HOCHSCHULE RUHR WEST
UNIVERSITY OF APPLIED SCIENCES
INSTITUT INFORMATIK

Getting Serious About a Platform Independent Application for the Usage of Mobile Moodle Quizzes: A Case Study

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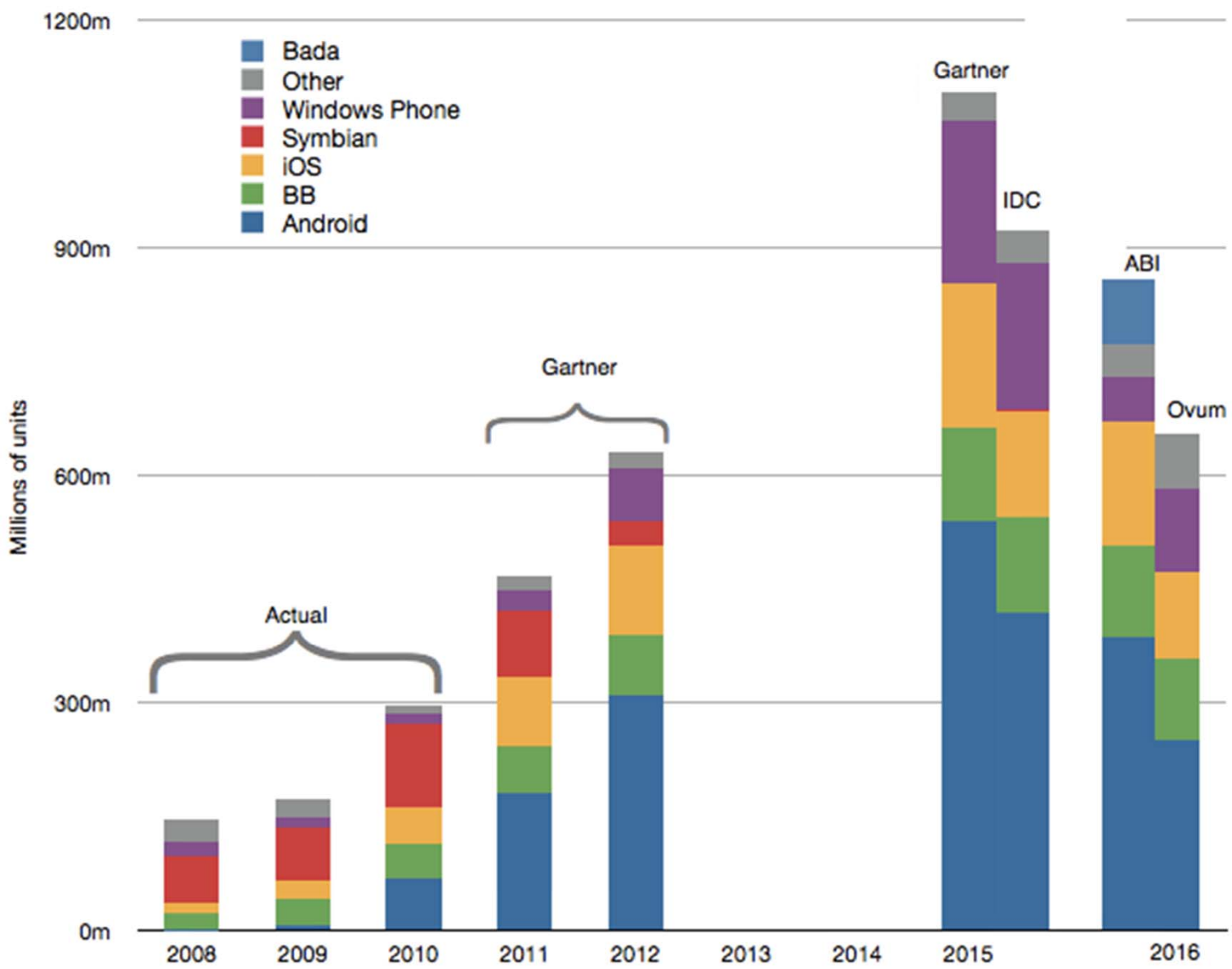
Contents

Introduction

Smart Devices Getting in (Almost) Every Student‘s Bag



Source: Gartner Smartphone Forecast

No unified Architecture or OS







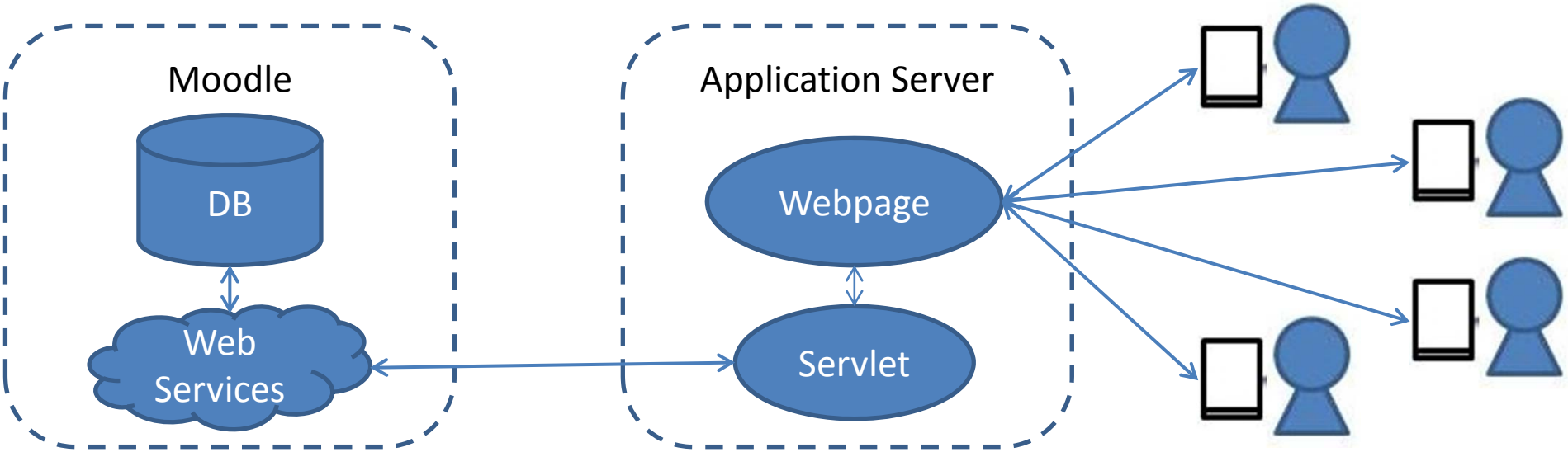

Image Sources:
Webpages of the different companies

Development and Research Goals

- Development Goals
  - System that supports access to quizzes of Moodle eLearning system
  - Minimal modification effort for porting to another OS
  - Running on different device types (e.g. screen size and resolution)
  - Intuitive user interface
- Research Goals
  - Suitable software architecture
    - flexibility and performance
  - User acceptance
  - Preferred field of application

The System

Technical Implementation

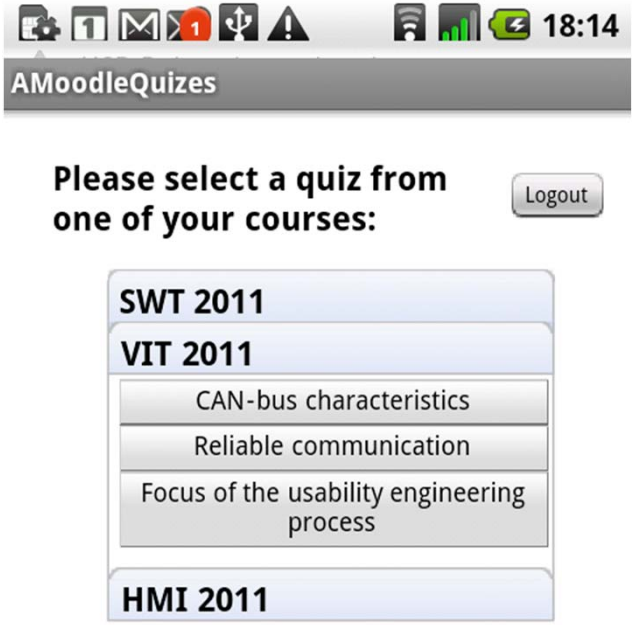


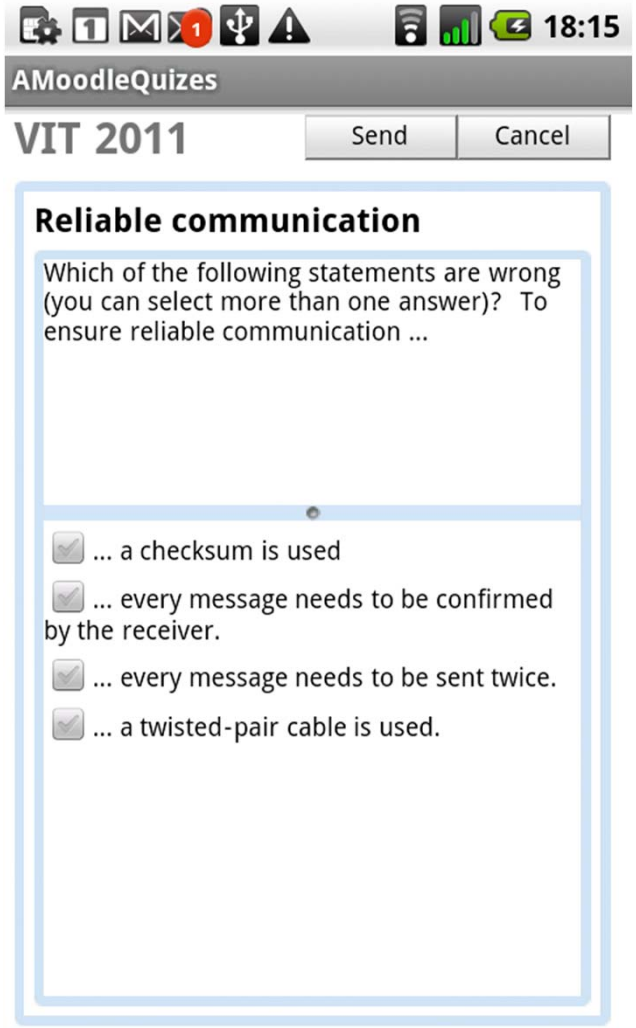
Mobile Devices App Based on HTML5 and JavaScript using GWT

The Mobile Application

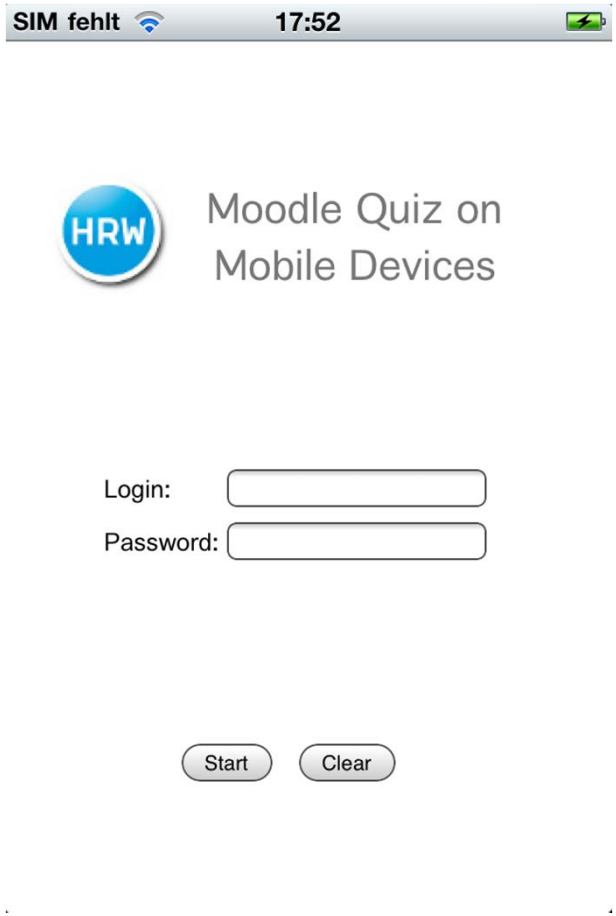
- App developed to optimize UI (compared to generic Webbrowser usage)
- Using HTML5 and Javascript leads to easy portability to other modern OS for mobile devices
- Limited functionality to Moodle quizzes
  - allows quick access to desired function
- Designed UI to work on different screen sizes and resolutions

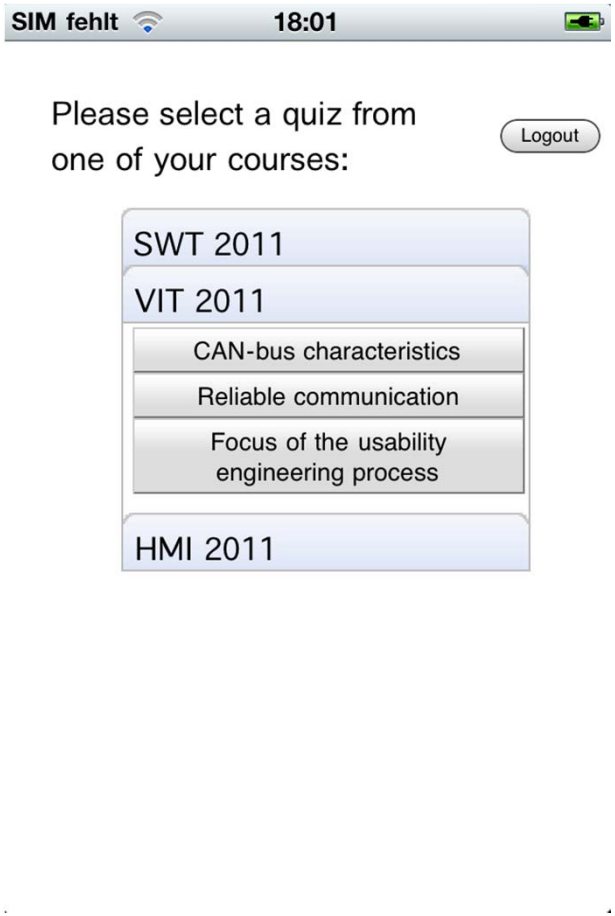
Screenshots from an Android Device

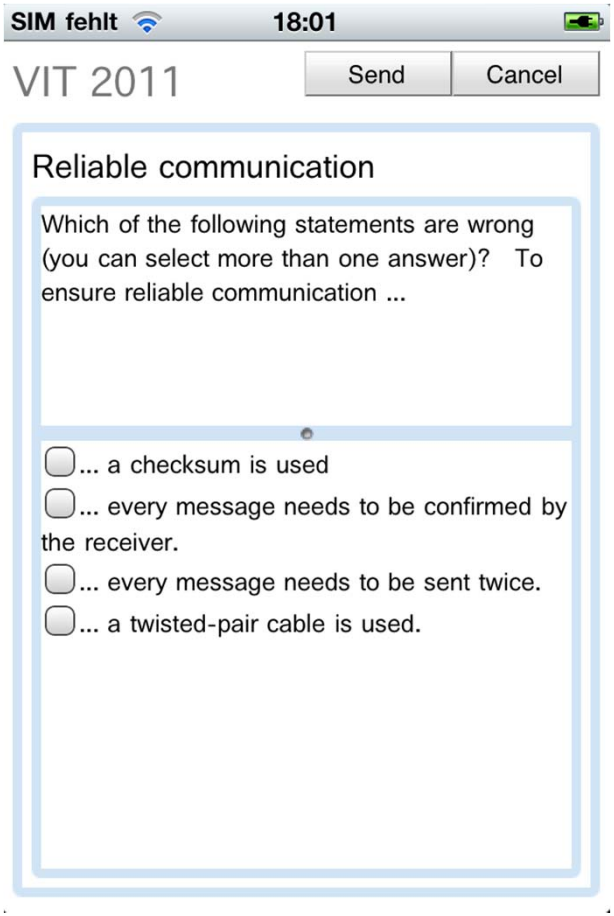




Screenshots from an Apple iPhone







The Case Study

Technology Acceptance Test

- Based on technology acceptance model
  - as published by Davis, F. D.; Bagozzi, R. P.; Warshaw, P. R.: User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. In: Management Science 35(8): 982-1003. 1989.
- Adapted to fit to eLearning environment
- To categories of questions
  - Perceived Usefulness
  - Perceived Ease of Use
- 7-level Likert scale for rating

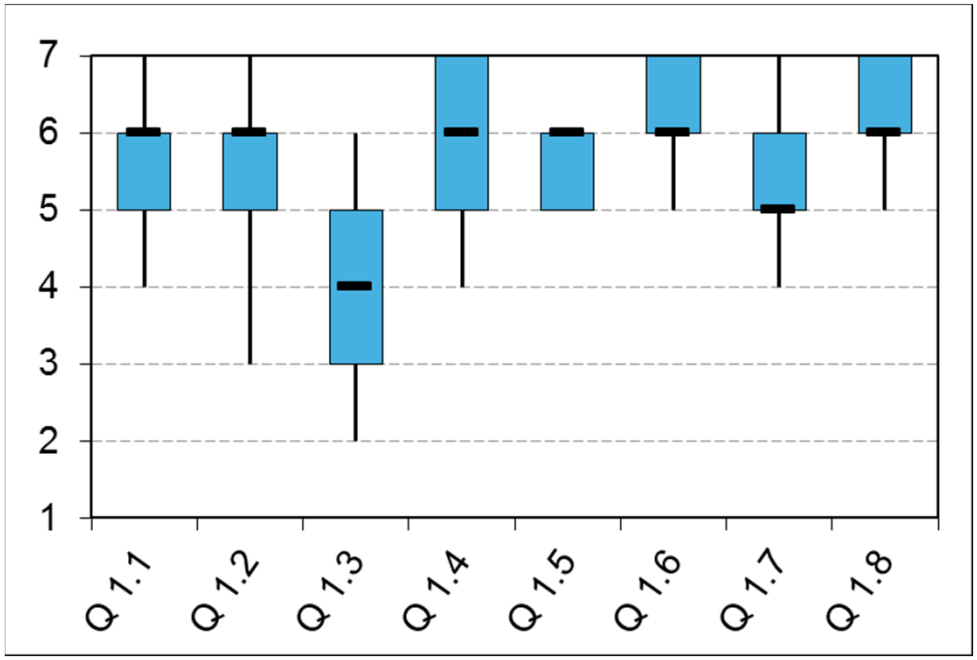
Questionaire

PU – Perceived Usefulness	PEU – Perceived Ease of Use
The MobileMoodleQuiz app …	
Q1.1: … helps me to repeat content and to deepen it	Q2.1: … is easy to learn
Q1.2: … with time and location independent access allows me to use the Moodle system more often and helps to better understand the learning content	Q2.2:Reverse: … is unflexible in its usage
Q1.3: … used in lessons and excercises helps me in to follow the lecture and to understand the learning content more efficiently	Q2.3: … is easy to handle and reacts as assumed
Q1.4: Reverse: … usage limits my productivity in formal learning settings	Q2.4: … handling is easy to understand
Q1.5: … eases the enduring learning	Q2.5: Reverse: … makes it difficult to remember how to achieve certain exercises
Q1.6: Reverse: … hindered the enduring learning	Q2.6: Reverse: working with the app is exertive
Q1.7: … helps me to increase my course achievements	Q2.7: … is overall user-friendly
Q1.8: … is overall meaningful for usage university	

Conducting the Test

- Participants
  - N=17 students applied of computer science
  - 7 used iOS, 10 Android
  - 12 experienced, 5 inexperienced
- Execution
  - Getting familiar: free trial
  - 1st task: find out available quizzes
  - 2nd task: quiz with short question text and few answers
  - 3rd task: quiz with long question text and many answers

Results: Perceived Usefulness



Reverse questions rated with 8-*value*

Overall average: 5.62, std. dev.: 0.46; high value for usefulness

Cronbach's alpha: 0.55, low consistency, further evaluation with improved questionnaire, more specific test material and improved test environment necessary

The MobileMoodleQuiz app …
Q1.1: … helps me to repeat content and to deepen it
Q1.2: … with time and location independent access allows me to use the Moodle system more often and helps to better understand the learning content
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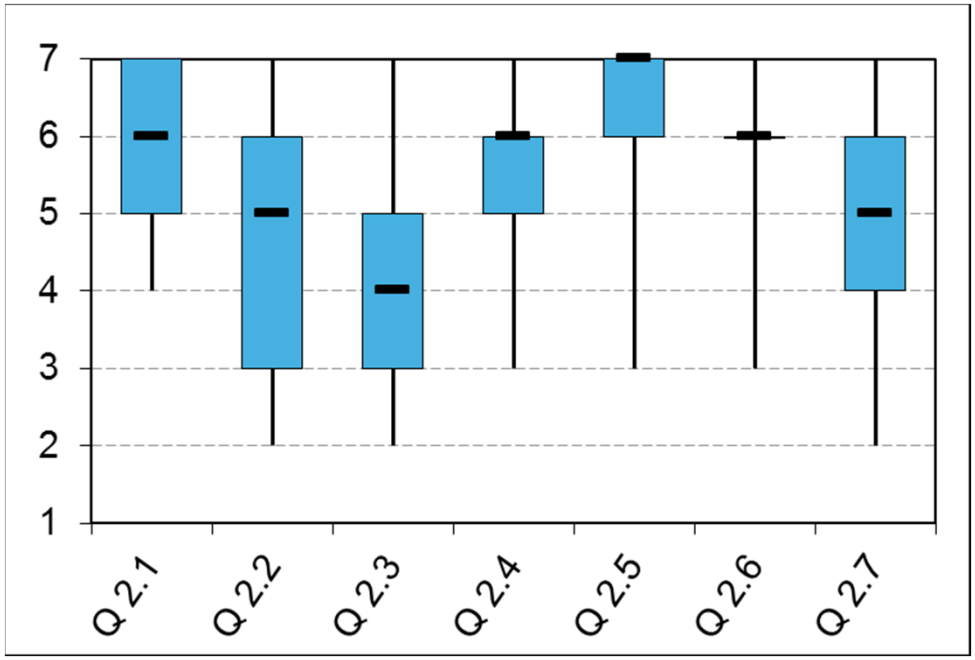
Results: Perceived Ease of Use



The MobileMoodleQuiz app …
Q2.1: … is easy to learn
Q2.2:Reverse: … is inflexible in its usage
Q2.3: … is easy to handle and reacts as assumed
Q2.4: … handling is easy to understand
Q2.5: Reverse: … makes it difficult to remember how to achieve certain exercises
Q2.6: Reverse: working with the app is exertive
Q2.7: … is overall user-friendly

Reverse questions rated with 8-*value*

Overall average: 5.3, std. dev.: 1.03; high value for ease of use, detail improvements were suggested and will be implemented

Cronbach's alpha: 0.89, high consistency

Summary and Outlook

Summary and Outlook

- The evaluated system offers quick access to quizzes if the Moodle eLearning system
- Usefulness confirmed, more detailed study on preferred field of application required
- Ease of use for platform independent user interface confirmed, details can be improved
- Future work
  - provide more types of questions
  - larger study with application over a complete semester
  - comparison with other existing mLearning approaches

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