

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

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# CONTENTS

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- Definitions
- Study's Outline
  - Test Object
  - Task
  - Users
  - Experimental Procedure
- Mixed Methods Research
  - Quantitative: Questionnaire
  - Qualitative: Observation, retrospective Thinking Aloud, Interviews
- Discussion
- Conclusion

# Definitions

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- Cross-Language Information Retrieval (CLIR)
- Multilingual Information Retrieval (MLIR)

# Study's Outline

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

# FlickLing

**Flickling** An online game for searching Flickr across language boundaries

Find this image:

Search results 1-20 of 500 for **windmill** [\[Show Flickr query\]](#)

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- Dutch 17th century polder **windmill**  
[holland](#), [top25](#), [windmill](#), [top50](#), [top75](#), [searchthebest](#), [thenetherlands](#), [top300](#), [alkmaar](#), [top100...](#) [\[show all\]](#)
- Murphy **Windmill**, Golden Gate Park, S.F. (peeking in)  
[sf](#), [sanfrancisco](#), [goldengatepark](#), [longexposure](#), [lightpainting](#), [color](#), [windmill](#), [night](#), [canon](#), [colorful...](#) [\[show all\]](#)
- Windmill** from inside  
[holland](#), [netherlands](#), [windmill](#), [inside](#), [hdr](#), [highdynamicrange](#), [maarszen](#), [bsidez](#)
- Psychedelic **windmill**  
[holland](#), [windmill](#), [nederland](#), [hdr](#), [molen](#), [windmolen](#), [badhoevedorp](#), [photomatix](#), [tonemapping](#), [molenvansloten...](#) [\[show all\]](#)
- Old Greek **Windmills**  
[bravo](#), [windmills](#), [mykonos](#), [choros](#), [fianna](#), [greatviews](#), [10faves](#), [coolestphotographers](#)
- WINDMILL**  
[windmill](#), [abigfave](#), [anawesomeshot](#), [onlythebestare](#)
- 123106 Fire in the Sky - Portland **Windmill** hdr III

# FlickLing

Flickling - An online game for searching Flickr across language boundaries - Mozilla Firefox provided by Manchester Metropolitan University

File Edit View History Bookmarks Help

http://bender.lsi.uned.es:8080/flickling2/#%7B%22start\_index%22%3A0%2C%20%22num\_results%22%3A20%2C%20%22base\_lang%22%3A

example@hotmail.com | My profile | Show ranking | Help | Contact | Logout

## Flickling

An online game for searching Flickr across language boundaries

Find this image

monolingual **multilingual**

windmill  Search

I write in *translate my query into*

English  DE EN ES FR IT NL


I give up


**Translations**


English	windmill
German	[add]
Spanish	[add]
French	[add]
Italian	mulino a vento
Dutch	windmolen


Search results 1-20 of 500 for **windmill** [\(Show Flickr query\)](#)


You may also want to try with: [sky](#), [wind](#), [holland](#), [netherlands](#), [clouds](#), [farm](#), [landscape](#), [mill](#), [power](#), [molen](#)... [\[show all\]](#)


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**Windmolen/Windmill**  
sunset, holland, netherlands, **windmill**, boat, canal, zonsondergang, rotterdam, brielle, oostvoorne... [\[show all\]](#)
- 

Dutch 17th century polder **windmill**  
holland, top25, **windmill**, topf50, topf75, searchthebest, thenetherlands, top600, alkmaar, topf100... [\[show all\]](#)
- 

**Windmolen / Windmill**  
wind, **windmill**, **windmolen**, polder, beamster, molen, blue, dutch, holland, amsterdam
- 

**Windmill**  
**windmill**, dutch, utrecht, thenetherlands, icon, **windmolen**, maarssen, typicaldutch, tienhoven, panasonicdmcfs30... [\[show all\]](#)
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Psychedelic **windmill**  
holland, **windmill**, nederland, hdr, molen, **windmolen**, badhoevedorp, photomatix, tonemapping, molenvansloten... [\[show all\]](#)
- 

\*the **windmills** of your mind\*  
**windmill**, painting, bravo, searchthebest, belgium, sabine, **windmolen**, bokrijk, blueribbonwinner, magicdonkey... [\[show all\]](#)

http://bender.lsi.uned.es:8080/flickling2/#

Start MMU Student E-Mail <2>... http://www.e-radio.gr - ... Flickling - An online g... E:\ QQML2009\_Abstract\_Ya... Microsoft PowerPoint - [...]

12:06

# Findings

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- **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

Vassilakaki, E., Johnson, F., Hartley, R. and Randall, D. (2008). A Study of Users' Image Seeking Behaviour in Flickling. In Peters et al (eds ): Evaluating Systems for Multilingual and Multimodal Information Access 9th Workshop of the Cross-Language Evaluation Forum, CLEF 2008, Aarhus, Denmark, September 17-19, 2008, Revised Selected Papers, Springer LNCS.

# Mixed Methods Research

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- 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

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## 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

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- ❑ 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

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- 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

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## 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

# Observation

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- 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

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## 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

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- To derive findings entirely on users' thoughts, comments and search behaviours.

# Retrospective Thinking Aloud

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## 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



# Interview

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- 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

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## 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

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- **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

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## 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

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- 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!