Users’ Image Seeking Behaviour in Multilingual Environments: experience in combining qualitative & quantitative data

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Definitions

- Cross-Language Information Retrieval (CLIR)
- Multilingual Information Retrieval (MLIR)
Study's Outline

- Test Object: FlickLing developed by CLEF organizers
- Task: search for the three known, non-annotated images
- Users
- Experimental Procedure
FlickLing

An online game for searching Flickr across language boundaries.
FlickLing

An online game for searching Flickr across language boundaries

Find this image

Search results 1-20 of 580 for windmill

You may also want to try with: sky, wind, holl...
Findings

- **Six** out of ten users employed typical IR search strategies
  - identify the setting of the image
  - extract the right keywords

- **Four** out of ten users recognized the importance of language when searching in a multilingual environment.
  - identify the language by paying attention to small details, such as a piece of writing, the colour usage, and the pictured landmark.

Reference

Mixed Methods Research

- The use of different methods to collect data and to answer research questions.

- Tashakkori and Teddi (2003)
  - mixed methods research can answer research questions that the other methodologies cannot
  - mixed methods research provides better (stronger) inferences
  - mixed methods provide the opportunity for presenting a greater diversity of divergent views.
# Mixed Methods Research

## Ways of combining qualitative & quantitative methods

- Triangulation or greater validity
- Offset
- Completeness
- Process
- Different research questions
- Explanation
  - Unexpected results
  - Instrument development
- Sampling
- Credibility
- Context
- Illustration
- Utility or improving the usefulness of findings
- Confirm and discover
- Diversity of views
- Enhancement or building upon quantitative/qualitative findings
- Other/ unclear
Mixed Methods Research

- Offset & Completeness
- Quantitative: Questionnaire & Qualitative: Observation, Retrospective Thinking Aloud, Interviews
- They extract different data (quantitative/qualitative)
- They overlap ensuring that no relevant data will be lost
- They enable the collection of both concrete and difficult to misinterpret data.
Questionnaire

- to gather information about the user sample
- to enable the formulation of questions to be asked during interviews regarding users' search behaviour and habits adopted in the specific study
Questionnaire

Pros
- Definition of the user sample characteristics and users' previous experience in each of the sections of interest.
- Short in length, concrete and easy to fill in as possible
  - to minimize the hassle to which users had to go through in completing it
  - to relieve the overload from carrying out the whole experiment (employment of four different methods)
  - to constrain the time spent on full-filing the various elements of the study.

Cons
- Not all users answered all questions
- Users withhold some information or provided contradictory data

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Observation

- to form an overview of the users' information seeking behaviour while performing the given task
- to form the necessary questions during the interviews based on the observations made
Observation

Pros
- Focus on specific areas, write comments, remarks and relevant questions for each user.
- Engage users in conversation asking him/her to explain why the user made that comment.

Cons
- The facilitator could miss the overall user interaction because he/she was focusing on specific elements of users' behaviour.
- Meaningless data or easily misinterpreted without users’ further comments and justifications of these actions.
- The users may have altered their search behaviour because they were observed.
Retrospective Thinking Aloud

- To derive findings entirely on users’ thoughts, comments and search behaviours.
Retrospective Thinking Aloud

Pros
- beneficial for the non-English native speakers since they could search thinking in their own language
- they could elaborate more and explain better their actions
- gain insights on users' information seeking behaviours,
- identifying the reasons why users were behaving in this way
- asking relevant questions during interviews

Cons
- Time consuming as a process
- The users were feeling tired

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Interview

- to clarify the answers provided in the questionnaires
- to clarify the specific actions of the user’s image seeking behaviour during the search session
- to clarify the users' expressions during retrospective thinking aloud
Interview

Pros
- Verification of specific sayings of the users during retrospective thinking aloud and of the users' answers in the questionnaire.
- Interpretation of the data gathered through observation, as users were asked to provide explanations on specific actions noted on the observation sheet.

Cons
- Short in length interviews because users were already tired and they were not willing to spend a long time on answering additional questions.
Discussion

- **Offset** way of combining research methods
  - **Questionnaire**:
    - define users' characteristics
    - provide hints on users' search behaviour
  - **Observation**
    - identification of specific search behaviours and actions
    - meaningless data without the users' explanations
  - **Retrospective thinking aloud**
    - collection of data entirely on users’ explanations of their actions
    - exhausting process for the users
  - **Interviews**
    - verify further users' answers in the questionnaire and specific actions noted during observation and clarify users' expressions during retrospective thinking aloud.
    - short in length
Discussion

Notion of **Completeness**

- Enabled the generation and gathering of diverse data on different aspects of the same research area

- Specific order in which the four methods have been applied. It provided the facilitator with the possibility of gradually accumulating data on users' search behaviour.
Conclusion

- The investigation and monitoring of users' interaction and search behaviour with multilingual environments is considered to be one of the most important factors in developing efficient and effective CLIR systems.

- The decision on which methods to employ in order to gain a better insight to users' behaviours and thoughts is also essential.

- The offset and completeness way of combining the chosen methods have been adopted in order to enable the better and a more comprehensive understanding of users' image seeking behaviour in multilingual environments.
Thank you for your attention!