Visualizing online search processes for Information Literacy education

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Switzerland
The LOIS project
ubiquitous

commodity easy fast
magic

opaque

a new form of power

necessary
DON'T YOU DARE PUNCH OUT CHARLIE! HE'S THE REASON WE KNEW ABOUT THE UNDERWORLDERS' SCHEMES!

WE DID?

SURE! YOU'RE HERE, AREN'T YOU? WELL, CHARLIE'S OUR INFORMANT!

HE'S A GUY WE CAN TRUST.
Your friend Giuseppe comes from Liguria and really enjoys eating good food: every time he goes home in the Cinqueterre, his grandmother fills him with jars of homemade Ligurian pesto made with home-grown basil, and he happily shares it with you. Giuseppe has invited you to a lunch of pesto pasta with Carlo, another friend of yours.

Carlo called you: he is quite worried because he has heard that basil is toxic and doesn’t know what to do about the meal invitation with Giuseppe. Moreover, he is worried about Giuseppe’s health, as he eats pesto at least once a day.

What do you advise? Should Giuseppe worry about his health?
From clicks to visuals

- LOIS Extension
- Late-Teenagers 16-20 Year Old

RAW
FILTERING
CLEAN
TAGGING
RICH
PLOTTING

- Browser History (URLs)
- Timestamps
- System Events (start / pause / end)
- Page Size
- Auto-Refresh Removal
- Search Query Extraction
- Action Duration
- Search Stories

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Why visuals?

• Visual for research:
  • To allow human researchers to inspect search stories
  • To facilitate the identification of (visual) search patterns

• ... Why not using it for teaching?
  • Make them interactive
  • Frame them into a consistent instructional design
  • Test it!
It’s all about process feedback

THE INVISIBLE SEARCH PROCESS

SEARCH TASK

SEARCH OUTPUT

SEARCH PRODUCT

FOCUS ON HOW (NOT ONLY WHAT)

STIMULATE PEER LEARNING

FIND TEACHABLE MOMENTS
Reading search stories
Reading search stories

1 SEARCH STORY = 1 USER SOLVING TASK

1 block = 1 action = 1 click

BLUE = New query
LIGHT BLUE = repeated query
BLACK = system action (e.g., "*end")

Length = duration

OCRA = new web domain
YELLOW = revisited domain
Search queries

DIFFERENT QUERY FOR EVERY SEARCH

PROGRESSIVE REFINEMENT

SINGLE-QUERY SEARCH
Reading Search Result pages
Reading time

FAST CLICKER

SLOW CLICKER
Introducing the interactive version
The LOIS Class
Sessions
A novel approach to online search education

• Principle 1
  There is no unique “optimal” online search method

• Principle 2
  Each of us has one or a few preferred methods

• Principle 3
  If we learn to observe how we search, we can diversify our practices

• Principle 4
  Search tasks are not all alike
Class session outline

**STEP 1**
Students solve 3 search tasks (in class or at home)

**STEP 2**
Common guided analysis of search stories, peer discussion

**STEP 3**
New search challenge to be solved “doing something unusual”

**STEP 4**
Focus and discussion on key topics: search engines, quality sources, AI, etc.

- **QUERIES**
- **SPEED**
- **READING SER**
- **STRATEGIES**
- **QUALITY**

Duration:
- **45’-60’**
- **90’**
Student feedback

• How did you like the LOIS Class Session?

AVERAGE SCORE: 7,89/10
Standard deviation: 1,57
By school performance

Session score by school grade

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<th>Grade</th>
<th>Score</th>
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<tr>
<td>Very high</td>
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<tr>
<td>Good</td>
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<tr>
<td>Insufficient</td>
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By perceived difficulty of online searching

Session score by perceived difficulty

- Very difficult: 7.88
- Difficult: 7.84
- Somewhat difficult: 7.75
- Easy: 9.45
- Very easy: 9.75
By sex

Session score by sex

Male: 8.01
Female: 7.87
Undisclosed: 6.79
Word association

Connections to the most common target term (the word "search")

Done with Tlab 5.0
What did students learn?

1. A *better* approach to search and find more *reliable* and *in-depth* information
2. The need to carefully *check* and *assess* if a website is *reliable*
3. A *different* method to find *correct* and *safe* information on the internet

Interestingly, some said they liked the session, they learned something, but they would not change anything in the way they search online...
What would you change in how you search?

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<th>THEME_02</th>
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**Better analysis and selection from Google results.**

**Search for trusted and verified sources, change language.**

**Change search method, dig more deeply.**

**Take time to read and not to always select the first link.**
5 principles for online search education

1. Effective online searching takes learning
   Do not give it for granted, even for "digital natives"

2. There is no unique “best” online search method
   Checklists are useful only to a limited extent

3. Each one has one or a few preferred practices
   Promote self-awareness and learning new tricks

4. A poor search can be worse than no search
   Aim at focused and lean searches, not

5. Search tasks matter and are not all alike
   Design for progression, starting from closed tasks and known topics
Outlooks
Instructional Materials

- Acknowledging search styles
- Designing good online search tasks
- Types of web sites
- Quality of web sites
- Reading online
- Search engines

https://loisresearch.org/lois-edu/

Only available in Italian & German but we are open to translations/adaptations
Outlooks

• A safe web platform where teachers could
  • create their own online search tasks
  • capture their students’ search stories

• To foster search awareness by
  • Individual reflection
  • Peer learning
  • Automated feedback

• The *Reflective Online Search Education* (ROSE) project is currently being evaluated at the FNS / Weave Program with the Leibniz Institute (Germany).
Q&A

www.loisresearch.org

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