Research Methodology and Scientific Writing, 2011, II2202

Qualitative method IV

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Usability testing

- The ease with which people can employ a particular tool
- Test interface of computer system / web sites (Human-Computer interaction)
  - Identify needed functionality
  - Identify design flaws
  - Contextual inquiry method in context of the users own environment

Usability testing

Issues when testing:

• How many subjects are needed?
• What test tasks are the subjects asked to perform?
• What criteria will be used to determine when the users have finished each of the test tasks correctly?
• What users aids (manuals, online-help) are available to the subjects?
Usability testing

• To what extent will the experimenter help the users during the test?

• What data is going to be collected and how will it be analyzed once it has been collected?

• What will be the criterion for pronouncing the interface a success?
Usability testing

Criterion Interface success - measurable:

• System start problems
• Successful start inserting information in the system
• Using the menu bar
• The frequent use of manuals and the time spent on it
• Controlling the task to be performed
• Looking in manuals
Usability testing

• Amount of “dead time” = Thinking time
• Number of user errors
• Time spent recovering from errors
• Number of times they say something negative about the system
• Ask for the help with the system
• Frustrating question to the experimenter
• Successful inserting right information in right place
Usability testing

• Problems noticed by the users
• Problems noticed by the experimenter
• Interest in continuing the work with the system
• Total time for the observation
Drawing task

• Concretizes their thoughts by drawing a picture of the system

• The picture could reflect the subjects’ thoughts about the systems contents

• The picture could reflect the users’ needs in an interface
Quality in research

• **Validity** (or trustworthy)
  ✓ Credibility – Sure that research has been conducted according to existing rules
  ✓ Respondents validation (objectivity) - Participants confirm that results are correctly understood
  ✓ Triangulation as confirmation method

• **Transferability** – Create rich descriptions that become database for others
Quality in research

• **Dependability** *(Reliability)*

  ✓ Use a reviewing point of view (auditing)

  ✓ Have a full and available report on every phase of the research process (auditing) :
    - *problem formulation, choice of participants, interview descriptions, analysis decisions*

  ✓ Use reviewers for the process – judge the correctness of the conclusions
Quality in research

• **Confirmability** – confirm that investigator has acted in good faith
  
  - No personal assessments
  
  - Not affect the result of the investigation
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Scientific Writing

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Scientific Writing

• Proposals
• Reports
• Master thesis
• Conference paper (- optional)

- write a proposal, a report in English
- write in good English in an acceptably academic style, using your own words
Earlier experiences?

• A thesis
• Technical reports
• Other reports
• Non-technical writing

-> Did you have and use writing instructions?
Difference in text

What characterizes different material academic / scientific / technical?

• Purposes
• Audiences
• Organization/structure
• Styles
• Content
• Presentation
Purposes

- Proposal?
- Report? (lab report or task report)
- Conference paper?
- Master thesis?

Is it to:

- Explain project ✓
- Inform ✓
- Persuade ✓
- Provide knowledge ✓
- More?
Audiences

- Other students?
- Supervisors or teachers?
- Other researchers or staff?
- Industrial sponsors?
- Public

- A combination of these above?

-> Write to meet their expectations
Purpose and audience affect the structure

For report and thesis:

- Aim is provide information fast
- The material must be read quickly
- The readers read selectively
- The readers expect to find specific information in pre-determined places

- Need informative headings
- Need informative structure/organisation
Before writing

Planning is important:

- Use keywords and outlines
- Begin writing a skeleton
- Revision

PLAN -> WRITE -> REVISE
Skeleton - example

• Describe the general background
  - knowledge-based systems, teaching strategies, learning styles
• Specify the background
  - knowledge-based systems for students and teachers
  - Incorporate learning objectives into knowledge-based system
• Provide design principles for systems
• Details about:
  - knowledge-based systems
  - teaching strategies
  - learning styles
Hourglass method

- Introduction (general to specific)
- Description
- Result (specific to general)
Hourglass method

• General description about the subject
• Detail information about the subject
• Tie together the description about the subject

(Result - Implication or conclusion)
Report / Thesis

- 1. Introduction
- 2. – 5. (6.) Main part
- 6. Conclusion (result)
2. Main part
- 2.1 Introduction section
- 2.2 – 2.5 Main sections
- 2.6 Result section

2.6 Main section
- 2.6.1 Introduction sub-section
- 2.6.2 – 2.6.5 Main sub-section
- 2.6.6 Result sub-section

- Absolutely NOT Goals: Methods:
1. “In a knowledge-based system, knowledge is acquired from a domain expert.”
2. According to Durkin (1994) the domain expert “is the person who possesses the skills and knowledge to solve a specific problem in a manner superior to others”.
3. The elicited knowledge can be categorized by e.g., procedural, declarative, meta-knowledge, heuristic, and structural knowledge (ibid).
4. In a knowledge-based system, the procedural and declarative knowledge types are commonly covered (Durkin, 1994).
Hourglass - example

1. **Introduction:** “In a knowledge-based system, knowledge is acquired from a domain expert.”

2. **Description:** According to Durkin (1994) the domain expert “is the person who possesses the skills and knowledge to solve a specific problem in a manner superior to others”.

3. **More details:** The elicited knowledge can be categorized by e.g., procedural, declarative, meta-knowledge, heuristic, and structural knowledge (ibid).

4. **Result:** In a knowledge-based system, the procedural and declarative knowledge types are commonly covered (Durkin, 1994).
Report / Thesis Introduction

Introduction

- Subject
- Background information
- Problem statement

Current situation

- The problem
- The causes
- The effects

Hypothesis

Purpose
- Main point
  /Significance
- Goals / Objectives
  - Benefits

Method for the report / thesis
- Literature
- Structure /Design

Limitations

Disposition
Report / Thesis

**Main parts**
- Detailed description about the subject / other topics
- 2-5 major findings

**Method**
- Research method (Q / Q)
- Research approach (D / I)
- Research design
- Data collection methods
- Data analysis
- Results
- Quality assurance

**Conclusions**
- 2-5 major recommendations
- Reflect introduction
  - Hypothesis
  - Purpose
  - Goal
- Discussion
  - The investigation
  - The report / thesis
- Further work
  - Look to the future
Authors’ guidelines are strict and detailed
✓ Section headings must be consistent and informative
✓ The text and references must be adjusted
✓ - Not irregular, follow standards
✓ Follow guidelines!

✓ Avoid I – can accept we
✓ Use formal expressions, not “colourful”
✓ Aim to express objectivity
Writing - I

To understand the state of the art of knowledge-based systems I conducted several Literature review. Moreover I tried to get a better understanding of the central topics within computer and system science and pedagogy. Within computer science I studied knowledge-based systems, different kinds of knowledge and reasoning strategies in knowledge-based system, knowledge management, and hypermedia systems. Related to pedagogy I did a literature review directed towards theories of learning, multiple intelligences and learning styles.
To understand the state of the art of knowledge-based systems we conducted Several Literature review. Moreover we tried to get a better understanding of the central topics within computer and system science and pedagogy. Within computer science we studied knowledge-based systems, different kinds of knowledge and reasoning strategies in knowledge-based system, knowledge management, and hypermedia systems. Related to pedagogy we did a literature review directed towards theories of learning, multiple intelligences and learning styles.
Writing - problems

To understand the state of the art of knowledge-based systems, we conducted several Literature reviews. Moreover, we tried to get a better understanding of the central topics within computer and system sciences and pedagogy. Within computer science, we studied knowledge-based systems, different kinds of knowledge and reasoning strategies in knowledge-based systems, knowledge management, and hypermedia systems. Related to pedagogy, we did a literature review directed towards theories of learning, multiple intelligences and learning styles.
Writing - problems

- For the author or for the reader?
  “To understand”  “we tried to get a better understanding”
- Repeat
  “Literature review”  <-> “we did a literature review”

- Plural?
  “conducted several Literature review”

conducted several Literature reviews

How many reviews for a thesis?
Writing

For the state of the art of knowledge-based systems, a literature review was conducted. The review captures central topics within computer and system sciences and pedagogy. Within computer science, knowledge-based systems, different kinds of knowledge and reasoning strategies in the field of knowledge-based systems, knowledge management, and hypermedia systems was studied. Related to pedagogy, the review was directed towards theories of learning, multiple intelligences and learning styles.

-> consider dividing the sentence into two sentences.
Presentation – Text

- A short and descriptive report /thesis title

- **Never** use title and subtitle *without* text in between

- Not too many levels (max four)
  2.6.2.1 – 2.6.2.5 For a sub-section or bold text without numbers

- One “thing” (topic) per sentence

- Not longer than 2-2.5 lines for a sentence

- If enumeration – more lines
Presentation – Text

- Not “aristocratic texts”
  - Not too many “old words”

- Not novel texts
  - Write “right forward”

- Put the verb in the middle
  - Not “left heavy” or “right heavy” sentences
Presentation – Text

- Use correct words:
  - The interviews “will only focus on” the students and teachers.
  - To “find out the thinking” of the participants
  - While “taking interviews”, make sure that they are brief or not waste time.

- Bridges between sentences
  - One a sentence does not follow from the preceding sentence
Presentation – Text

- ‘s or s’
  - Singular or Plural
  - User’s experience or users’ experience
    User’s experiences or users’ experiences

- The result’s validity
- The validity of the result
- The validity of the results

- The project’s hypothesis
- The hypothesis of the project
Presentation – Text

- Write in a “direct” form:
  - the investigation of socializing behavior
  - investigating socializing behavior

- The project will investigate on how
- The project investigates how

- Plural for users and participants
  - Users’ experience, participants’ opinions

- Interviews, Observations, Results
"that" with restrictive clauses and "which" with nonrestrictive clauses

- That:
  - She took the test that was hard

- Which:
  - Collect data on this issue, which cannot be directly observed

The Van Gogh that was hanging in the foyer, which we purchased in 1929 for $10,000, was stolen.
- Not use **for example** and **etcetera** in the same sentence.

- Cut **so** (whenever it is possible)

- Not – And (together)

- … not using “ethnography” **and** “action methods”.

- … not using “ethnography” **or** “action methods”.

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References


Questions?