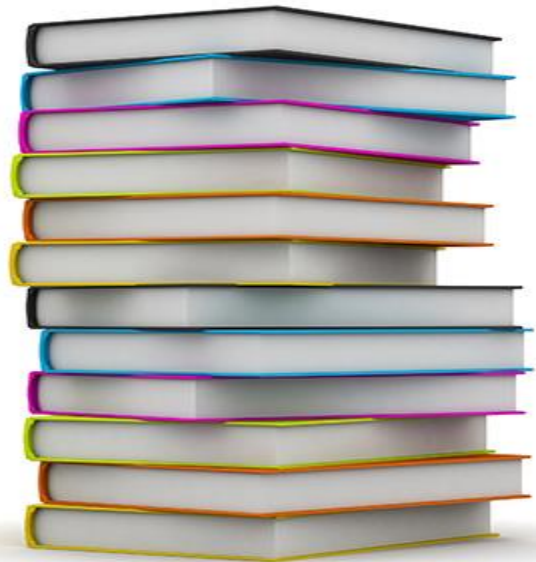


Usability investigation of University Library Website from the Students' Perspective



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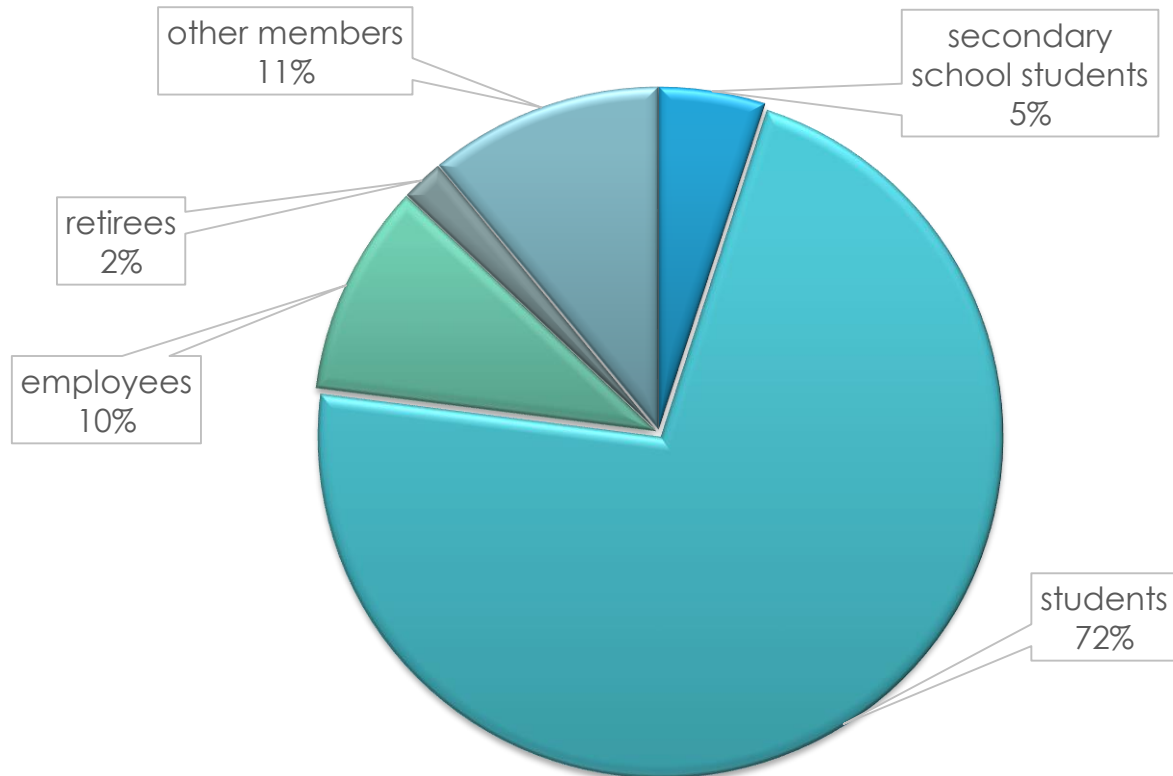
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Agenda

- Motivation
- Usability evaluation methods
- Research
 - Research goals
 - Methods
 - Execution of the research
 - Data collection protocol
 - Results
- Conclusion

Motivation

- The University library is primarily intended for students and university staff, but library membership is open to all citizens above fifteen years of age.



We were interested in how usable the university library website is for students.

Web usability

- In general: a quality characteristic that describes how easily a user can navigate across a website.
- The term usability represents a combination of several properties and attributes.
- Nielsen and ISO 9241-11 definitions are the most widely cited:
 - Nielsen defines usability as an aggregation of five attributes: learnability, efficiency, memorability, errors and satisfaction.
 - **The extent to which a product can be used by a specified user to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use (ISO/IEC 2018).**

Usability evaluation method

- Usability evaluation methods are classified into two general categories:
 - empirical methods (involve real-users; focus group, interviews, questionnaires, surveys, **formal usability testing**) and
 - inspection methods (based on reviewing the usability with expert evaluators or designers; heuristic evaluation, cognitive walk-through, pluralistic walk-through and formal inspection).
- During a test, participants will try to complete tasks while observers watch, listen and takes notes. The goal is to identify any usability problems, collect qualitative and quantitative data and determine the participant's satisfaction with the product.

Research

- Research goals:

(1) To evaluate the websites' use with the students through the concepts of usability as defined in ISO.

- Effectiveness as “accuracy and completeness with which specified users can achieve specified goals in particular environments”.
- Efficiency as "resources spent by a user in order to ensure accurate and complete achievement of the goals".
- Satisfaction as “the comfort and acceptability of the work system to its users and other people affected by its use”.

(2) To evaluate the usefulness of the library website for the students.

- A website is denoted as usable if at least in 75% of cases participants are able to complete the tasks successfully by themselves.

Research

- Methods
 - The usability evaluation was based on the following methods:
 - (1) Formal usability testing,
 - (2) Think-aloud protocol and
 - (3) Questionnaires.

Research

- The usability test was performed by tool called Morae:
 - (1) Morae Manager – used to manage data,
 - (2) Morae Recorder – used for the preparation and execution of usability testing,
 - (3) Morae Observer – used for monitoring events on the participant's screen and for the management of observational data

Research

- Environment
 - Usability evaluation was conducted individually per each participant in a controlled environment in the presence of two researchers:
 - the modeller (led the whole testing process and communicated with participants) and
 - the observer (monitored the situations and took notes about all participants' comments when they were thinking aloud).

Research

- Execution of the research
 - Before beginning with the usability evaluation, a pilot test was performed.
 - Potential participants were invited via email to participate in the research.
 - 5 students responded to an invitation.
 - The best results come from testing no more than 5 users and running as many small tests as you can afford (Nielsen, 2000).
 - On the scheduled day, the modeller had a welcome speech and presented the structure and instructions for testing to the student.
 - If a student did not have any questions, he/she started with the testing procedure.

Research

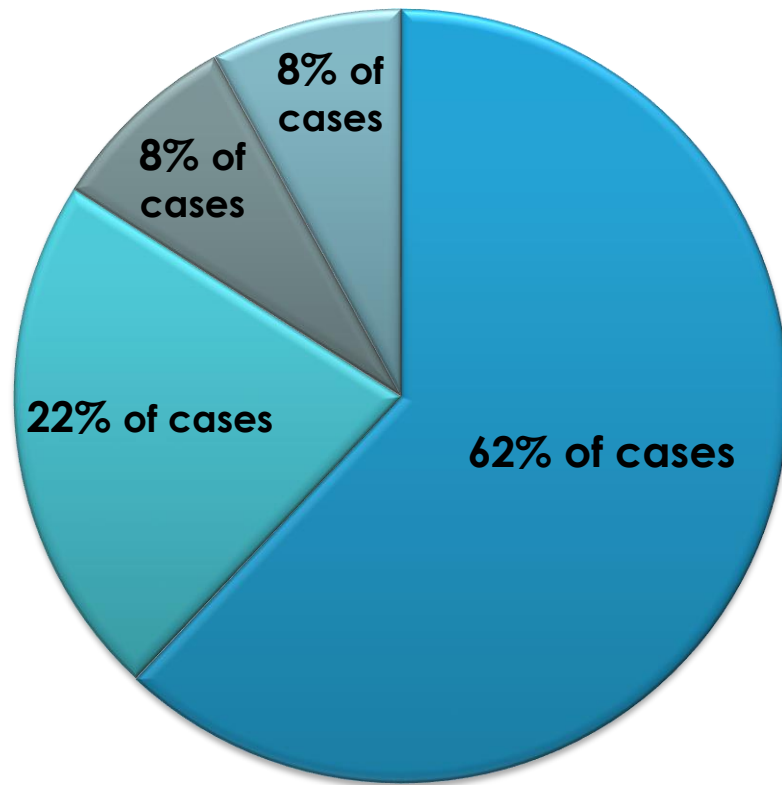
- The evaluation was divided into three sections:
 - **Questionnaire I.** - a questionnaire with six close-ended questions, which acquired the participant's demographic information.
 - **Performing tasks** - formal usability testing, which consisted of ten tasks and presents the information for the measurement of effectiveness and efficiency.
 - Effectiveness was measured by successful task completion.
 - Efficiency was measured by the time needed to complete the tasks.
 - **Questionnaire II.** - based on the standardized questionnaire System Usability Scale (SUS) and presents the information for measurement of satisfaction. Students' satisfaction was measured by the five-point Likert scale and evaluated with the SUS protocol.

Research

- Data collection protocol
 - The empirical data (i.e. successful task completion, task time, satisfaction level) were collected using the questionnaires and using formal usability testing with the Morae Recorder.
 - The qualitative data were collected using the think-aloud protocol (i.e. students' comments).

Results

- Task completion (effectiveness)



- Participant completed the task successful.
- Participant completed the task with a little help from the modeller.
- Participant completed the task with some help from the modeller.
- Participant completed the task with guidance piecemeal.
- Participant provided the wrong answer or gave up before completing the task.

Relationship between the levels of performed tasks

Results

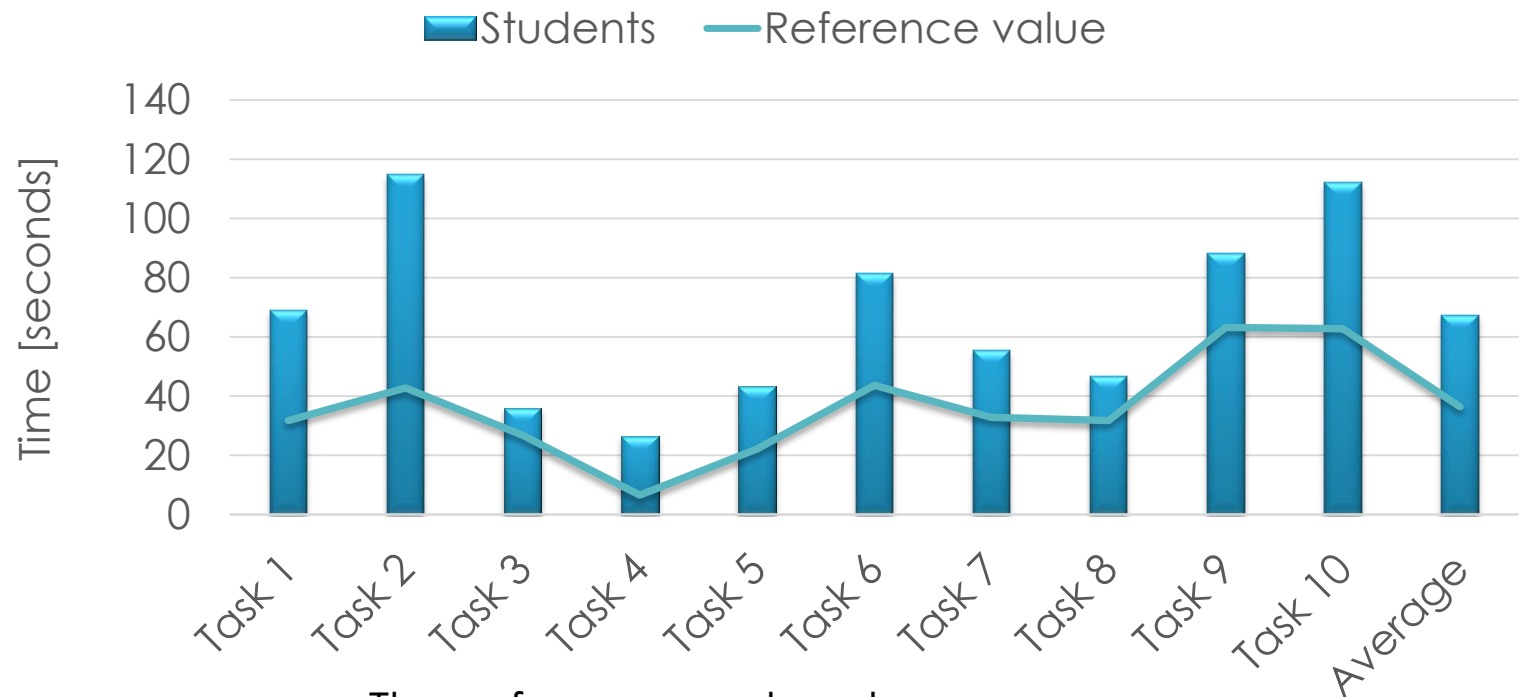
- Task time (efficiency)

On average, the students needed 67.35 seconds to complete the task, while the expert needed 36 seconds to complete the task.

The students' minimal task time was less than 27 seconds (Task 4), while the maximum task time was 114 seconds (Task 2).

The expert's minimal task time was less than seven seconds (Task 4), while the maximum task time was 63 seconds (Task 9).

Average time for each task and the reference value



The reference value shows the results based on testing by an expert.

Results

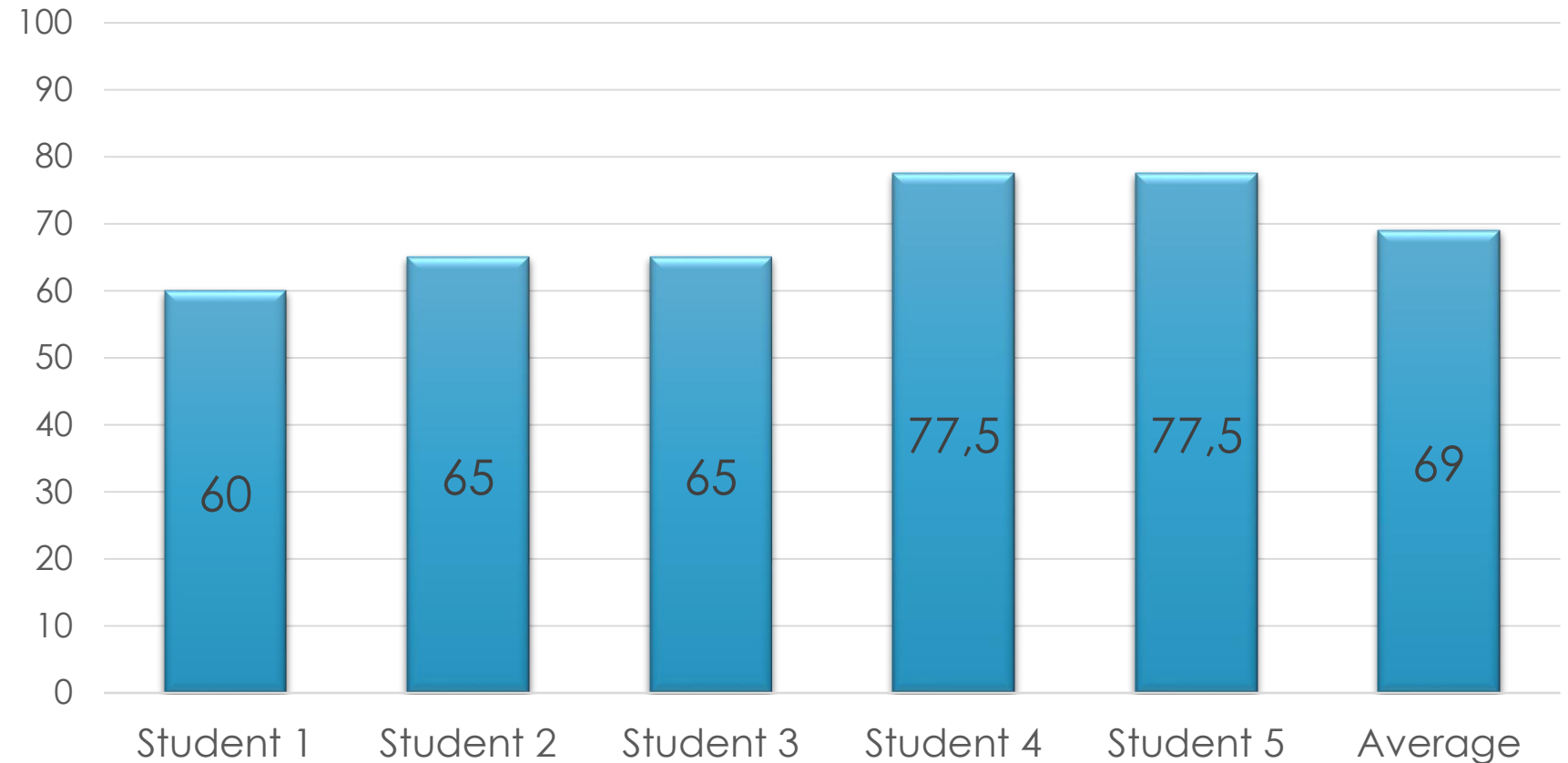
- Satisfaction

The results of students' satisfaction with using the website were between 60 to 77,5 points. In average, the students (69 ± 8.023) expressed above-average satisfaction with using the website.

The results are interpreted by Sauro's reference limits.

A SUS score above a 68 would be considered above average and anything below 68 is below average.

The results of satisfaction per participant



Results

- Based on think-aloud protocol, the most common problems were identified:
 - Complex column sorting (3/5)
 - Not enough contrast between font color and background color (2/5)
 - Unclear warning message (2/5)
 - Problem with login to account (2/5)
 - Unclear information about borrowing a book (2/5)
 - Too small fonts (1/5)

Conclusion

- The results of formal usability testing indicate that none of the students achieved a 75% success rate, which is the threshold for a usable website.
- Most of students completed the task successfully by themselves.
- In average, the students expressed above-average satisfaction with using the website.

Thank you for your attention!