Oral presentation

Better quality in healthcare through gamified simulation based skill training application

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I will follow

Introduction

Introduction
Introduction
Theory
Method
Results
Discussion and Conclusions
Introduction
Abdominal aortic aneurysm (AAA)

Each year 1000 events of death in Sweden.

Since 2008 all men, at the age of 65 in VGR are offered screening for AAA.
Introduction

Wide aorta
Irregular walls of aorta
Plaque, snaky (serpentine)

Normal aorta
Regular walls of aorta
Introduction

Wide aorta
Irregular walls of aorta
Plaque, snaky (serpentine)

Normal aorta
Regular walls of aorta

Hard to measure
Easy to measure
The purpose

Explore if a gamified simulation based online training application could be a viable and acceptable solution helping the screening personnel to train measuring the abdominal aortic diameter in ultrasound images.
The goal

to design a usable skill training application (Aortaspelet) helping the screening personnel to measure abdominal aortic diameter in ultrasound images with better precision.
Introduction

Theory

Method

Results

Discussion and Conclusions
Theory

- User centered design
- Educational theories
  - Behaviourism
  - Information processing
  - Constructivism
Introduction
Theory
Method
Results
Discussion and Conclusions
Method

The Goal Directed Design process

- Research
- Modeling
- Requirements Definition
- Framework Definition
- Refinement
Method: Research

- Interviews with stakeholders
- Field study
  - Observation of the personnel
  - Interviews with the personnel and questionnaires about learning of work practice
Method: Modeling

- Persona
- Workflow model
Method: Requirements Definition

- Persona's expectations
- Context scenarios
Method: Framework Definition

- Form
- Elements
- Operations on elements
Method: Refinement
Evaluation methods applied in this design process

- Heuristic evaluation
- Testing paper prototypes with end users
- Cognitive walkthrough
- Usability testing of an interactive prototype
Introduction
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Results
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Results: Research

Results of the interviews with three stakeholders
-requirements of stakeholders:

- Skill training twice a year
- Continuous quality improvement and control for experienced personnel
- Comparison with others
Results: Research

Results of the observation of and interviews with personnel:

- characteristics of the personnel
- details about their work
Results: Modeling

Persona – a textual portrait representing users with similar behaviour, attitudes, aptitudes, goals and motivations

Persona Erica is a 45 years old Biomedical Analyst (BMA) that:

● is confident of handling ultrasound machine
● always works together with a colleague
● ....
Results: Requirements Definition

Persona's expectations

- training application should be similar to an ultrasound machine
- to rewind the sequence back and forth
- to get feedback on the angle of measurement
Results: Refinement
Results of usability testing of interactive prototype

- Usability goal 1: (HELP markers) no one should need help
Results: Refinement

Results of usability testing of interactive prototype

- Usability goal 1: (HELP markers) no one should need help
  - What are HELP markers?
Results: Refinement
Number of times test participants needed help by task

![Bar chart showing the average number of HELP markers needed by test participants for each task.](image-url)
Results: Refinement
Results of usability testing of interactive prototype

- Usability goal 2: (Satisfaction scores) to obtain 90 of 100 System Usability Scale scores
Results: Refinement
Results of usability testing of interactive prototype

- Usability goal 2: (Satisfaction scores) to obtain 90 of 100 System Usability Scale scores
  - Test 1: 55 scores
  - Test 2: 59 scores
Introduction
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Methods
Results
Discussion and Conclusions
Discussion

- Involvement of end-users was valuable
- There is a lack of game based on line skill training applications
- Scenarios helped me as a designer to picture and imagine different design solutions
- Playing the game is still problematic
  - Watching the sequence and handling the slider at the same time is hard
Conclusion

- Prototype of Aortaspelet isn't fully usable yet

- Material collected during the usability evaluation can be used in the next design iteration and lead to more usable design
http://vgregionen.com/aortaspel
Thank you for listening!

Questions?

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