

Usability meets assessment:

Equal chances in education

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Luxembourg, 10 November 2011



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UNIVERSITY OF LUXEMBOURG
Educational Measurement and
Applied Cognitive Science (EMACS)

Overview

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Context:
Assessment
& usability

2

Concrete
examples
& usability

3

Methodology:
How to
evaluate
usability



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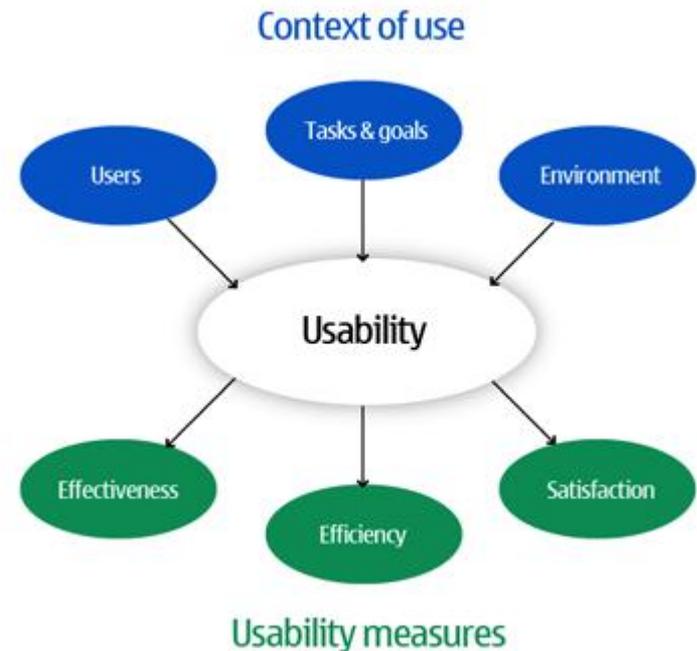
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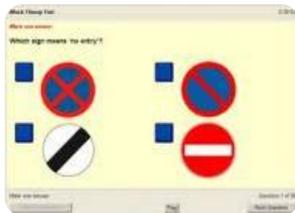
Definition

ISO 9241-11 standard:

„the extent to which a product can be used by specified users to achieve specified goals with **effectiveness**, **efficiency** and **satisfaction** in a specified context of use“.



Lack of usability – possible situations and consequences for the test takers of computer-based assessments:



Failing of a **driving theory test** due to **misinterpretation** of function and design of the test.



The **human resources agency** may obtain a **different profile** of the skills of the job candidate.



A **student** may get a **low score** in a computer-based assessment.



Central objectives of our research project

- We suppose that, whenever people are **not able to interact** with the interface of a computer-based assessment adequately, they are **not able to fully demonstrate** his or her level of **proficiency**.
- Moreover, we expect that an **optimized** usability computer-based assessment instrument would **encourage** people to show their **actual level of proficiency**.
- **Removing** usability **barriers** supports accurate and objective assessment of proficiency and **equal chances** to work through the assessment.



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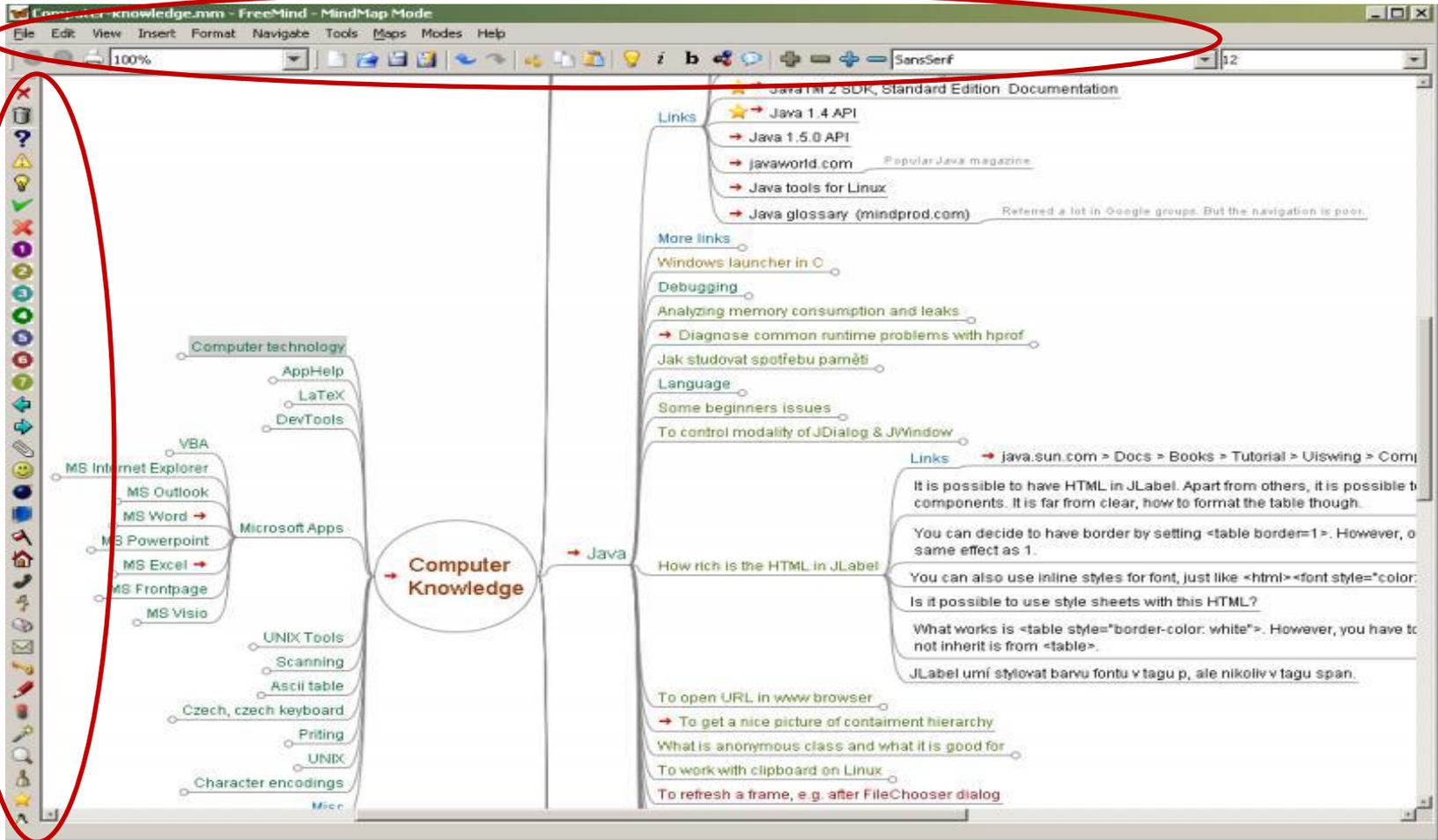


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Example 1: FreeMind



Example 2: Visual Thesaurus

The screenshot shows the Visual Thesaurus application in a Mozilla Firefox browser window. The browser's address bar contains the URL <http://www.visualthesaurus.com/app/view>. The browser's navigation bar includes buttons for BACK, FORWARD, and a search box containing the word "Collection". To the right of the search box are buttons for LOOK IT UP, EDIT, PRINT, SHARE, and HELP. Below these are tabs for HISTORY, WORD SUGGESTIONS (40), MY WORD LIST, and SETTINGS.

The main content area displays a word network centered on the word "collection". The network consists of the following words connected to "collection":

- assemblage
- aggregation
- accumulation
- assembling
- collecting
- compendium
- collect
- solicitation
- ingathering
- appeal

On the right side of the page, there is a sidebar with several sections:

- NOUNS** (ON/OFF): Contains definitions such as "several things grouped together or considered as a whole", "a publication containing a variety of works", "request for a sum of money", and "the art of gathering something".
- ADJECTIVES** (ON/OFF): A section header with no visible content.
- VERBS** (ON/OFF): A section header with no visible content.
- ADVERBS** (ON/OFF): A section header with no visible content.

A red oval highlights the browser's navigation bar and the sidebar area.

Example 2: Visual Thesaurus

The screenshot shows the Visual Thesaurus application interface. The search bar contains the word "connection". The main area displays a network diagram with "conjunction" at the center, connected to various related terms. The terms are: "continuative", "conjoin", "disjunctive", "conjoint", "cooperative", "concerted", "copulative", "connective", and "conjunctive". The word "conjunction" is highlighted with a red dot, while other nodes are yellow. The interface also includes a sidebar with categories like NOUNS, ADJECTIVES, VERBS, and ADVERBS, each with a brief definition.

NOUNS EN ON OFF
an uninflected function word that serves to conjoin words or phrases or clauses or sentences

ADJECTIVES EN ON OFF
connecting or tending to connect.
involving the joint activity of two or more
serving or tending to connect
syntactically connecting sentences or elements of a sentence.

VERBS EN ON OFF

ADVERBS EN ON OFF



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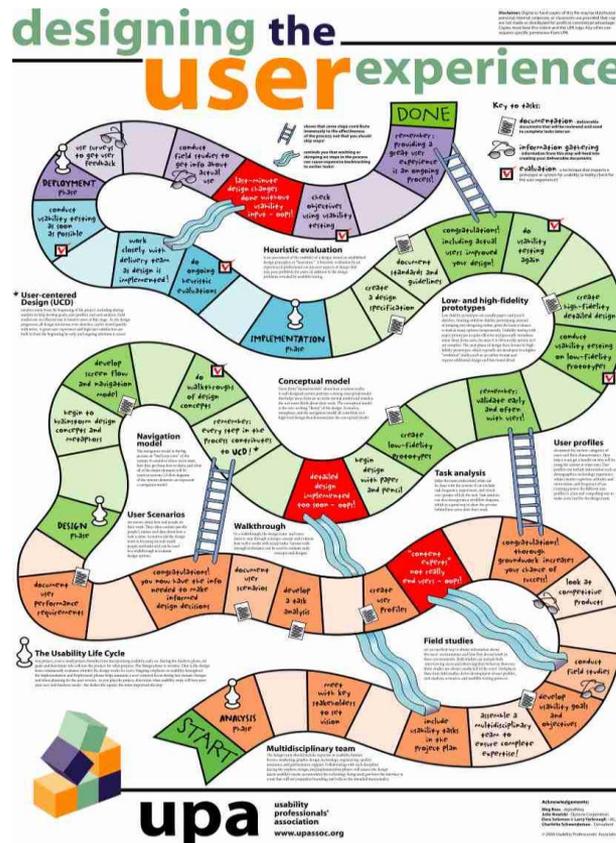


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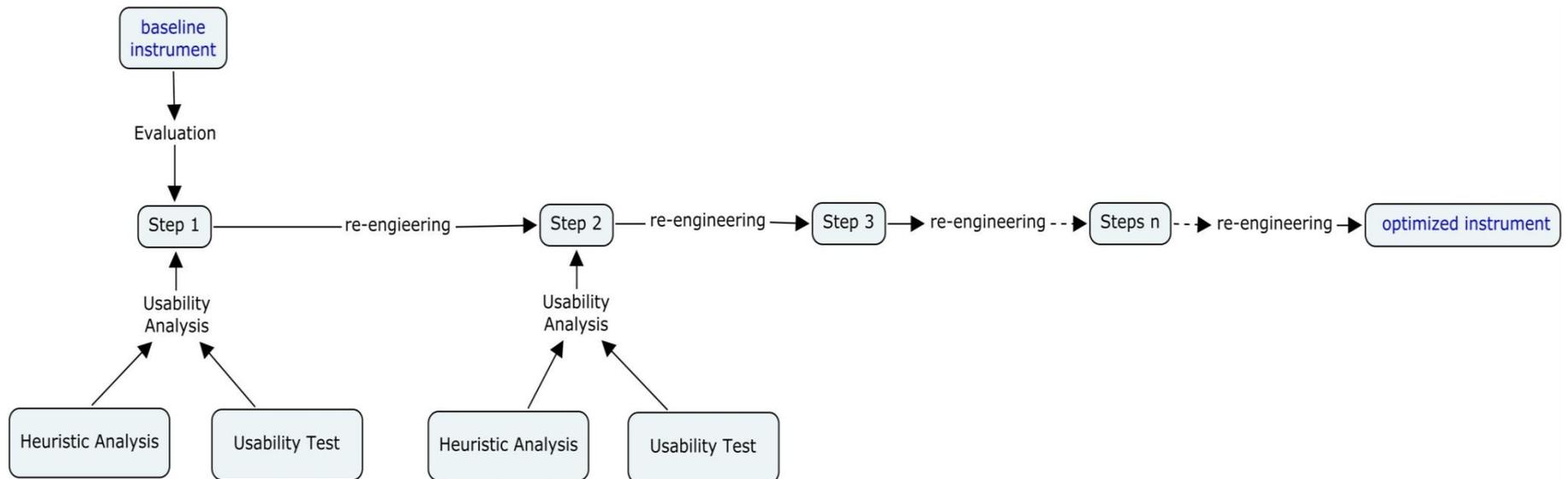
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Evaluation of the usability of the computer-based assessment application – somewhat inspired by the UPA „Usability Life Cycle“



Evaluation of the usability of the computer-based assessment application:

- Usability experts (Heuristic Analysis)
 - Student pilot studies (Usability Tests)
- } Results and feedback for re-engineering



The aim of the usability evaluation of the computer-based assessment application:

- Address the lack of usability
- Demonstrate and prove the impact of usability
- Verify the increase of usability
- Reduce barriers of interaction with the assessment instrument

➔ More **objective** and **valid measures** of proficiency

➔ **Equal chances** in computer-based assessments



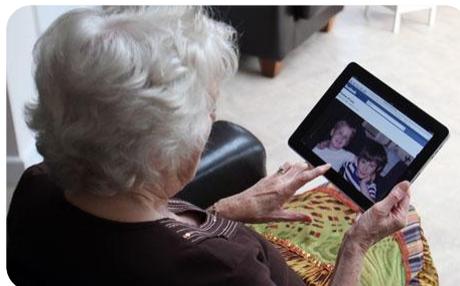
www.cts.umn.edu



www.atomicobject.com



www.johnnyholland.org



www.i.telegraph.co.uk



www.conversionmedic.com

Central objectives of our research project (Reminder)

- We suppose that, whenever people are **not able to interact** with the interface of a computer-based assessment adequately, they are **not able to fully demonstrate** his or her level of **proficiency**.
- Moreover, we expect that an **optimized** usability computer-based assessment instrument would **encourage** people to show their **actual level of proficiency**.
- **Removing** usability **barriers** supports accurate and objective assessment of proficiency and **equal chances** to work through the assessment.



Study 1: Development of instrument

- Development of an **optimized** computer-based assessment **instrument** with regard to **usability**.
- This will take place in our **Usability Lab**.



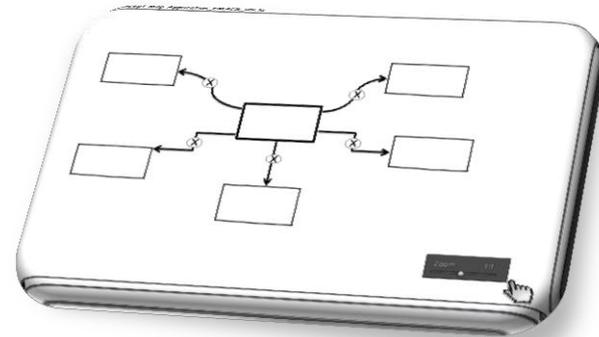
Study 2: School study

- Evaluation and comparison of the two assessment instruments
 - ➔ Optimized vs. baseline (not optimized) version
 - ➔ A sample of 200 students will be randomly assigned

- We expect: students working with the **optimized version** will be able to demonstrate their knowledge with **higher effectiveness, efficiency and satisfaction.**



- Developing of the **computer-based assessment instrument**



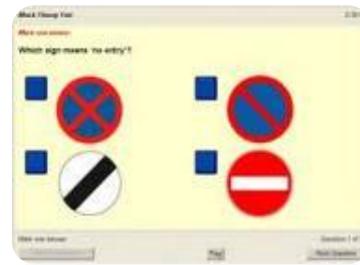
- Preparing the **Usability Analysis** (Heuristic Analysis and Usability Test)
- Designing of **project homepage**
- Start **user testing** in December



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- ➔ Shed light on the **relevance** and **impact of usability** for computer-based assessment.
- ➔ **Removing usability barriers** in computer-based assessment supports:
 - accurate and objective assessment of proficiency
 - equal chances



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THANK YOU!

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