m-Learning Solution for Training English

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Introduction

• **Aim of this work:** create a mobile-learning application, to help Qatar Petroleum (QP) trainees to learn workplace English.

• It will not replace but enhance the conventional method of learning.

• **Advantages:**
  - Learn beyond classroom walls
  - Learn faster
  - Learn anytime, anywhere.
  - Learn with fun 😊
Project Objectives:

✓ Investigate m-learning approaches to deliver English language training for oil and gas industry workers.

✓ Consider limited memory and processing capacity of handheld devices.

✓ Investigate effective use of learning object repositories for m-learning.

✓ Develop, deliver, and evaluate a pilot model of m-Learning objects
  ✓ (based on a module of English content used for training by Qatar Petroleum (QP) instructors.)

✓ Evaluate the improvement due to using mobile devices to improve their work efficiency.

✓ Determine ways in which the m-learning model for English training, as suggested in this study, can transfer to other industries.
The Project Methodology for Mobile Learning

- Requires a learning path through which the learning objects are asynchronously presented through a sequence of slides.
- Test the newly gained knowledge through a set of questions.
- The trainee does not need to go over a learning path. He can explore on his own the available learning content that interests him.
- Allows trainees and instructors participating in a learning session to communicate via mobile devices.
Description of System services

- Instructor
- System Administrator
- M-Learning System
  - Develop Learning Objects
  - Post Learning Objects
  - Update learning Objects
  - Download Learning Objects
  - Manage Accounts
  - Select Course
- Trainee
Communication Use Cases Diagram

Instructor

Communication
- Send Email
- Receive Email
- Send SMS
- Receive SMS
- Join Topic
- Create Topic in Forum

Trainee
High Level Architecture
class diagram
Activity diagram
Database design
User interface design

Starting screen

M-Learning
for Training English at Workplace

A joint production by Qatar University and Qatar Petroleum’s Corporate Training Department

Read the following log entries and choose the best one. Think carefully about each entry. Is there any important information missing?

- HVAC unit tripped. Now checking in progress.
- HVAC unit tripped @ 11:10 hrs. Checking in progress.

Correct
Implementation

- Instructor
- Administrator
- Authoring tools
- Learning objects
- Server
- Pulling learning objects
- Open connection
- Learner mobile handset
- Forum
- E-mail
- SMS
- Learning through exposition
- Assessment tools
- Learning through exploration
- Learning objects

m-Learning system components for training English at workplace
Platform Deployment Diagram
Tools

Android based mobile device such as Samsung Galaxy II

Laptop

Eclipse IDE 3.6 (Helios) or greater

Android SDK and AVD manager.
Qatar Petroleum – Qatar University M-Learning Pilot Results

Test Averages from All Pilots (27 Learners, 5 oil & gas companies, 3 loc.)

<table>
<thead>
<tr>
<th>Pre-Test</th>
<th>Post-Test</th>
<th>Net % Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>62.7%</td>
<td>78.9%</td>
<td>+16.2%</td>
</tr>
</tbody>
</table>

![Graph showing pre-test and post-test results](image)
# Learner Feedback – Questionnaire on m-Learning Pilot

Survey breakdown for analysis

<table>
<thead>
<tr>
<th>Category</th>
<th>Characteristic</th>
<th>Question #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware</td>
<td>Easy to use</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Convenient</td>
<td>2</td>
</tr>
<tr>
<td>Application</td>
<td>Easy to navigate</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Quality of presentation</td>
<td>8</td>
</tr>
<tr>
<td>Lesson slides</td>
<td>Easy to understand</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Helped memorize</td>
<td>5</td>
</tr>
<tr>
<td>Assessment activities</td>
<td>Easy to understand</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Engaging</td>
<td>7</td>
</tr>
<tr>
<td>Overall</td>
<td>Perceived effectiveness</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Would use mobile learning again</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Would recommend mobile learning to others</td>
<td>11</td>
</tr>
</tbody>
</table>
How easy did you find the navigation through the mobile course?

- Extremely easy: 41%
- Very Easy: 59%
- Somewhat easy: 18%
- Not easy: 4%

Is it more convenient to have information and content in mobile phone or in books?

- Mobile phone only: 41%
- Mostly mobile phone, with books for support: 41%
- Mostly books, with mobile phone for support: 18%

Did you find the Lesson Slides easy to understand?

- Definitely: 6%
- Yes: 41%
- Somewhat: 53%
- No: 6%

Did you find the Assessment Activities engaging, that is, did they hold your interest??

- Definitely: 53%
- Yes: 47%
- Somewhat: 4%
- No: 0%
Pilot Photos
Conclusion

• **Development of learning objects**
  - Learning objects were developed according to the chosen learning approaches and devices capabilities.

• **Pulling the learning objects**
  - Application’s platform can successfully pull the learning objects from the server and download it on the mobile phone.

• **Mlearning proved useful for Oil and Gas industry**
  - >16% improvement in results after using m-learning.

• **Extension to other industrial sectors**
  - Mobile learning system can be easily extended to sectors other than oil and gas, like healthcare.
Future work and recommendations

- Application provided in other industrial and educational fields
- Implement the communication approach: such as the forum, sending e-mails and SMSs
- Providing the capability for the user to post the learning objects into the server
- Providing appropriate authoring tools can be implemented to achieve better expandability for the system.
Thank You

Q & A