## TEACHING INFORMATION LITERACY IN THE AGE OF ARTIFICIAL INTELLIGENCE

A report from Central Library at Forschungszentrum Jülich

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### **PLENARY DISCUSSION**

**Information Literacy** 

# What does information literacy mean to you?



Key Facts

- Developed by the Association of College and Research Libraries (ACRL)
- Adopted by the ACRL Board 2016
- Free resource to the academic library community
- Consists of 6 core concepts

(https://www.ala.org/acrl/standards/ilframework)



1) Authority Is Constructed and Contextual

What are the authorities in my study field?





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What are the authorities in my study field?

How are authorities established in my study field?





1) Authority Is Constructed and Contextual

What are the authorities in my study field?

How are authorities established in my study field?

How are authorities changed in my study field?





### 2) Information Creation as a Process

Information creation depends on the context.

- What information sources were used?
- How was the information processed?
- What was the intention of the author(s)?
- How was the information communicated?





3) Information Has Value

I am willing to invest time

- to find information and get a complete overview
- to read and understand the information
- to organize information
- to document my work
- to curate and archive the information at the end of my project





4) Research as Inquiry

Ability to understand research as a process of asking questions and solving problems

Question	Problem solving process	Answer	New Questions	\$
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### 5) Science as Discourse

Ideas and solutions for existing issues are exchanged and discussed in the scientific community.

### Ability

- to critically reflect on the discourse
- to develop an individual point of view
- to understand that complex issues often need more than one point of view





Screenshot Connected Papers (20.11.2024): https://www.connectedpapers.com/

6) Searching as Strategic Exploration

Newton's famous sentence:

"... If I have seen further it is by standing on the shoulders of giants."

(Quoted from a Wikipedia article published under a Creative Commons Attribution-ShareAlike 4.0 License, https://en.wikipedia.org/wiki/Standing\_on\_the\_shoulders\_of\_giants#References)

The ability to find enough information to meet my information needs, and, importantly, to know when I have enough information.

Example: Enough information to understand the scientific discourse.



Making information findable

Up to now

Information sources

- Library catalogue
- Literature data bases
- Academic search engines



Making information findable

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Information sources

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- Academic search engines

These sources often have a higher learning curve.

- 1. Specific search facets and controlled vocabulary
- 2. Usage of boolean operators to build search queries



Making information findable

Up to now

Information sources

- Library catalogue
- Literature data bases
- Academic search engines
- 1. Easier to use
- 2. However often lead to very high sets of matches
- 3. Relevant literature is easily overlooked
- 4. The algorithms frequently miss good job candidates.



Making information findable

**Can AI tools be the solution?** 

> Quickly and easily find the exact information you need.



### **PLENARY DISCUSSION**

**AI Tools** 

# Do you already have experience with AI tools?



### UNDERSTANDING THE ISSUES: WHAT EXACTLY IS A.I.

- An algorithm (linear regression, random forest, neural network, etc.) used to detect patterns in data (training), that then uses those patterns to make predictions or in the case of generative models, create something new by extrapolating from the data it was trained on.
- Limitations are about
  - the algorithms,
  - their architectures,
  - the adequacy of the data.



## HALLUCINATIONS: WHEN THINGS GO WRONG IN A.I.

### **Incorrect predictions**

An AI model may predict that an event will occur when it is unlikely to happen.

#### For example

An AI model that is used to predict the weather may predict that it will rain tomorrow when there is no rain in the forecast.





## HALLUCINATIONS: WHEN THINGS GO WRONG IN A.I.

### **False positives**

When working with an AI model, it may identify something as being a threat when it is not.

#### For example

An AI model that is used to detect fraud may flag a transaction as fraudulent when it is not.



## HALLUCINATIONS: WHEN THINGS GO WRONG IN A.I.

#### **False negatives**

An AI model may fail to identify something as being a threat when it is.

#### For example

An Al model that is used to detect cancer may fail to identify a cancerous tumor. https://cloud.google.com/discover/what-are-ai-hallucinations

#### ≻ Current estimates are about 27% hallucination rate.

https://en.wikipedia.org/wiki/Hallucination\_(artificial\_intelligence)



### **INADEQUATE DATA:**

#### Particularly problematic for information management

- Data sets must be very large and well indexed (the different details thoroughly identified and coded)
- Failures are the direct result of weaknesses in the training data sets.
- In other words, A.I. can't help you if the information you need for effective searches was not indexed, or was never included.

> Ergo: We need better data sets.



### RECOMMENDATIONS

- Take A.I. results with a grain of salt
- Ask a human





#### **Getting started**

Formed a group and had regular meetings

#### What did we do?

Collected literature in a shared Zotero collection

Compiled list of tools

Gathered information about the tools

Tested different use cases

Topical search	Method search
Data search	Finding keywords



**Next Step - Template for testing** 

We used the procedure explained in the video "The BEST ChatGPT Prompts for Research and Literature Review" as a template for a structured testing of AI tools.





#### Conclusion

- References are often not correct
- Links are broken
- Contents are repeated
- Very uneven quality of responses
- Prompt is not always understood likely because key words have different meanings in different disciplines. (We might need metadata for keywords ... ?)



#### Outlook

➢ Results are rather sobering

It remains to be seen whether the meaningful use of A.I. in combination with literature databases and search engines is possible



### **IDEAS FOR TEACHING**

**Use Cases** 

Creating prompts	Starting with a new topic
AI tools for classic literature search	Finding cross-disciplinary information



#### **Contact data**

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