Investigation into students preferred interface on mobile devices and their pedagogic performance

Presentation for AACE Conference

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Outline of Presentation

• Introduction
• Aims of the research
• Background
• Motivation of the study and research questions
• Approach
• Selected key findings
• Conclusions and future work
Introduction

• Technology in Higher Education within Saudi Arabia is in a state of growth

• Increased motivation to study via m-learning as part of a blended education approach

• Courses taught in Arabic with English Language as a core module in all degree programmes

• Gender segregation with traditional and cultural expectations impact on Saudi educational system

• Key opportunity to investigate how m-learning could assist students to learn across a number of different degree programmes
Aim of Research

To investigate how m-learning can be used to complement the teaching of compulsory English modules within Higher Education Courses in Saudi Arabia

• How m-learning can be integrated into the learning process
• Specific role of the user interface (Avatars)
• Effectiveness on teaching and learning
• Applicability across different degree programmes
• Educational gender segregation and cultural aspects
Technological Growth

- Smartphone penetration figure is set to rise to 84% in Saudi Arabia by end-2016, among the very highest anywhere in the world (Kart Whitfield 2012)

- The incorporation of mobile technology and pervasive learning can enhance the effectiveness and accessibility of learning activities anywhere any anytime (Cochrane 2010, Leong et al. 2013)
m-Learning in Saudi Arabia

• Mobile learning brings new opportunities of learning (Al-Fahad, 2009)

• Plays a key role in Saudi Arabia by promoting and facilitating access to good education without a gender bias (Al-Alwani, 2005; Baki, 2004)

• Multi-aspects need to be considered e.g. psychology, acceptance of the technology, social and cultural issues (Baker, et al. 2007)
Experience, Engagement & Effectiveness

- Using smartphones may increase the students satisfaction, engagement and learning efficacy/efficiency (Seliaman & Al-Turki 2012)

- Students find it interesting to learn and easy to retain educational content if the course is highly designed on mobile device (Huang, 2010)

- Interaction with an avatar is a crucial factor to affect learning performance (Huang, 2010)

- Direct instruction is an approach to learning where students remain engaged and focused while achieving desired learning outcomes (Pham, 2011)
Avatars

• **Definition**: An avatar is a simple or complex visual representation of characters on the interface to represent the instructor as an assistant intending to improve communication and interaction (Haake, 2006).

• **Examples**
  - Instructor static photo avatar, smiley face,
  - Animated and conversational tones avatar
  - Cartoon avatar

• **Usage of avatar**: can appear as instructors, virtual teachers, presenters, guider and a tutor
Purpose of Study & Approach

• To study how m-learning can be used to complement the teaching of compulsory English modules within Higher Education Courses in Saudi Arabia

  • How prepared/willing are students to adopt mobile learning?

  • What type of mobile interface avatar (text, image, cartoon, audio, and video) interface is most engaging to students?

  • Is the student’s preferred interface the most pedagogically effective?

  • Are there gender differences between preferences and performance or cultural aspects associated with gender segregated education?

• Research Approach is a mixed methods approach incorporating both quantitative and qualitative techniques
Data Collection Stages

Pilot study

Pre-questionnaire Interface Experiments
Post-questionnaire
(Stage 1)

Co-creation Workshop

First Analysis & result

Final Analysis Result of the study

Interface Experiments (Stage 2)
Experimental Procedure

General pre-Questionnaire

Traditional class
Via mobile device text and audio
Talking head static male photo avatar text+audio+photo
Animated male photo avatar text+audio+photo
Carton avatar
Talking head static female photo avatar text+audio+photo

(75 st.) Male & (75 st.) Female, Science & Art Student Albaha University, Saudi
Female student only

Pre-test for the targeted sample to assess their information of the lesson

Traditional face to face
Delivering a mini lecture via each avatar type through students’ mobile phones with English language lessons

Post-test for the targeted sample to compare levels of the performance

Post-Questionnaire for all experimental participants
Selected Key Results & Findings

Convenience of m-learning:

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<th>Male</th>
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Importance of avatar interface type:

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Results and Findings

Preference of avatar interface type:

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<th>Female Preference</th>
<th>Male Preference</th>
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| Performance for video/then cartoon:
| Text       | 3%                | 9%              |
| Static Image| 23.2%             | 12.7%           |
| Cartoon    | 29.4%             | 16.4%           |
| Audio      | 3%                | 9%              |
| Video      | 35.3%             | 52.7%           |

Performance (test scores out of 14):

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<tr>
<td>Video</td>
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<td>6.9</td>
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Conclusions & Further Work

- A study is being conducted into how m-learning can be blended into the Higher Education in Saudi Arabia

- Different avatars based m-learning interfaces have been used to deliver English Language lecture material to students on both Arts and Science-based courses

- Evaluation is underway with regards to students’ engagement with the technology and their performance across different avatar types

- Analysis has found that there is some correlation between some preferred avatar interfaces and m-learning performance but not all and there are some gender distinctions

- Experiments are planned to investigate these findings further
Thank you very much
Any Questions?

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