Americas Mobile Learning Panel
Mobile Learning Research

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May 21, 2010

Athabasca University
Canada's Open University

Athabasca University

New Generations of Students

- Online presence
- Now generation
- @ generation
- Virtual generation
- Social networking
- Games
- Digital experts
- Adapt to technology quickly
- Technology is second nature

Current Generation of Students

- Online presence
- Social networking
- Games
- Technology literate

Shift to Mobility

- E-learning to M-learning
- E-Commerce to M-commerce
- E-government to M-government
- E-collaboration to M-collaboration
- E-library to M-library
- E-health to M-health

Emerging Technologies in Learning

Print

↓

E-learning

↓

Mobile Learning
(M-learning)

The Ultimate School in the 21st Century

(Albert Browne, Verizon Foundation, U.S.A.)

- Use of digital media
- Games as a learning strategy
- Mobile devices
- Online courses

Research Projects

Designing for Different Devices

Delivering to Specific Devices

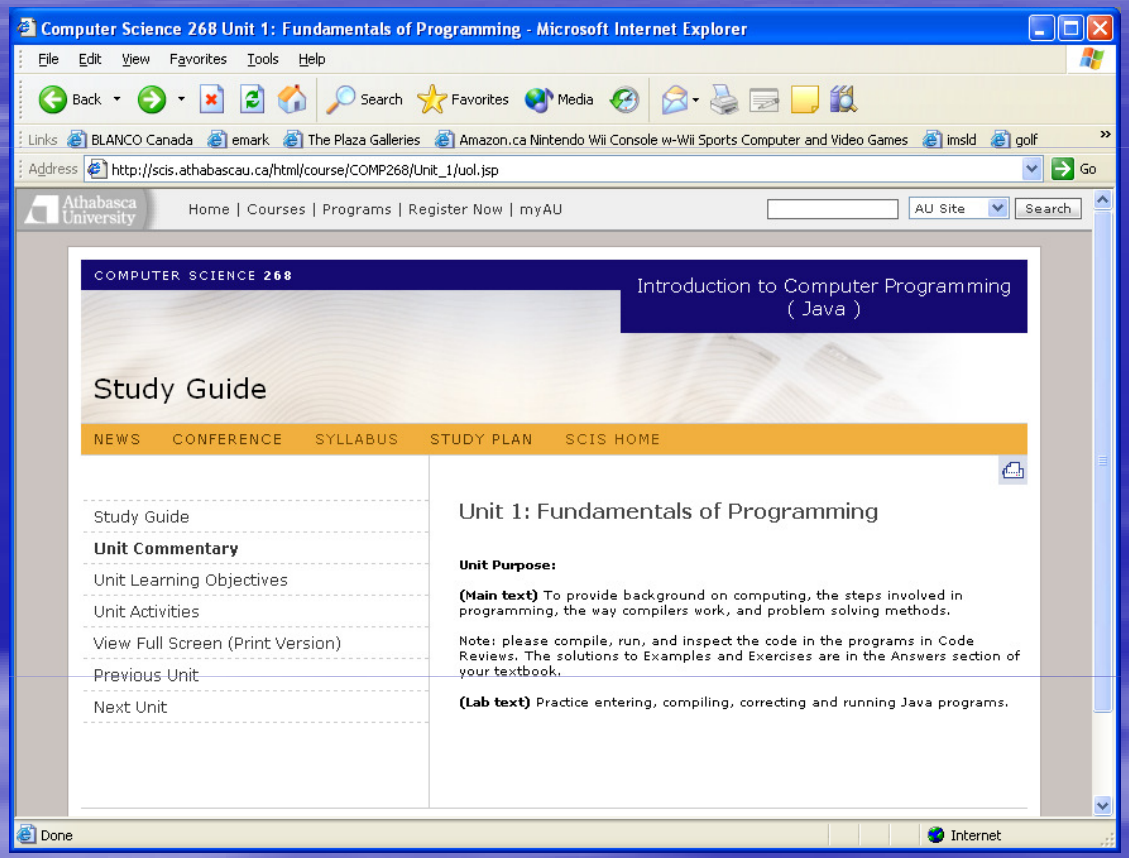
- Device detection had been problematic because new devices and mobile OSs and browsers were constantly coming on stream.
- Created problems for the device detection scheme used to determine the mobile device:

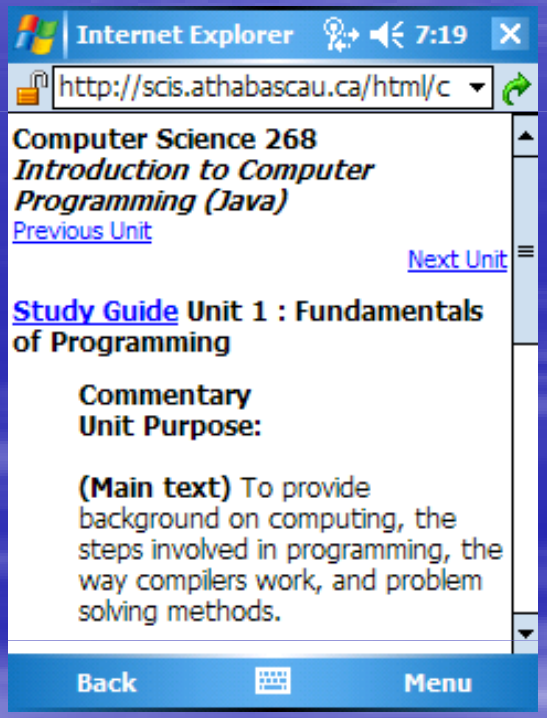
```
String user_agent = request.getHeader("user-agent");
```

- Changed to JavaScript to determine screen real estate:

```
if (screen.width >= 800) {
  document.write('<style type=\"text/css\">.....
```

Stylesheet Delivery

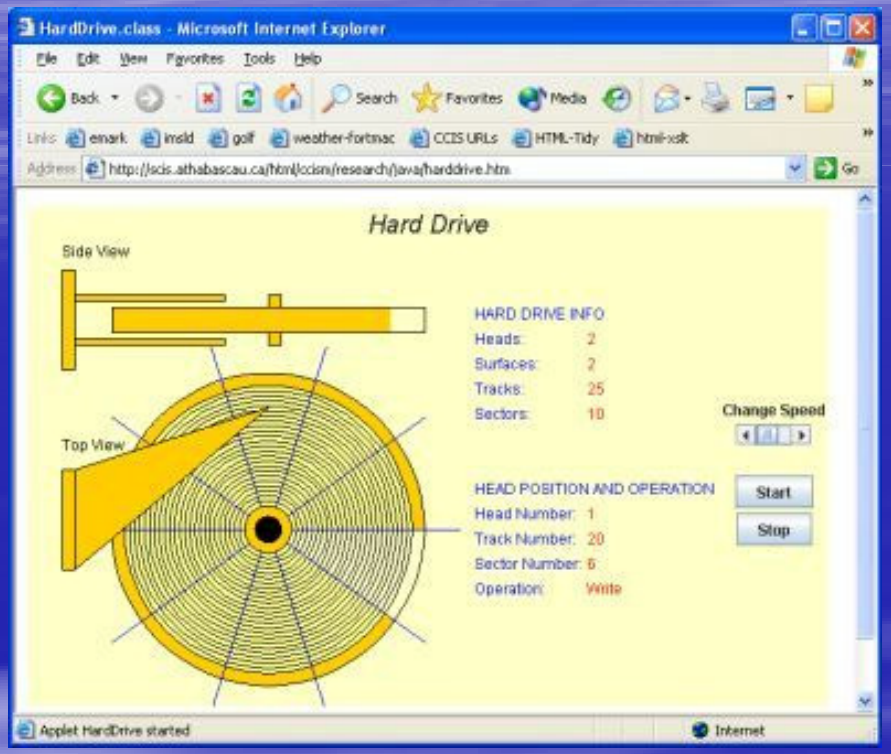


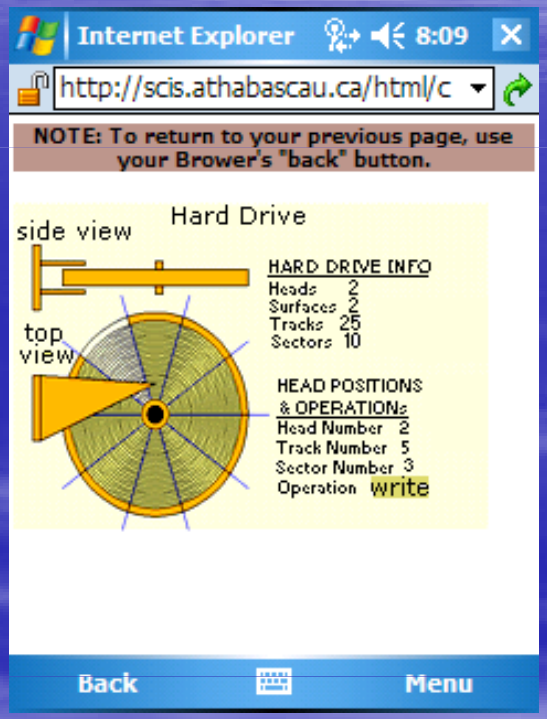


If the screen size is >= 800, delivers the full stylesheet

If screen size < 800, delivers style sheet meant for mobile device

Multimedia Displays





Device detection also implemented for applets, flash, large graphics, etc.

Delivery of alternate graphics to mobile devices

Intelligent Agent to Adapt Course Materials for Mobile Learners

Agent Characteristics

- The agent can search for a conversion tool according to the desired format and convert the course materials automatically.
- The agent is able to understand mobile clients' capabilities.

Process

- Jena as an RDF (Resource Description Framework) parser was used to obtain the device information, providing a query language called Resource Description Query Language (RDQL, 2005) to query for device information.
- Sun's Wireless Toolkit and PalmOS Emulator were used as the testing environment.
- An open and service-oriented architecture was used to develop the agent and open application interfaces to enable interaction and integration seamlessly between learning objects repository, course repository, and learning services.

Design Considerations

- *Software Portability.* A Java-based cross-platform software framework is one of the most important features in this project.
- *Limited Computing Power and Memory Consumption.* We designed computing intensive tasks to execute on the server side. The portable computing devices act as a thin client.
- *Display Properties.* The system provides support for different devices by separating the presentation layer from the data content. A number of different devices can be supported without the need of modifying programming logic and data content.

- *Design Flexibility and Scalability.* The system is designed in a distributed architecture that prevents a single point of failure, improves structural scalability and performance.
- *Caching to Save on Limited Resources.* With the support of the caching design, users can read the cached course notes on the device to avoid additional downloads.
- *Software Agent Support.* Software agents can be used to facilitate automated routine tasks, residing in both the client device and the server environment.

Steps in the Device Recognition

- The server agent will try to recognize the device by its vendor and device names. If the server agent cannot find that device directly from the database, it will try to recognize the device by the component attributes.

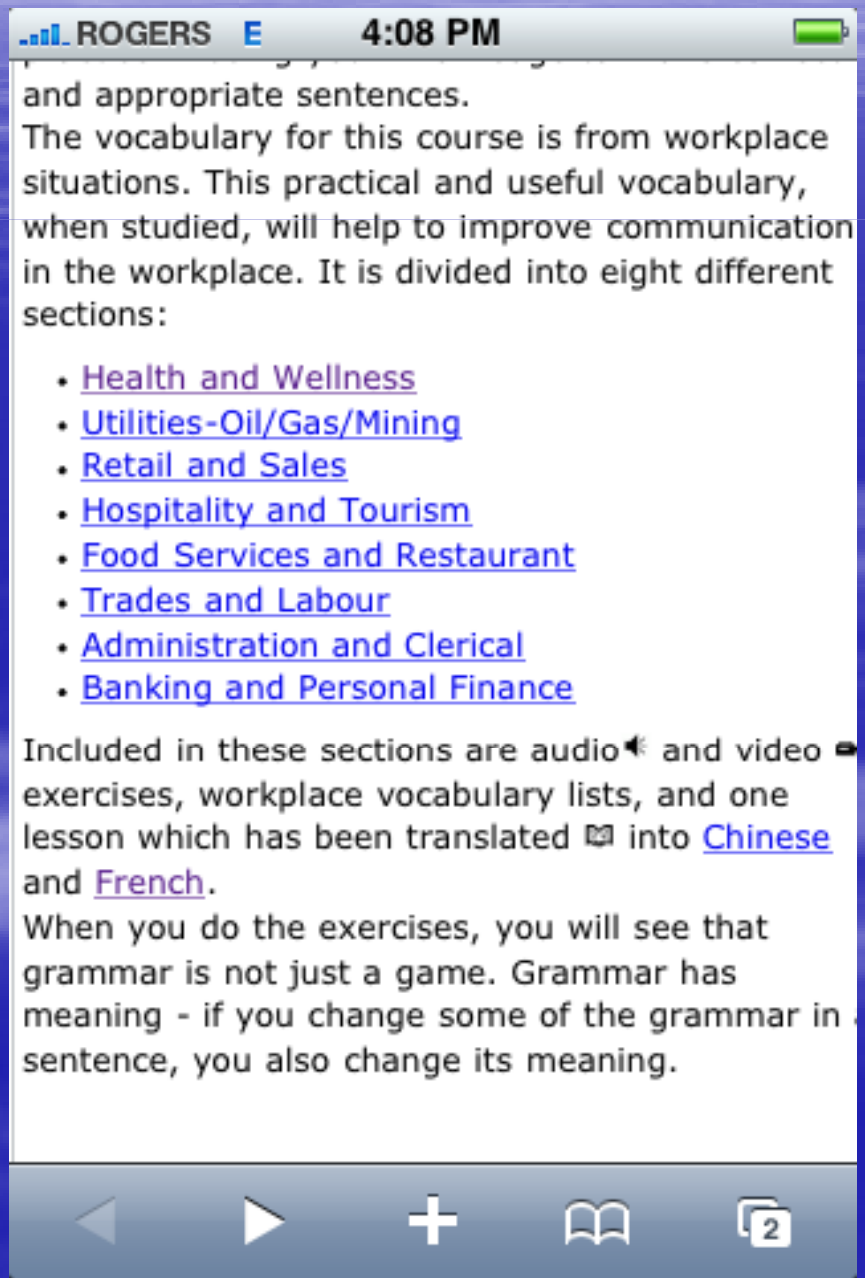
Language Training

Mobile Workplace English Project

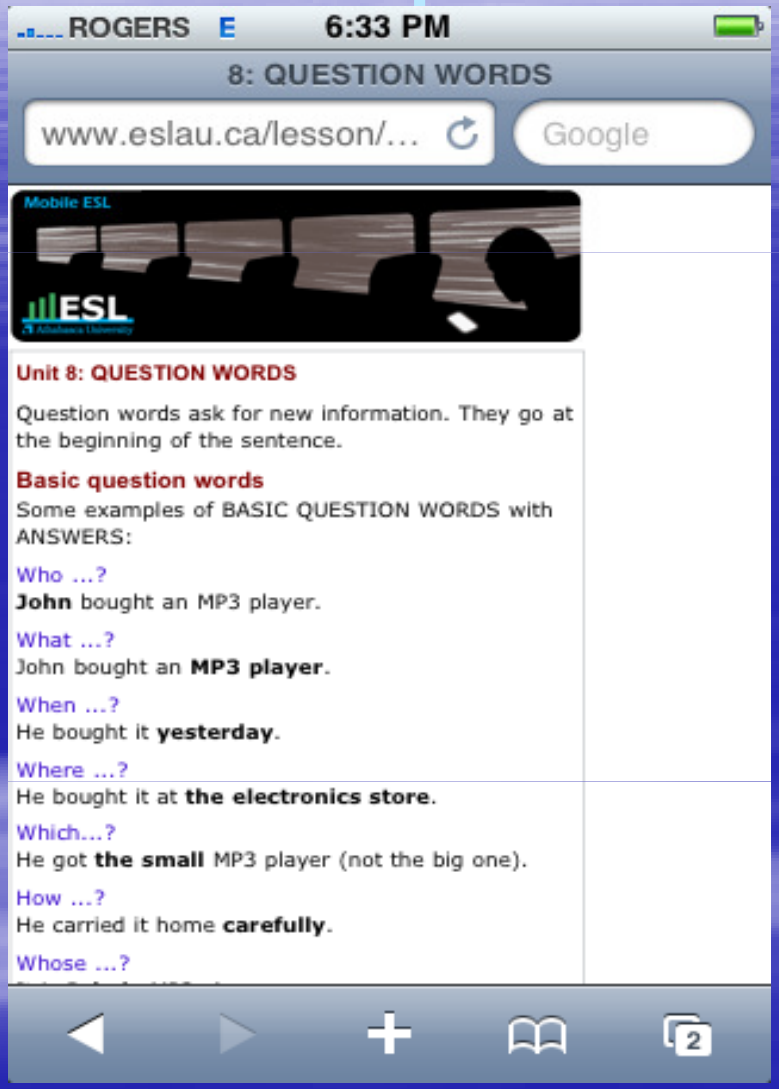
- Build on the success of Mobile ESL project
- Improve workplace communication
- Provide practical and useful vocabulary
- Introduce relevant situations

http://wpeau.ca

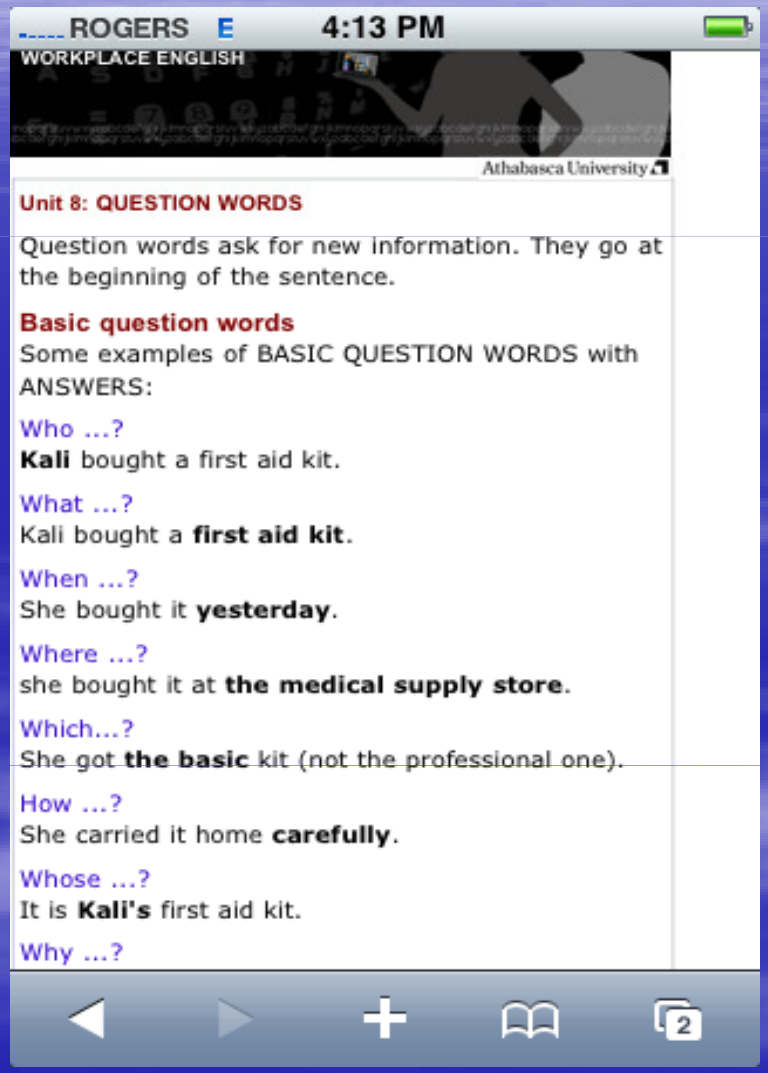
Mobile Learning Lessons in Different Sectors



Workplace specific grammar



Mobile ESL



Mobile WorkPlace English

French and Chinese translations

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wpeau.ca/ Google

Workplace English Introduction 中文 Français

This is a course of lessons and interactive exercises for practicing English grammar. It is divided into eighty-six sections. The exercises are not all the same length. Some exercises have only five questions, but others have up to nine questions. This course tests your knowledge of English grammar and, more importantly, it gives you practice in using your knowledge to make correct and appropriate sentences.
The vocabulary for this course is from workplace situations. This practical and useful vocabulary, when studied, will help to improve communication in the workplace. It is divided into eight different sections:

- Health and Wellness
- Utilities-Oil/Gas/Mining
- Retail and Sales
- Hospitality and Tourism
- Food Services and Restaurant
- Trades and Labour
- Administration and Clerical
- Banking and Personal Finance

Included in these sections are audio and video exercises, workplace vocabulary lists, and one lesson which has been translated into Chinese and French.

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Unit 8: QUESTION WORDS

Pronoms, adverbes et adjectifs interrogatifs

Question words ask for new information. They go at the beginning of the sentence.
Les pronoms, adverbes et adjectifs interrogatifs sont utilisés pour obtenir de la nouvelle information. Ils sont placés au début de la phrase.

Basic question words

Les pronoms, adverbes et adjectifs interrogatifs de base

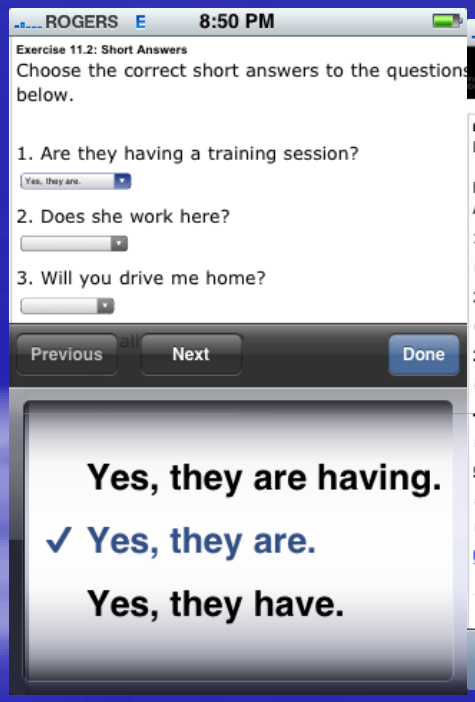
Some examples of BASIC QUESTION WORDS with ANSWERS:
Quelques exemples de PRONOMS, ADVERBES ET ADJECTIFS INTERROGATIFS DE BASE avec les RÉPONSES:

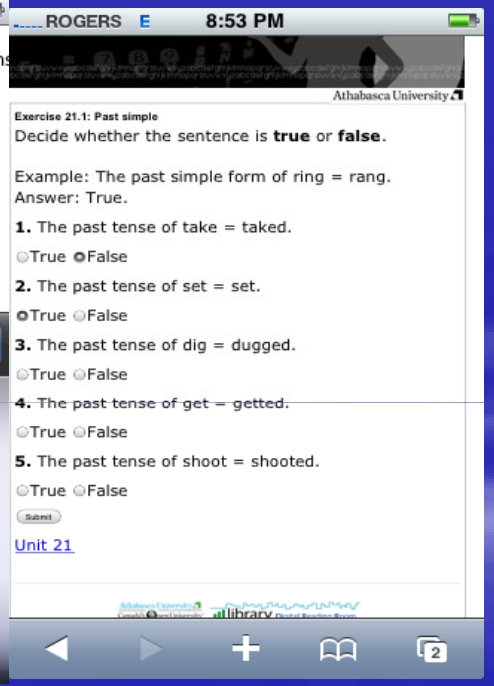
Who ...?
Qui ...?
Kali bought a first aid kit.
Kali a acheté une trousse de premiers soins.

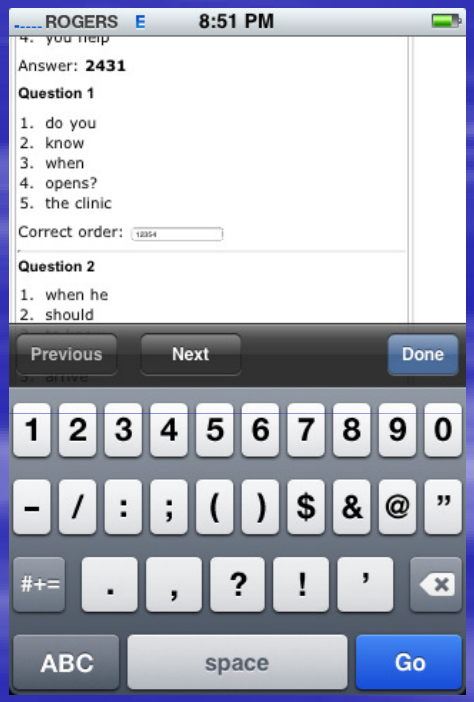
What ...?
Quoi ...?
Kali bought a **first aid kit**.
Kali a acheté une **trousse de premiers soins**.

Interactive Exercises

M/C, True/False, Matching, Word Order



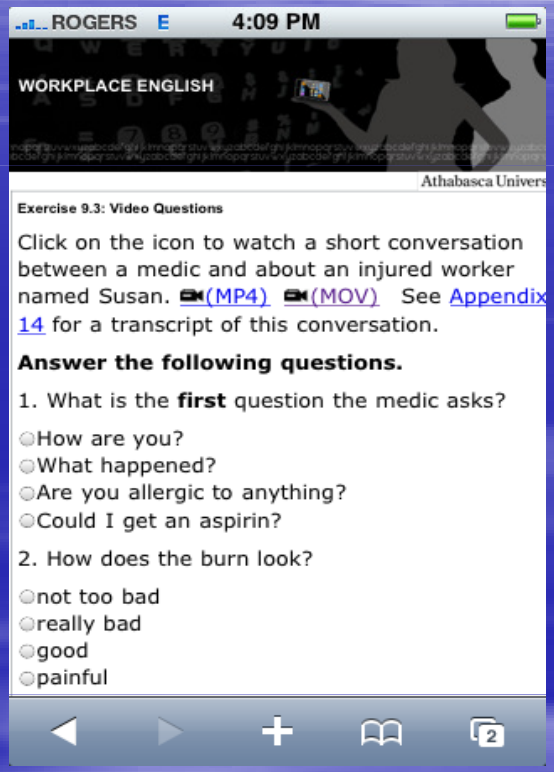




Multimedia Features -audio

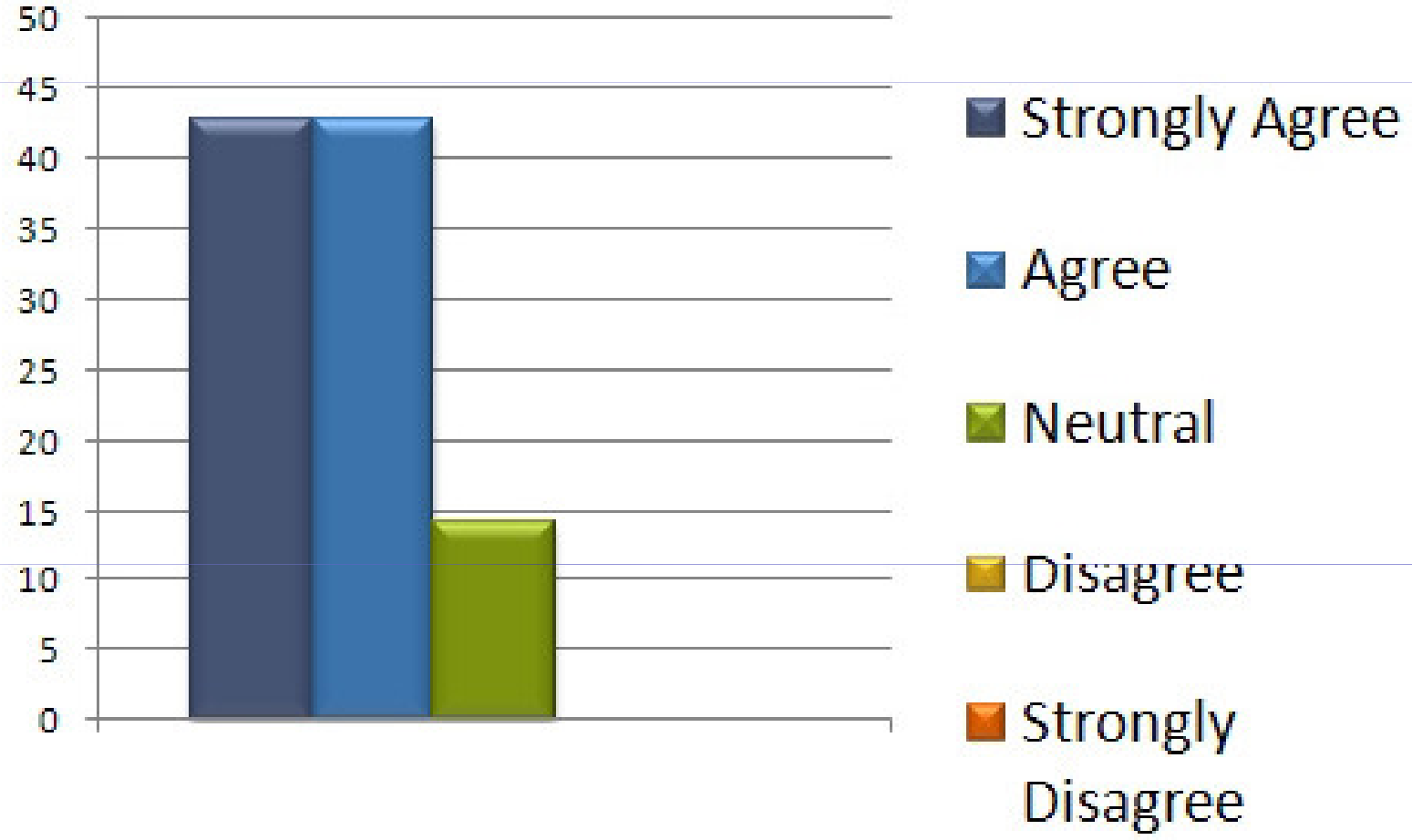
- Vocabulary lists
- Dialogues
- Audio questions

Multimedia Features -video

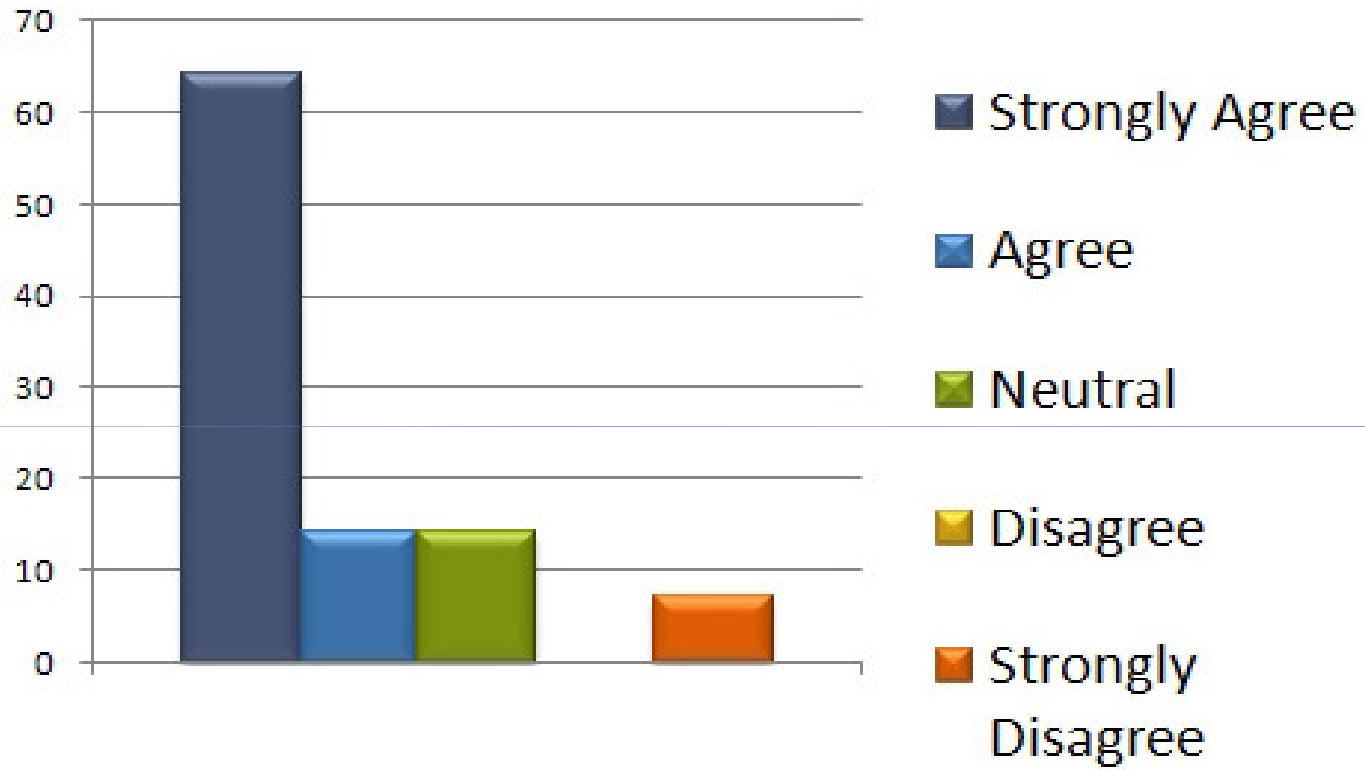


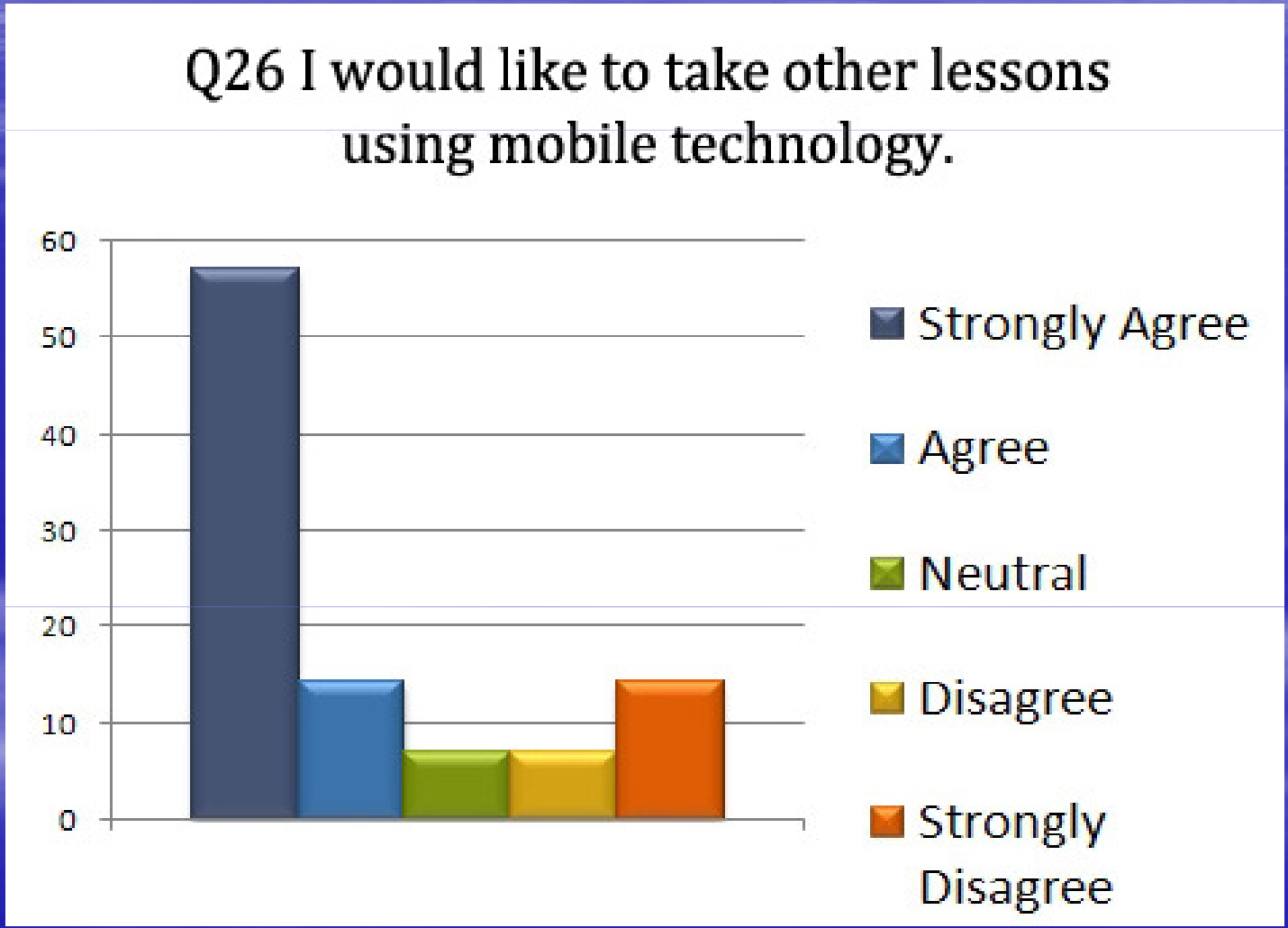
- Health and Wellness video followed by interactive questions

Q7 The technology provides flexibility for me to learn anywhere and at anytime.



Q14 The use of this type of technology could make learning materials more easily available.




Q26 I would like to take other lessons using mobile technology.
60
50
40
30
20
10
0
Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree

Examples of Mobile Learning Projects At Athabasca University

- Mobile phones in Language Training
- Mobile phones for accent reduction
- Convert courses for delivery on any technology, including mobile technology
- Use of mobile technology by Indigenous peoples from around the world, especially in remote locations, to access information and learning materials from anywhere and at anytime.

Future Research

Research Needed

- How to design for learners on the move
- Most effective interfaces for mobile and virtual devices
- Learning style of different cultures and mobile learning
- How to design information rich content for small display devices
- What are the characteristics of mobile technology for different cultures
- Interactivity on mobile devices

Future Directions

- Virtual devices
- Immediate assembly of learning materials
- Intelligent agents to adapt the interface for the learner
- Intelligent training materials (e.g. learning objects) to cater for individual learner needs
- Open Education Resources (OER)
- Less use of textual materials – more multimedia

Thank you

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