Evaluating the Combination of two User-oriented Usability Evaluation Methods: Thinking-aloud and Questionnaires

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Introduction

- **Usability Evaluation** is a popular research topic [1] and an important aspect of software engineering.
- Assessing the Usability is **more important today** than it was in the past.
- **Research Problem**: There is no method, which assesses the three major usability aspects (as they are defined in ISO 9241: effectiveness, efficiency, satisfaction) at **once**.
- We used two well known **user-oriented** Usability Evaluation methods: Thinking-aloud and questionnaires.
- Our findings were evaluated in a **case study**.

Approach: Overview

![Method Combination](image)

<table>
<thead>
<tr>
<th>Approach</th>
<th>Results of the Case Study</th>
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</thead>
<tbody>
<tr>
<td><strong>Context Analysis</strong></td>
<td>Analysed content, design and structure</td>
</tr>
<tr>
<td></td>
<td>Students / researchers</td>
</tr>
<tr>
<td></td>
<td>Information about: Lectures, projects, ...</td>
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<td></td>
<td>Test-Session in environment of the user</td>
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<tr>
<td><strong>Introduction Questionnaire</strong></td>
<td>28 participants: 20 students (target group), five researcher (target group), three professional web developers (benefit from experience)</td>
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<tr>
<td></td>
<td>Two different questionnaires: Introduction questionnaire, System Usability Scale questionnaire (modified version [2])</td>
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<td></td>
<td>Two different Task-Paper</td>
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<tr>
<td></td>
<td>Evaluated website: <a href="http://swe.informatik.uni-goettingen.de">http://swe.informatik.uni-goettingen.de</a></td>
</tr>
<tr>
<td><strong>Task-Paper</strong></td>
<td>Modified version of the Questionnaire: The word system was replaced by website [2].</td>
</tr>
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<td></td>
<td>SUS-Score of 78.75 points (median): Higgest difference at the statement about future website usage and the integration of website functions</td>
</tr>
<tr>
<td><strong>Evaluation</strong></td>
<td>Evaluation of time, number of clicks, steps to reach a goal, aborts</td>
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<td></td>
<td>Evaluation via a voice recorder and a handwritten test-session protocol</td>
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</table>

Table 1: Overview of the used approach and its application to the case study.

Acknowledgements

Special thanks go to Patrick Harms, who supported me not only during the project, but also during the whole afterwork. Additionally, I like to thank Verena Honsel for her input and Jens Grabowski for the opportunity to do this project at his research group.

Case Study: Overview

- **28 participants**: 20 students (target group), five researcher (target group), three professional web developers (benefit from experience)
- **Two different questionnaires**: Introduction questionnaire, System Usability Scale questionnaire (modified version [2])
- **Two different Task-Paper**
- **Evaluated website**: [http://swe.informatik.uni-goettingen.de](http://swe.informatik.uni-goettingen.de)

Discussion & Conclusion

The results give information about the **effectiveness**, **efficiency** and **satisfaction** of the website.

- **Effectiveness**: Were users able to solve the tasks? Measured: **Aborts**.
- **Efficiency**: How long did it take and was the shortest way chosen? How was the psychological strain? Measured: **Time**, **Clicks**, **Comments of Users**.
- **Satisfaction**: Were the expectations fulfilled / excelled? Measured: **Comments of Users**, **Expectations**, **SUS-Score**.

With our approach we were able to determine all three major usability aspects, as they are defined in ISO 9241 at once.

References


Further Research

- **More case studies**
- **Other method combinations**: E.g. methods from another class than user-oriented evaluation methods
- **Different Questionnaires**