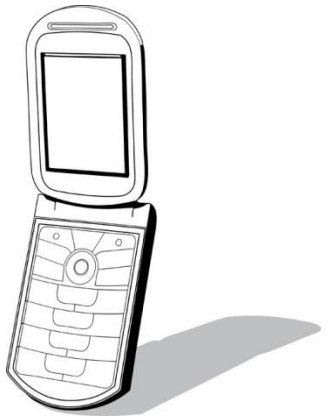
Introduction



- Part 1: MobiGlam pilot project (2008)
  - Purpose, theory, background, technology
  - Methodology and results
- Part 2: Smartphones & tropical medicine pilot (2010)
  - Purpose, theory, background, technology
  - Methodology and results
- Open discussion

MobiGlam: Introduction



- MobiGlam pilot project
  - Background
  - Technology
  - Purpose, theory
  - Methodology and results

MobiGlam - Background

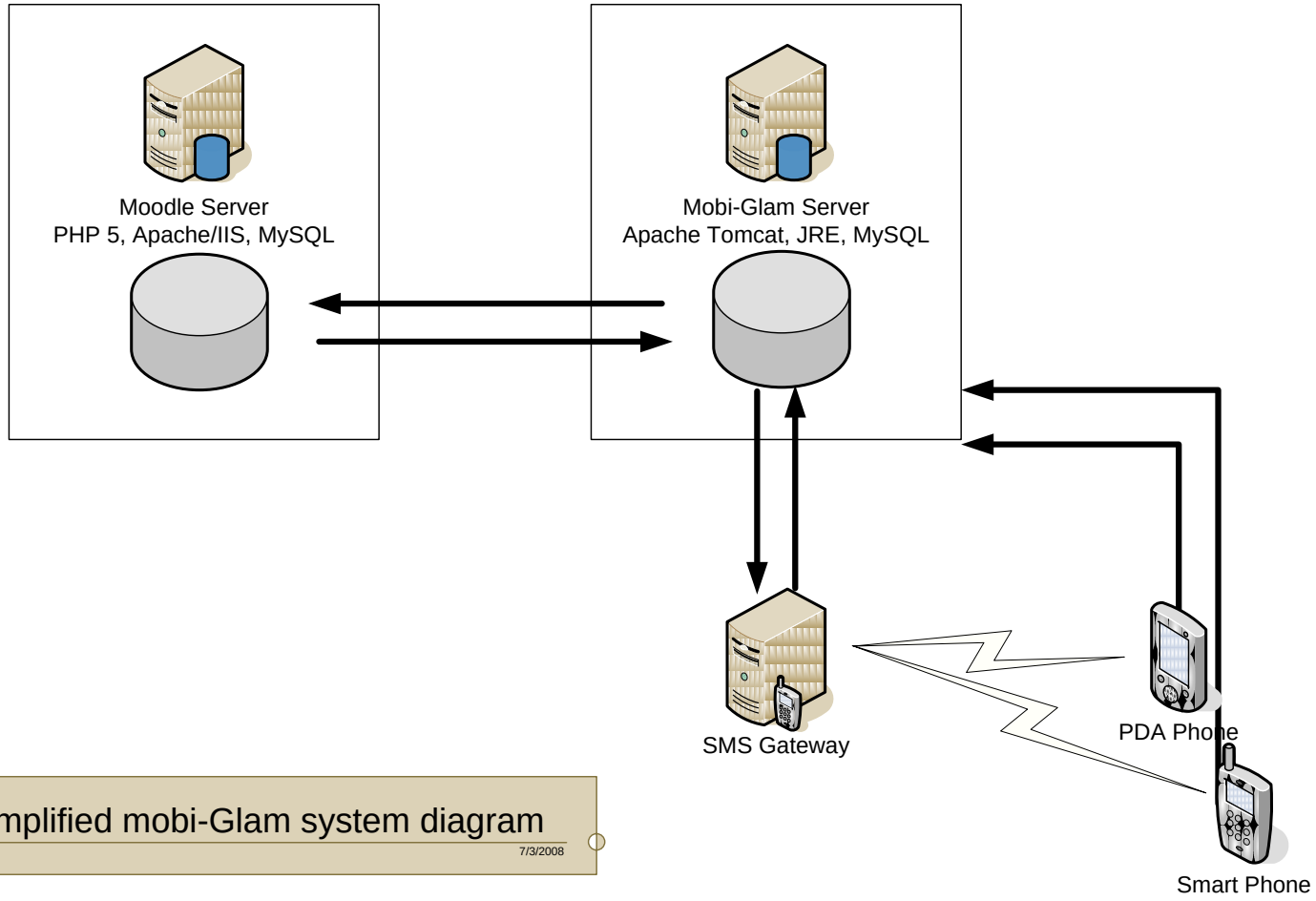
- Conducted at a post-secondary, distance-education institution in Canada (2008)
  - Master of Education students
- Moodle LMS
  - Test system
- MobiGlam
  - Dr. Fatma Elsayed Meawad
    (Now at the German University, Cairo)
  - University of Glamorgan
  - Cellular or WiFi networks
  - Selected for accessibility through a variety of networks and devices

MobiGlam – Technology

- MobiGlam aims to support wide use of mobile learning through:
  - Online automated integration with VLEs, ex. Moodle
  - A J2ME mobile application for VLE content browsing, for example, forums, quizzes, Moodle messages, and other modules
  - Personalised SMS notifications triggered through VLE use
  - Adapting content for various devices

MobiGlam – Architecture

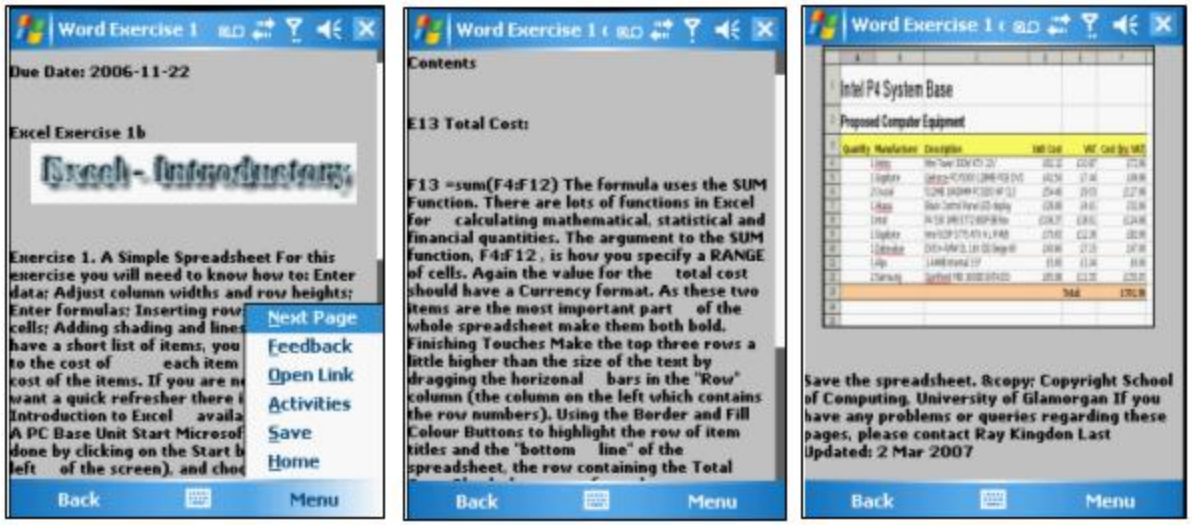
- http://wales.pbworks.com/Project-Deliverables



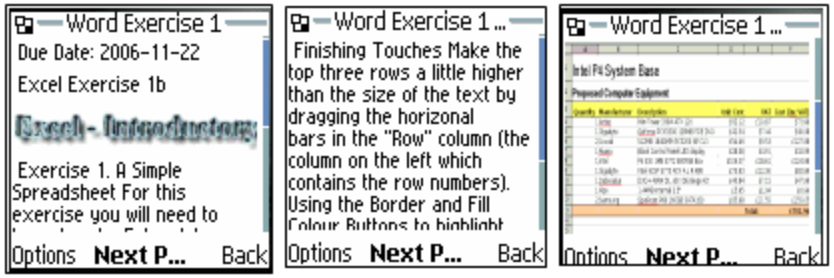
Simplified mobi-Glam system diagram

7/3/2008

MobiGlam-Adapting content for different mobile devices



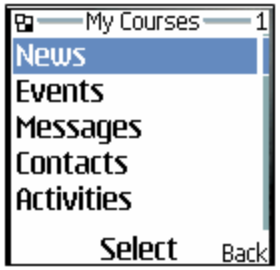
Qtek9100

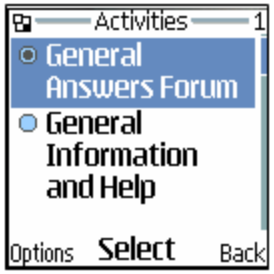


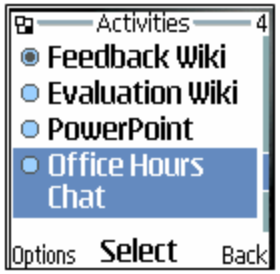
Nokia 6230i

Personalised Navigation

The non-personalised display of the navigational items on a Nokia 6230







The display of the personalised menu on the device. Grades and Search Users were promoted to the first Menu.

MobiGlam - Purpose

- Purpose
  - Perceived usefulness
    - Attitudes
  - Potential impact
    - Study patterns
    - Social effects
    - Pedagogical effects

MobiGlam - Theory

- Seven Dimensions of Freedom
  - Space, time, pace, media, access, content, relationship (Paulson, 1993; Anderson, 2008)
- Types of Interaction
  - Student – Student
  - Student – Teacher
  - Student – Content
  - Student – Interface

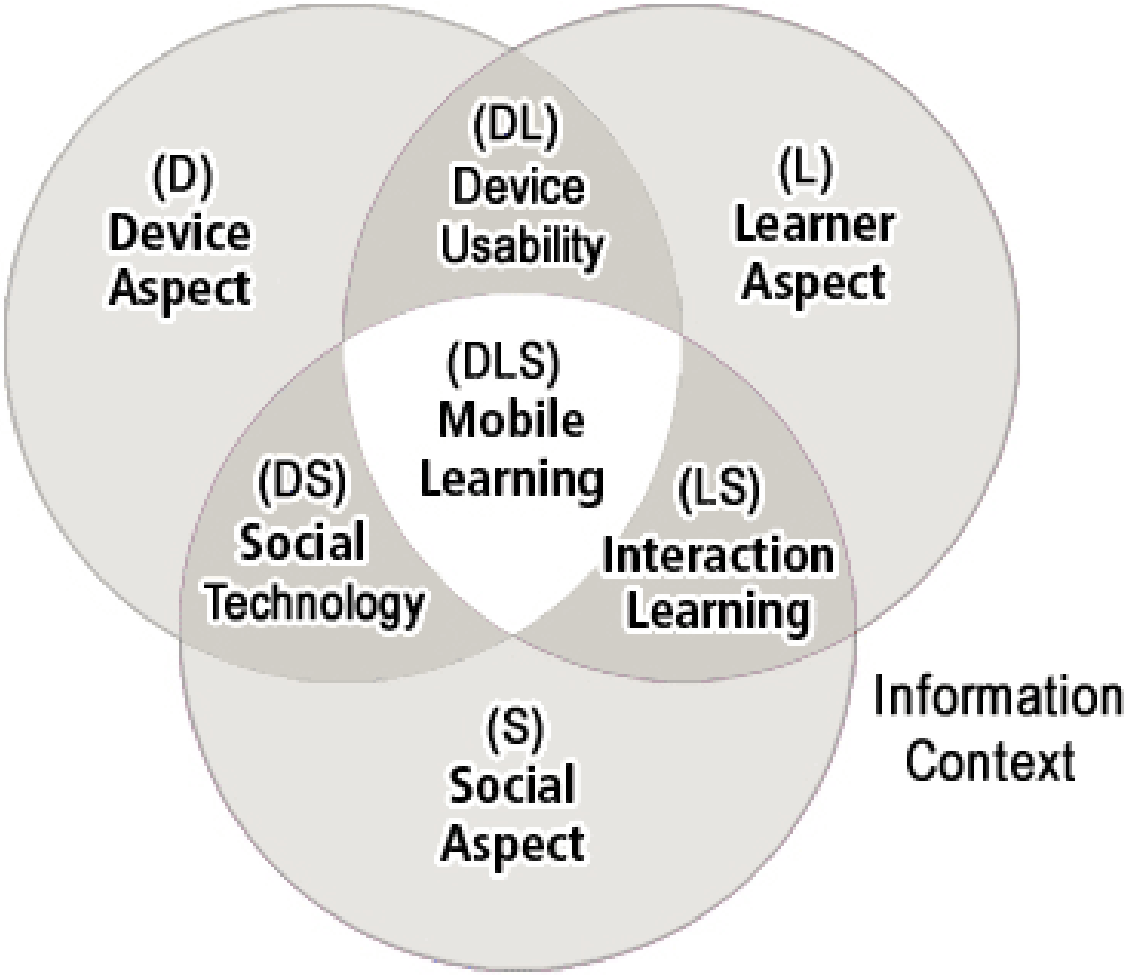
(Moore, 1989; Hillman, Willis, Gunnawardena, 1993)

MobiGlam - Theory

- Transactional Control Theory (TC)
  - Dron, 2007
  - Based on Transactional Distance Theory (TD)
    - The more structure, the less the freedom of choice
    - The more structure, the less the dialogue
    - The more autonomous the learner, the less need for structure and dialogue
  - TC theory
    - The learner must adapt to aspects in the environment that potentially constrain his/her choices.

MobiGlam - Theory

- The Frame model (Koole, 2006)



MobiGlam - Methodology

- Phase 1
  - 4 respondents (26-56 years)
  - Pilot software, training materials, questionnaires
- Phase 2
  - 16 respondents (26-56 years)
    - 12 = high computing skills
    - 3 = advanced computing skills
    - 1 = low computing skills
- Weekly activities
- Pre- and post-questionnaires
  - Based on FRAME model

MobiGlam - Results

- Interaction Learning
  (Communication, feedback)
  - Current frequency of interaction in Moodle is fairly low, yet learners report feel very “connected”
  - The mobile pilot showed more frequent activity (novelty?), but the respondents indicated that mobile access would not likely increase their sense of “connectedness”

MobiGlam - Results

- Social Technology
  (Networking & collaboration)
  - Rated need for flexible access to Moodle high
  - Rated need for flexible mobile access low
  - Respondents recognize that mobile access is advantageous for travelers

MobiGlam - Results

- Device Usability
  (Portability, access to information, comfort, satisfaction)
  - Higher satisfaction with usability of Moodle than of the mobile system
  - Both Moodle and MobiGlam were easy to learn, although navigation was found to be more difficult with MobiGlam
    - Low understanding of mobile technology (input, output, navigation)
    - Training was not effective

MobiGlam - Results

- Study Patterns & Attitudes
  - Email remained preferred method of communication
  - Ratings for mobile was low, but comments indicated that they would adapt
  - Possible correlation with demographics
  - One learner felt that mobile access was only useful for checking on activity, but would not increase “learning”
  - Others felt mobile access was intrusive

MobiGlam - Results

- Respondents' Recommendations
  - University-wide implementation of mobile technology

Recommendations	***Yes***	***No***	***Maybe***
Offer SMS service	5	4	0
Provide mobile access to courses	5	2	2

MobiGlam - Conclusion

- Control-constraint-need threshold had not been met in this trial

  = motivation to adopt or adapt remained low

- References & paper:

  http://www.jofde.ca/index.php/jde/article/view/644

Thank you

- Questions later . . .

Smartphones and tropical medicine pilot

by Inge de Waard

Generic mLearning goals for any mLearning project

- Sustainability
- Scalability
- Collaboration (local people know the local health situation best)
- Allowing user generated content to be added
- Low cost
- Independent from, or at least flexible to, infrastructure
- Generic

Aim of Peruvian mobile project

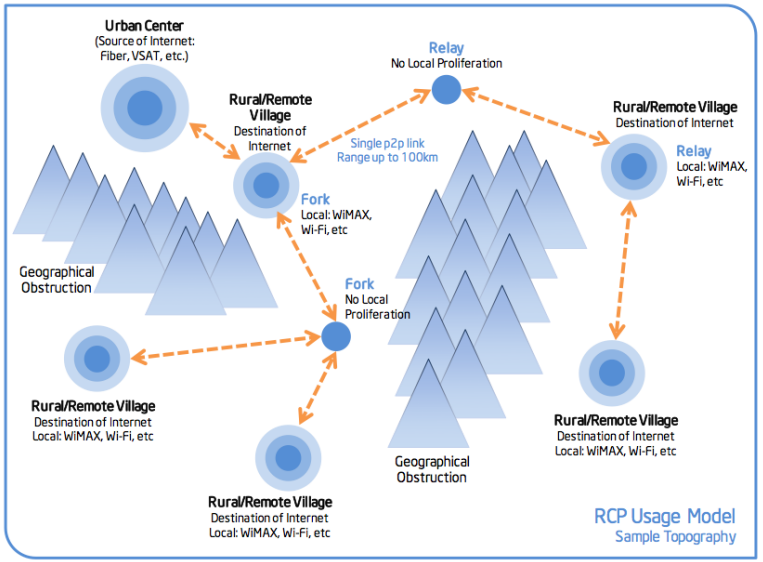
- In 2008 the Institute of Tropical Medicine Alexander von Humboldt (IMTAvH) in Lima (= the real craftsmen of this project) and the Institute of Tropical Medicine (ITM) in Antwerp set up a mobile educational platform for healthcare worker (HCW) training:

  - ✓downloading of the latest medical information
  - ✓knowledge sharing and data contribution

Target population and setting

- Health care workers involved in HIV/AIDS care in Peru
- 20 Clinics in Department Capitals (urban and peripheral)
  - More than 70% of the national patients receive treatment on those selected health facilities
  - The selection was made working closely with the Ministry of Health

How to apply in low resource settings (rural area) Wifi Local Area Network

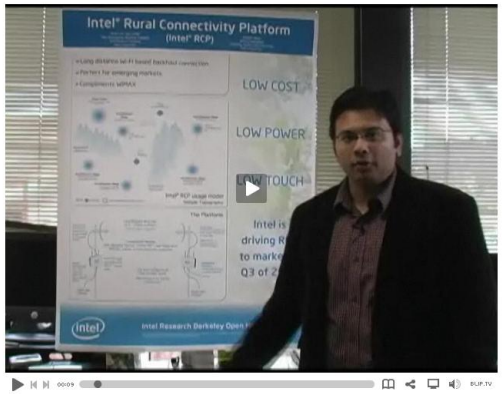


Intel (r) Rural Connectivity Platform becomes a reality

posted by **Cheryl Miller** on **March 10, 2008**

I have followed this project over the past few years as it has moved from an exploratory project in the Intel Research lab, to testing in such remote places as Vietnam, India, South Africa, Panama and...Berkeley.

The demo that was presented at the **Berkeley Lab** open house had two antenna transmitting video via WIFI connection. One of the antenna was on top of the Space Sciences Laboratory (SSL) at the UC Berkeley campus which about 1.5 miles (2.4 km) away from the lab in downtown Berkeley.



Methods

- 20 physicians used individual Smartphones (Nokia N95 and iPhone), for a CME program, Oct ’09 – Jan ‘10

- Wifi, solar panels and wireless router to save on connection costs and increase autonomy

CLINICAL MODULE

Pre-test (day 1)
-access LCMS
(MLE Moodle)
-via email
-website

Clinical Case (day 3)
-3D movies (podcast deliver using iTunes)
-Questions related with clinical case
(start discussion forum Moodle)
-Critical thinking

wifi

Conclusion of discussion (day 10)
- strengthening network

Summary
Day 1: Pre-test with focus on a specific topic
Day 3: Send Clinical cases with questions and start discussion
Day 10: Conclusion of clinical cases
Day 11:Summary of module (articles and review)
Day 15: Post-test on the topic

Post-test (day 15)

Send summary material
Website link (day 11)

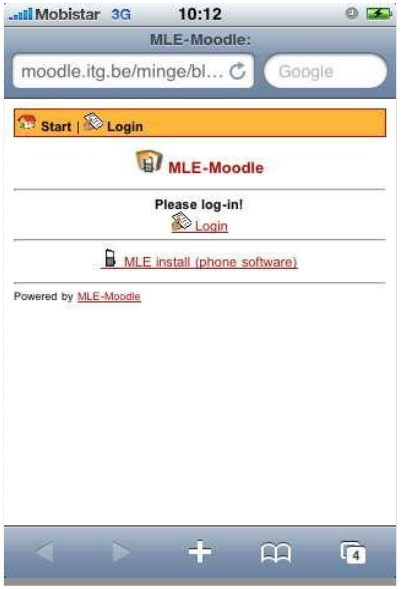
Tools used

module revision was provided through multimedia files developed with [ScreenFlow]

Looking at examples, we used iTunes as a repository of the podcast during course: [http://itunes.apple.com/be/podcast/central-videos-audios-reach/id332290043]

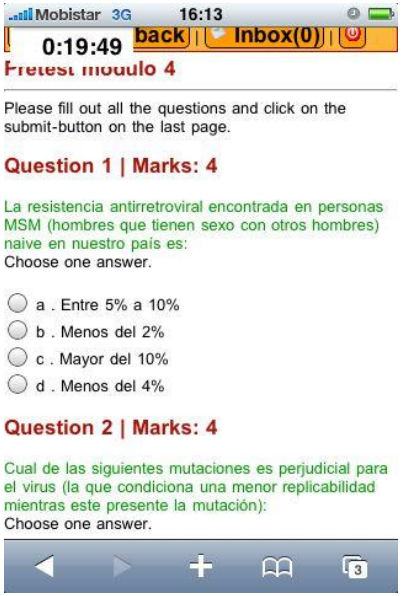
MLE Moodle

- A web-based platform (MLE Moodle), is offered to support the learning events, tracking students' progresses over time
- Why Moodle? It is based on social constructivist idea (co-construction)



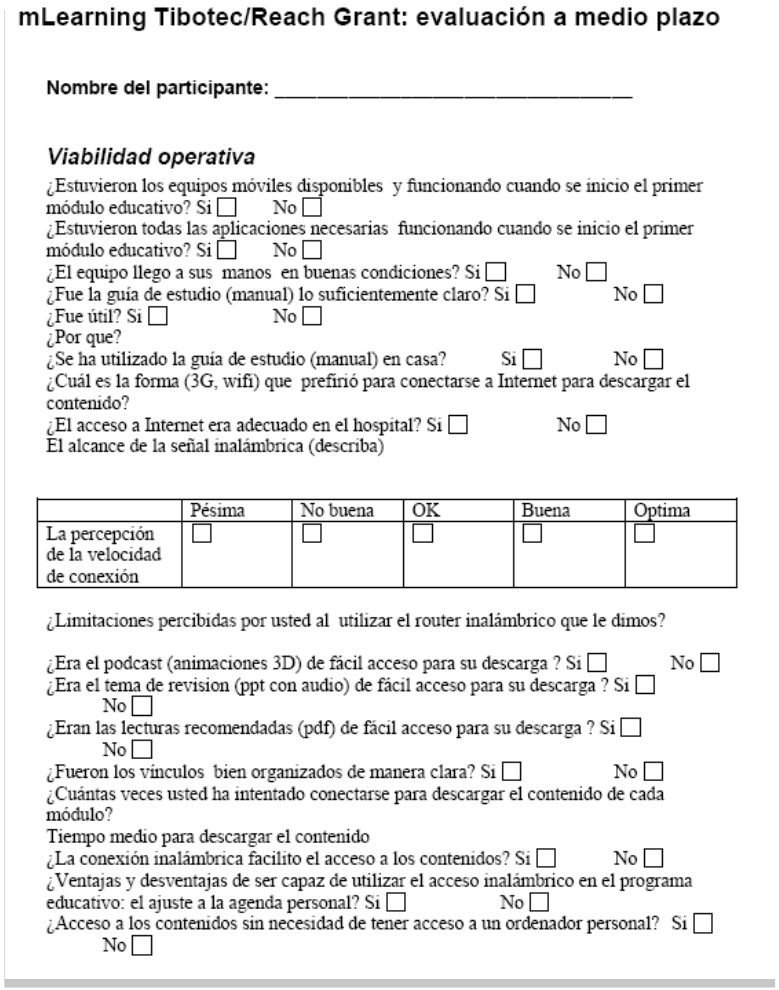
Pre post test

- Baseline knowledge and learning outcomes were tested through mobile-based multiple choice questions issued at the beginning and end of each module



Mid-term evaluation results

- 18/20 returned standardized questionnaires (response rate, 90%)
- Focus group discussion (12/20)
- Participant median age was 48.5 years (range, 34–55 years), with a median of 6 years of experience treating HIV patients



mLearning Tibotec/Reach Grant: evaluación a medio plazo

Nombre del participante: _____

Viabilidad operativa

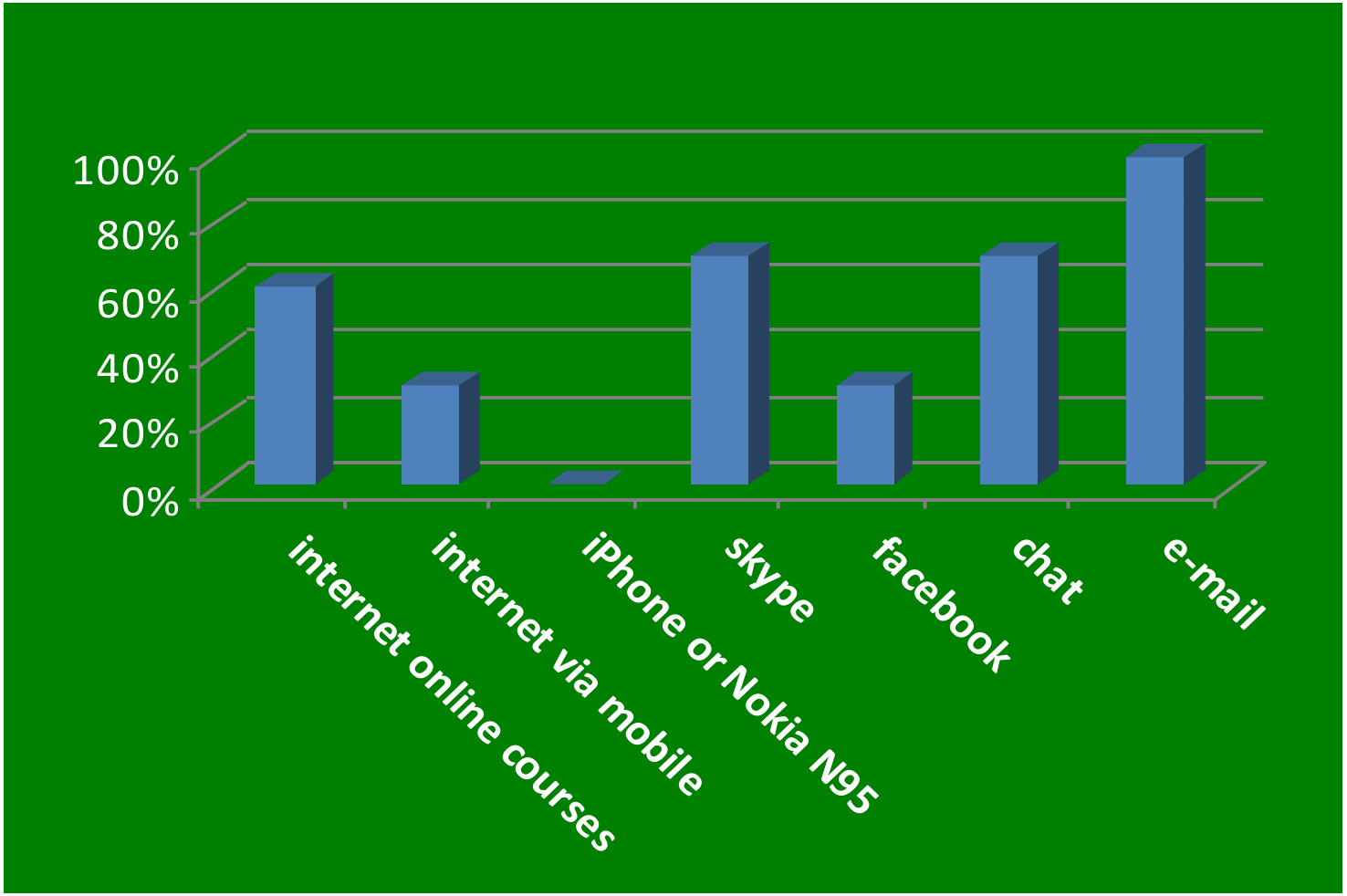
¿Estuvieron los equipos móviles disponibles y funcionando cuando se inicio el primer módulo educativo? Si ☐ No ☐
¿Estuvieron todas las aplicaciones necesarias funcionando cuando se inicio el primer módulo educativo? Si ☐ No ☐
¿El equipo llego a sus manos en buenas condiciones? Si ☐ No ☐
¿Fue la guía de estudio (manual) lo suficientemente claro? Si ☐ No ☐
¿Fue útil? Si ☐ No ☐
¿Por que?
¿Se ha utilizado la guía de estudio (manual) en casa? Si ☐ No ☐
¿Cuál es la forma (3G, wifi) que prefirió para conectarse a Internet para descargar el contenido?
¿El acceso a Internet era adecuado en el hospital? Si ☐ No ☐
El alcance de la señal inalámbrica (describa)

	Pésima	No buena	OK	Buena	Optima
La percepción de la velocidad de conexión	☐	☐	☐	☐	☐

¿Limitaciones percibidas por usted al utilizar el router inalámbrico que le dimos?

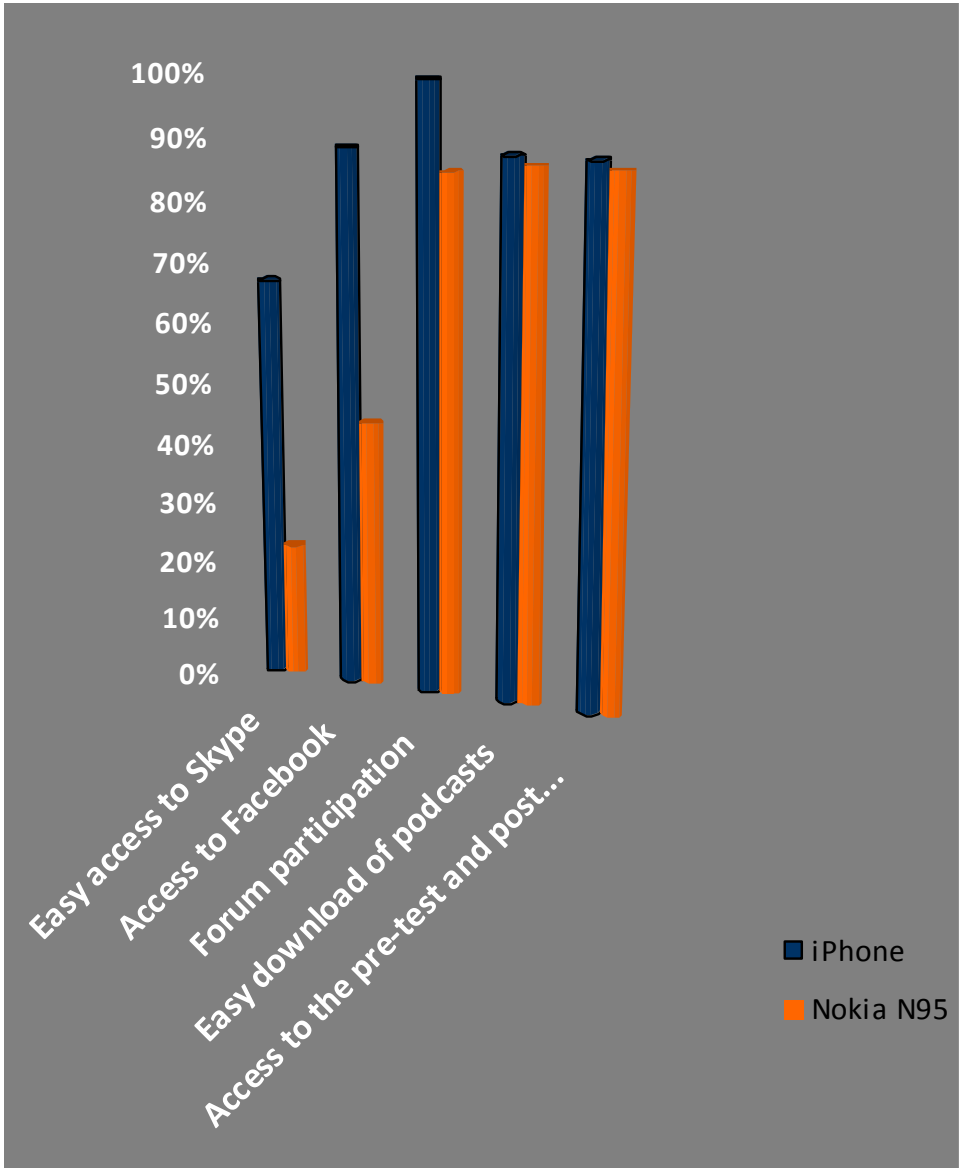
¿Era el podcast (animaciones 3D) de fácil acceso para su descarga ? Si ☐ No ☐
¿Era el tema de revision (ppt con audio) de fácil acceso para su descarga ? Si ☐ No ☐
¿Eran las lecturas recomendadas (pdf) de fácil acceso para su descarga ? Si ☐ No ☐
¿Fueron los vínculos bien organizados de manera clara? Si ☐ No ☐
¿Cuántas veces usted ha intentado conectarse para descargar el contenido de cada módulo?
Tiempo medio para descargar el contenido
¿La conexión inalámbrica facilito el acceso a los contenidos? Si ☐ No ☐
¿Ventajas y desventajas de ser capaz de utilizar el acceso inalámbrico en el programa educativo: el ajuste a la agenda personal? Si ☐ No ☐
¿Acceso a los contenidos sin necesidad de tener acceso a un ordenador personal? Si ☐ No ☐

Prior mobile learning experience, and social media literacy



Questionnaire

- **66.7%** of the iPhone users indicated that Skype was easy to access vs **22.2%** using the Nokia N95
- **88.9%** of the iPhone respondents found it easy to access Facebook via mobile vs the **44.4%** using the Nokia N95



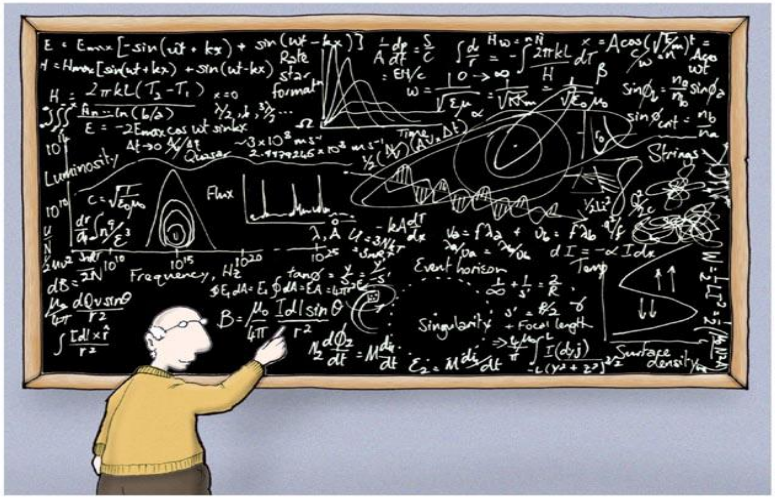
Focus group discussions

- Advantages indicated by the participants: portability of the equipment and easy access to the educational content at own space and time
- The overall satisfaction of using iPhone or Nokia N95 as expressed by the participants was generally greater for iPhone
- The Nokia N95 users described:
  - access to Skype and Facebook as being more complicated;
  - less satisfaction with the screen and the keyboard size;
  - troublesome quality of the images

Challenges to tackle

1. Lack of mobile standards (html5 on the rise with W3C mobile web initiative)
2. Lack of interoperability of the mobile programs
3. Relatively high investment cost: mobile devices, phone service fee, mobile IT help desk for technical problems
4. Connectivity not assured and different per region
5. Need more mobile theory research to really get the most out of the mobile possibilities
6. Native apps => different approaches => time consuming (SDK's)
7. Augmented mobile learning is tough for limited budgets, but delivers more interactivity
8. Real time feedback or content/context pick-up
9. Time to find creative solutions

10. I am sure you can think of others …



Astrophysics made simple

(cartoon by Nick D Kim, nearingzero.net)

Actions taken (later reading)

The actions we took were multiple, let me list 7:

1. We looked at the latest mobile phones supported by the national telecom companies, and we compared their functionalities. These functionalities had to enable reading comfort; they had to permit installing certain applications (for picture exchange, keeping connected with peers). The devices needed to have multimedia possibilities as we aimed to address different learner skills (text, audio, video). The devices also needed to have enough memory to enable big multimedia files to be stored on them. Synchronization with computers was necessary to allow cheaper downloading of new clinical modules. And last but not least, because we were aiming to add mobile social media, these media needed to be accessible by the mobile devices.
2. After purchasing the devices we started to compare mobile social media. Those media that could be accessed with both devices, and that offered a mobile design were chosen.
3. It was deemed necessary to use a mobile platform on which to store all the modules. So we started to look for mobile platforms that were both cheap and accessible. Mobile Moodle was chosen, as it offered the surplus of enabling ubiquitous learning in future projects, and because both institutes were using Moodle already as a learning platform.
4. At the same time content was being redeveloped: getting interactivity going, delivering both static (text) and multimedia content to cater to a variety of learner types, animations were made for patient/doctor conversation simulations.
5. To enable easy podcast downloads, we started using iTunes for education.
6. A facebook page was set-up to allow easy peer-to-peer information exchange.
7. Training was given to the participants (2 days, 1 day per type of mobile device)

Tools used (later reference)

- Skype and facebook for p2p knowledge exchange
- Moviestorm & iClone for animations
- Screenflow and iMovie for multimedia files
- RSS, podcast and iTunes (see examples) for retrieving material
- Online mobile survey software: surveygizmo
- MLE and iPhone.moodle.com.au

Not used here, but very useful

- Great tool for offline mobile data gathering:
  Survey-To-Go we use it in field research in non-connected areas (synchronizable with computers, works offline and waits until it can transfer data).

Acknowledgments for ITM project

This work is a result of the collaboration between the eLearning teams of ITM, Antwerp and the IMTAvH, Lima

We thank Athabasca University and CIDER to be able to share this project!

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Thank you!

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Thank you

Questions?