



Sources for Science

Ollie Bridle & Rachel Scanlon,
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Learning Objectives



Be able to differentiate non-academic material from academic sources.



Be able to apply the CRAAP test to evaluating sources.



Understand the importance of referencing in academic work and apply basic referencing techniques.



Academic Sources

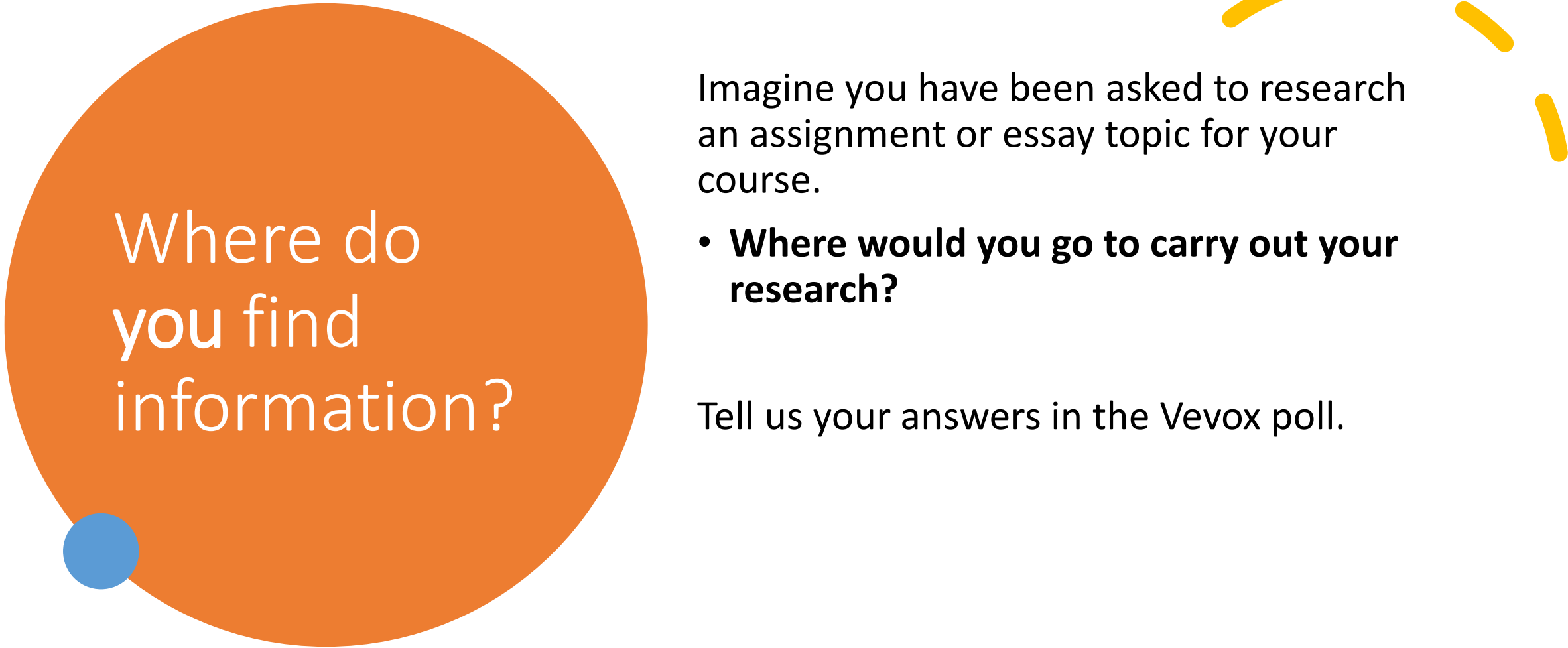
What types of sources do you use to find information?



Lots of material out there...

Lots of material out there...

- Newspapers
- Search engines
- Websites
- Blogs
- Journals
- Research papers
- Pamphlets
- YouTube videos
- Podcasts
- Books
- Adverts
- Diaries
- Social media
- Lecture notes
- Your own work
- Trade magazines
- Dissertations
- Conversations
- Reports
- Reference books
- TV programmes



Where do
you find
information?

Imagine you have been asked to research an assignment or essay topic for your course.


- **Where would you go to carry out your research?**

Tell us your answers in the Vevox poll.

Types of sources - books

- Textbooks.
- Reference works.
- Often helpful for background reading, definitions or revising key theories.





Types of sources – journals/conferences

- Latest original scientific research.
- Scientific papers.
- Review articles.

Types of sources - websites

- Lots of useful websites.
- Can be very up-to-date.
- Information quality is always an issue.
- You need to evaluate websites carefully – is it suitable for academic work?





Types of sources – databases

- Find papers and book chapters on any topic.
- Easily search millions of science papers.
- Fantastic for researching assignments and projects.
- Scopus and Web of Science are the most popular for the sciences.

Where to look
for different
things

**Message – you
probably won't find
everything you need
in one place!**

Books	Journal Articles and Conference Proceedings	Websites
SOLO	Literature databases	Search Engines
Reading lists / ORLO	SOLO Article Search	Subject guides
	Reading lists / ORLO	Reading lists / ORLO
	BrowZine	

Reading Lists

- Reading lists help highlight key books, papers and websites.
- May be online (ORLO) or printed.
- Sometimes require a bit of interpretation!



Finding journal articles from a reference

Webster, M., Chen Y-H., Stowell, J., Alhusaini, N., Sweet, T., Graveley, B., Collier, J., and Passmore, L. (2018) 'mRNA Deadenylation Is Coupled to Translation Rates by the Differential Activities of Ccr4-Not Nucleases'. *Molecular Cell* 70(6), 1089-1100

Authors Year Published Title of Article *Title of Journal* Volume, Issue and Page Numbers

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Finding journal articles from a reference

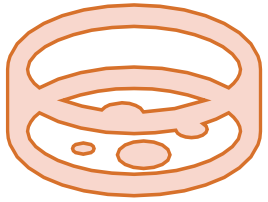
Webster, M., Chen Y-H., Stowell, J., Alhusaini, N., Sweet, T., Graveley, B., Coller, J., and Passmore, L. (2018) 'mRNA Deadenylation Is Coupled to Translation Rates by the Differential Activities of Ccr4-Not Nucleases'. *Molecular Cell* 70(6), 1089-1100

Authors **Year Published** **Title of Article** *Title of Journal* **Volume, Issue and Page Numbers**

You can search for the title on SOLO

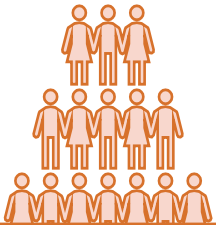
You can search for the title of the journal in SOLO or BrowZine.

Types of journal articles



Primary research articles

- Report the results of new studies or experiments. Give the latest scientific research.



Review articles

- Overview of existing knowledge on a subject by summarising existing research. Helpful for background reading. Do not report original findings.

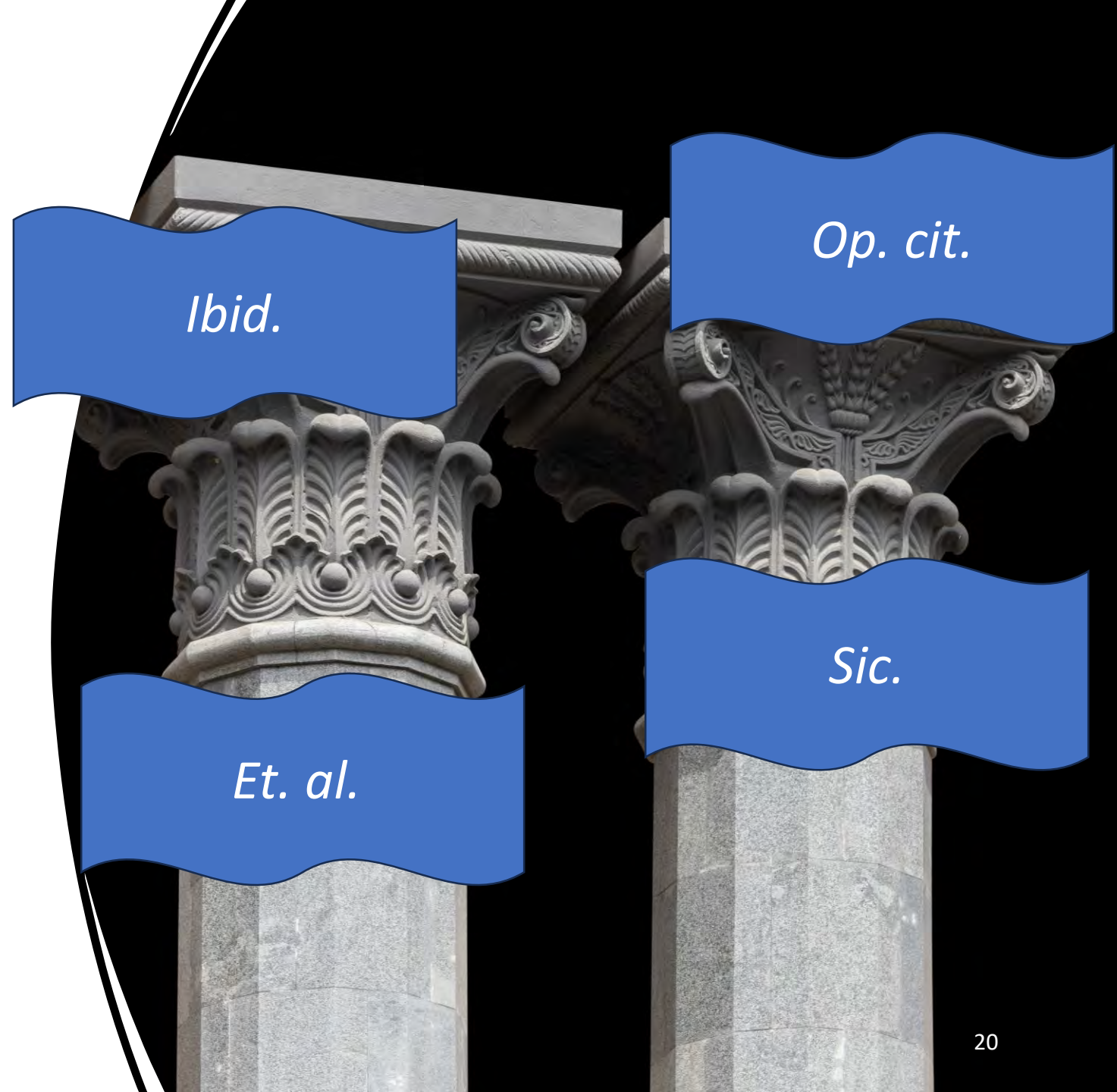
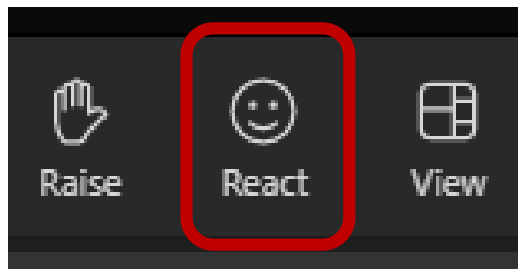


Systematic Reviews

- Special type of review article which attempts to answer a very focused research question by collecting, synthesizing and evaluating the findings of every study available.

Chatting Latin

- You may come across some unfamiliar terms and Latin abbreviations.
- Take a moment to give us a thumbs up on Teams if you're confident you know what the following phrases and abbreviations mean.



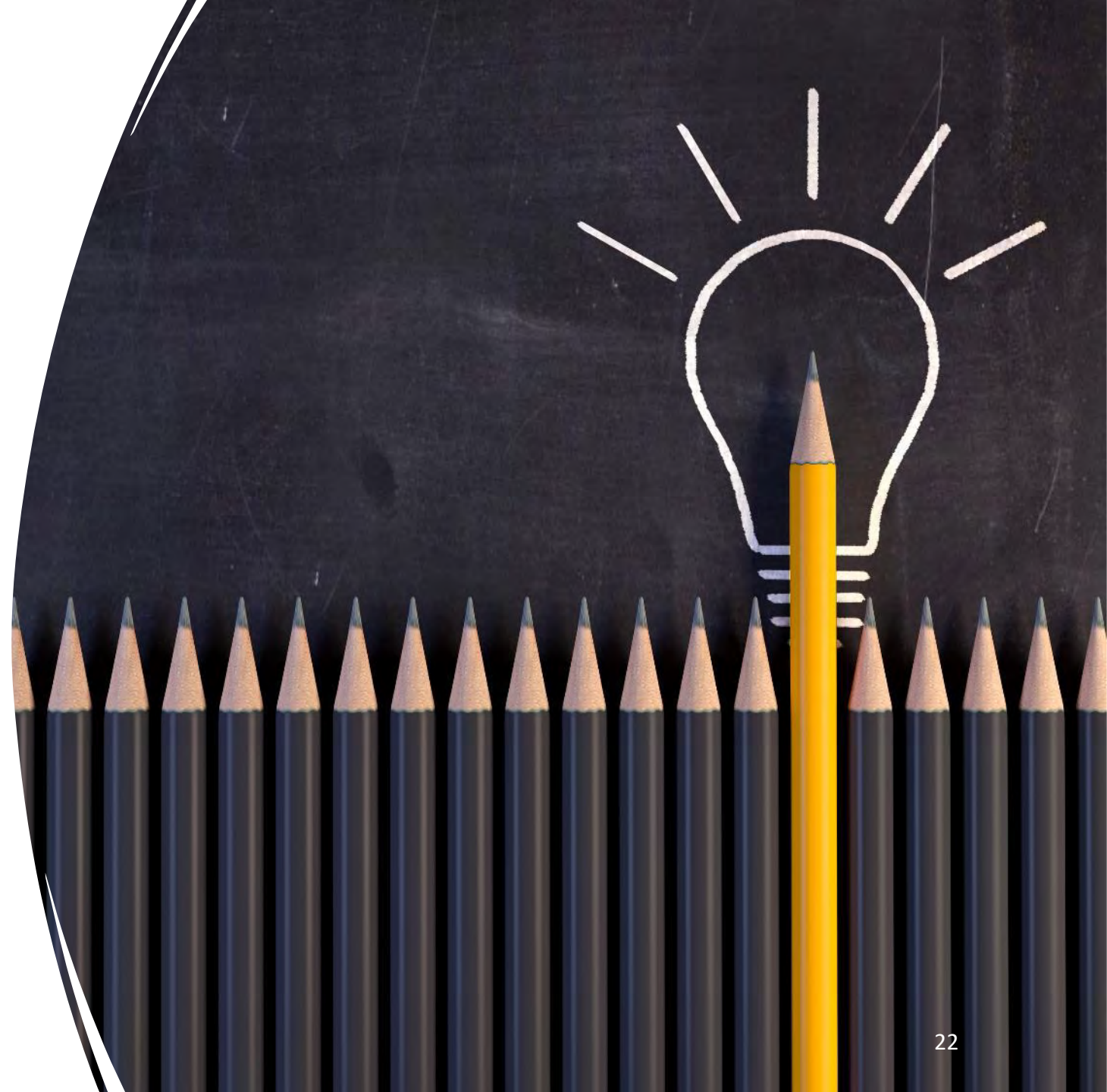
Jargon Buster

- **Ibid.** – *ibidem* – ‘In the same place’, used to refer you back to a source that has just been mentioned.
- **Op. cit.** – *opera citato* – ‘In the work already cited/mentioned’, like *ibid.* this refers you back to a source that was recently mentioned.
- **Et al.** – *et alii* – ‘and others / and the rest of them’, used to abbreviate a long list of authors in a citation for a source written by many people.
- **Sic.** – *sic erat scriptum* – ‘Thus was it written / It was written this way’, often used in quotations which contain spelling or grammatical mistakes in the original source. *Sic.* denotes that the error is in the original text. ‘A surprising range of animals thrive in a dessert [*sic.*] ecosystem.’ (Dalglish, 1998, p.37).

Top Tip

You probably won't find everything you need in one place!

Look around, try different resources.





Evaluating Sources

Why bother evaluating sources?



Avoids including inaccurate, false or incomplete information in assignments



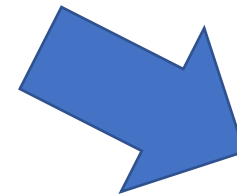
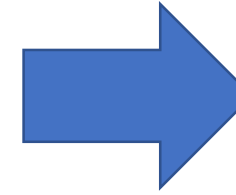
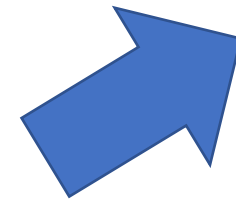
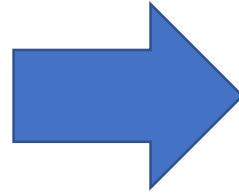
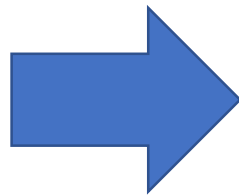
Builds skills to sort reliable information from the rest – useful in any context!

Back up assignments with good quality evidence



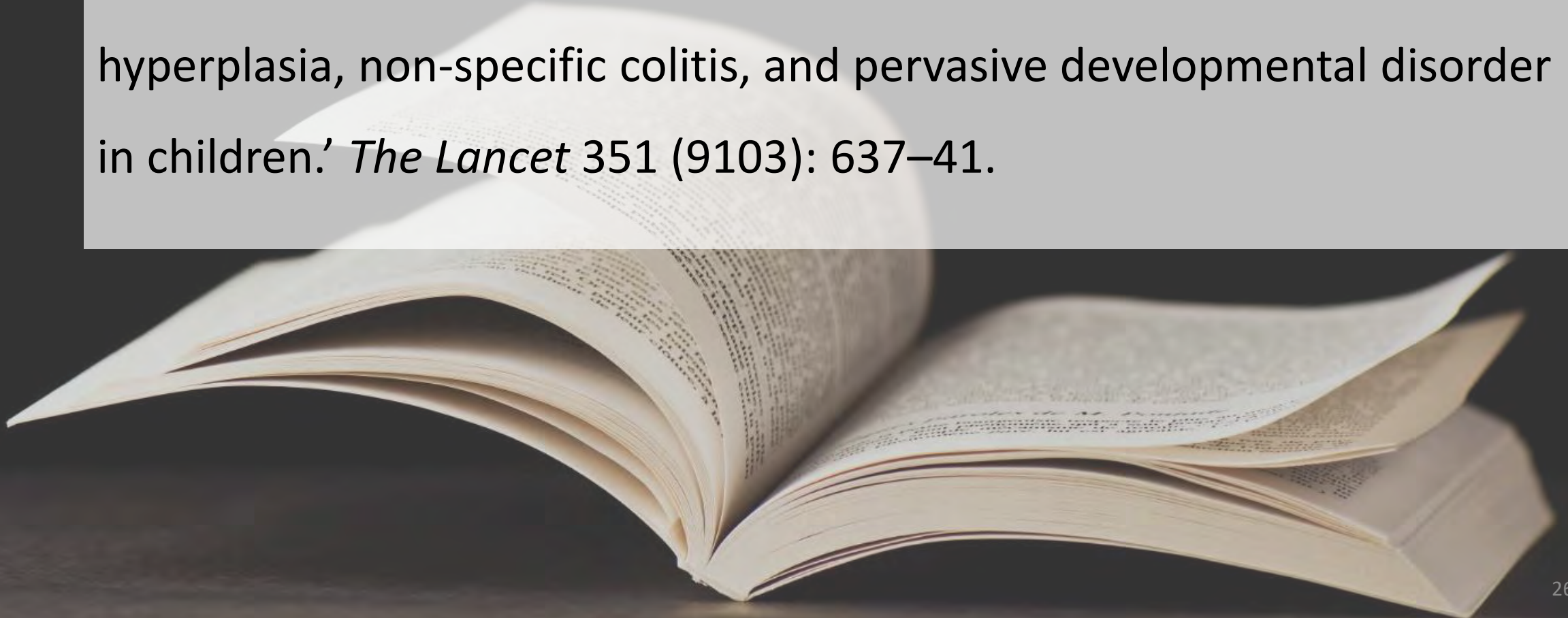
About Peer review

- Academic journals usually use a **peer review** process to provide a level of 'quality control' on research papers they publish.



Do you recognise this paper?

Wakefield A, Murch S, Anthony A, et al. (1998) 'Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children.' *The Lancet* 351 (9103): 637–41.

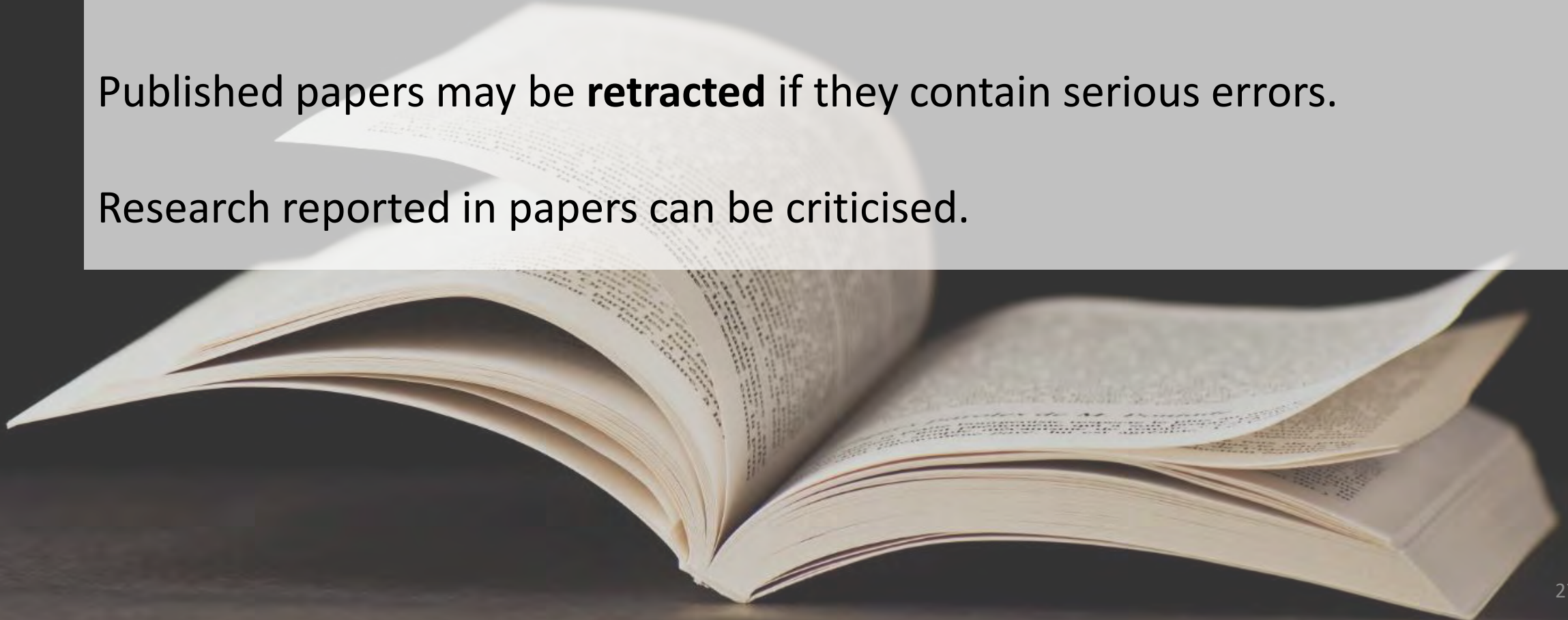


Do you recognise this paper?

This is the redacted article from the Lancet that erroneously linked the MMR autism to vaccines.

Published papers may be **retracted** if they contain serious errors.

Research reported in papers can be criticised.



Introducing the CRAAP test

Currency

Do you need recent information, or will older information still be useful?
Can you be certain when the source was written?

Relevance

Does the information relate to your topic?
Is it the right depth for your work? Is it aimed at an academic audience?

Authority

Who wrote it? What are their qualifications? Are they an expert on the subject? If you cannot find who (either a person or an organisation) wrote something, assessing its reliability can be difficult.

Accuracy

Has clear evidence been provided? Does it fit with what you know?
Can you back it up with other sources? Is the level of detail sufficient?

Purpose

Why was it written? Is the author likely to be biased?
Is the information fact or opinion? Are there commercial or political motivations?

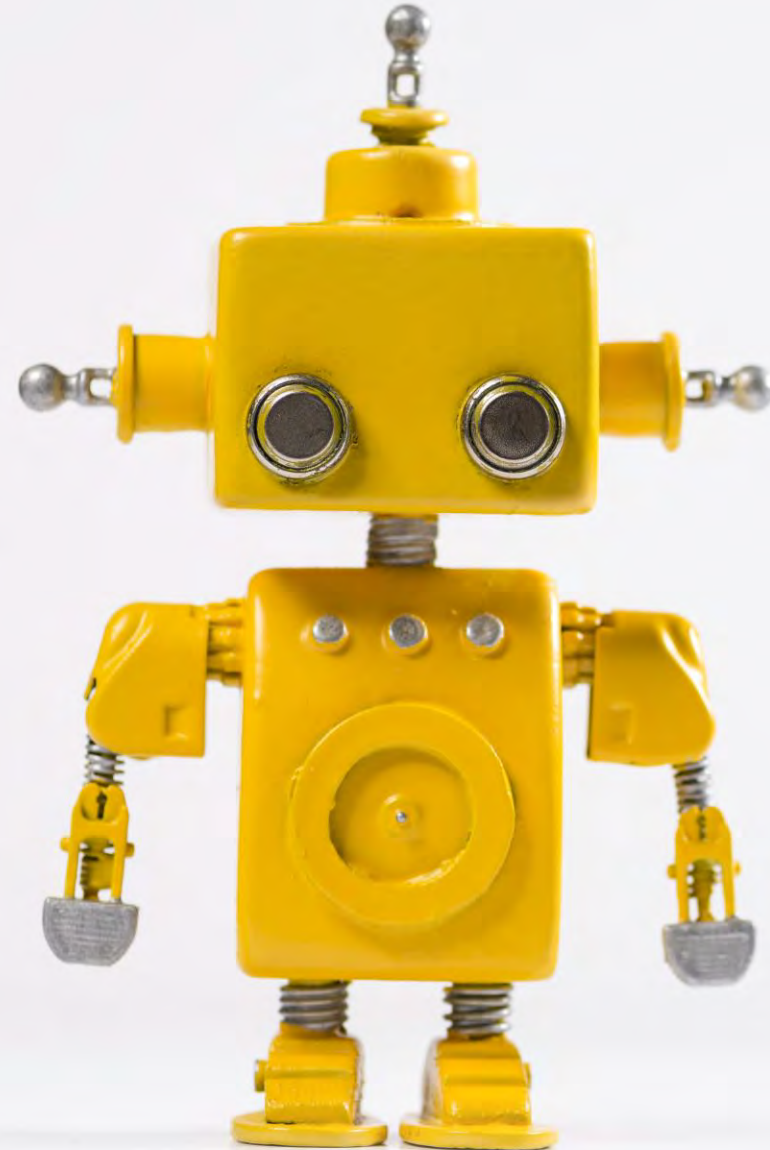
Applying the CRAAP test

- We would like you to try applying the CRAAP test principles to the following website – www.dhmo.org
- We will collect your ideas on a Padlet.
- <https://tinyurl.com/CRAAPExercise>



What about AI?

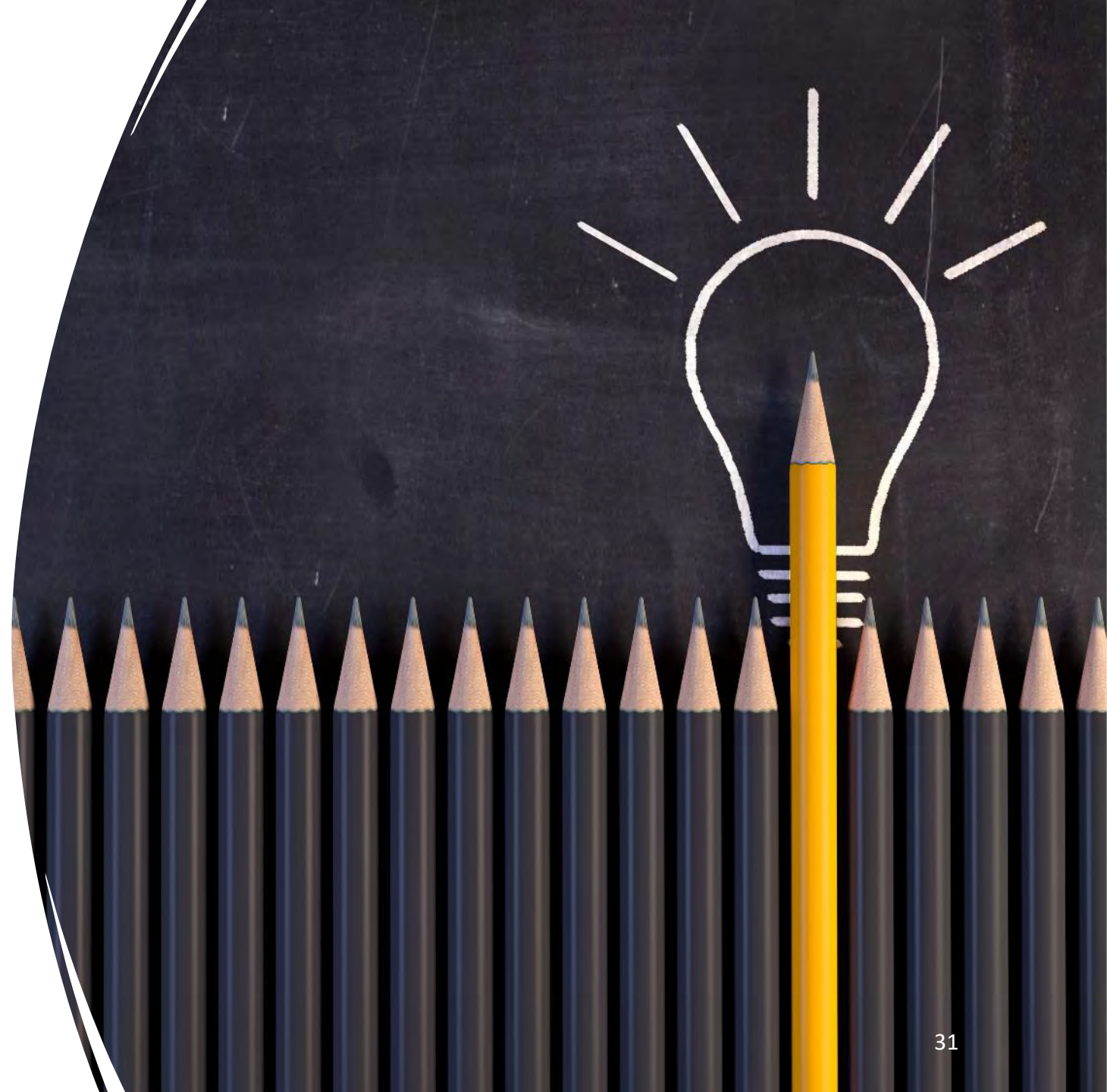
- ChatGPT, Gemini, Claude AI, Microsoft Co-Pilot and Elicit.
- Poor at giving factually correct answers.
- Often provide references to non-existent sources.
- Can't replace, careful, critical reading and thinking.
- **Fact-check answers from AI tools!**
- More guidance here - <https://www.ox.ac.uk/students/academic/guidance/skills/ai-study>



Top Tip

Don't believe everything
you read!

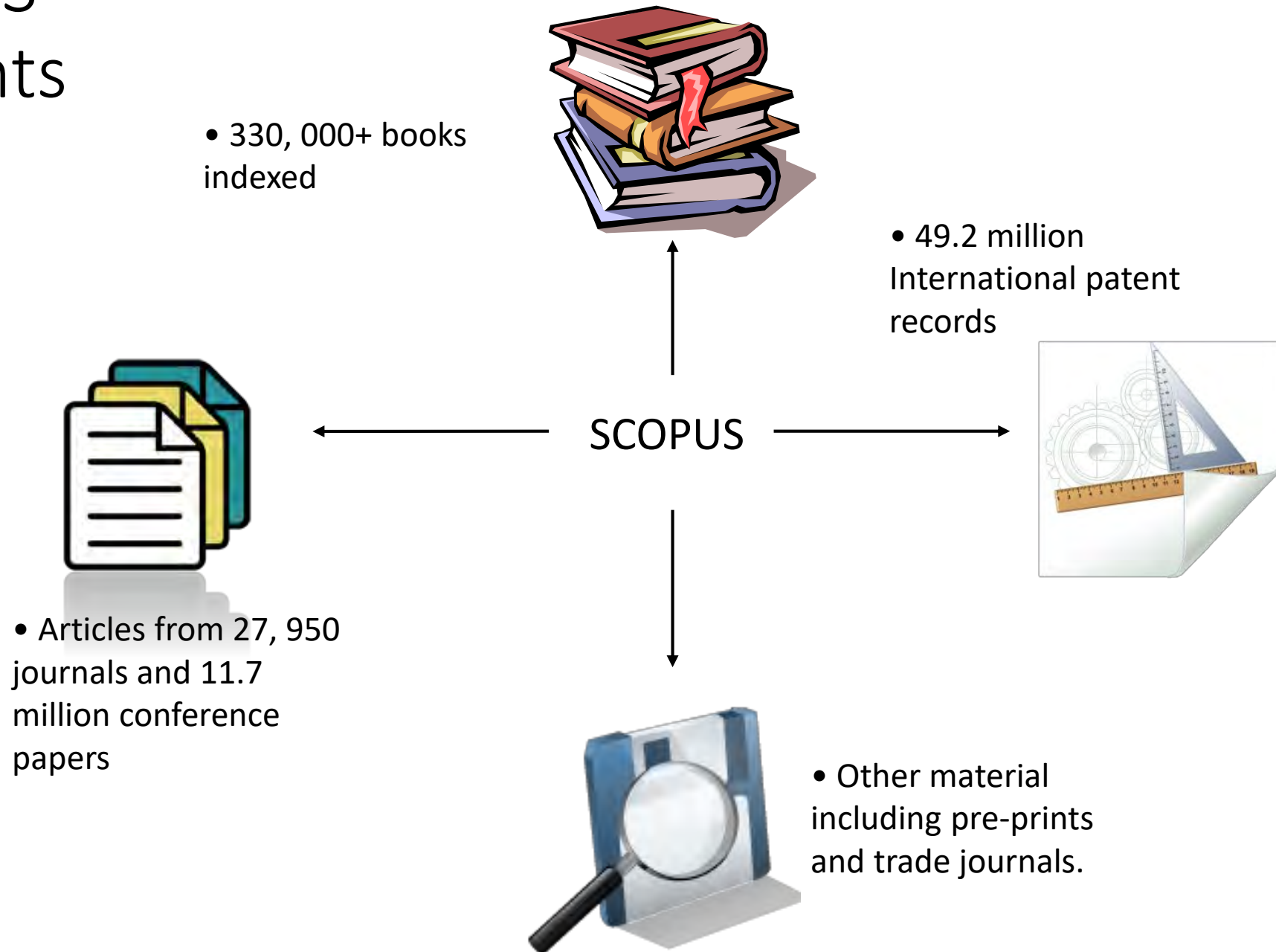
Always look at the
primary literature! Go to
the start of the chain.





Databases

SCOPUS Contents



Finding databases

Bodleian Libraries
UNIVERSITY OF OXFORD

Subject and research guides

Bodleian Libraries / Oxford LibGuides

Databases A-Z
Find the best library databases

All Subjects All Database Types All Vendors / Providers Search for Databases Go

All A B C D E F G H I J K L M N O P Q R S T U V W X Y Z #

1652 Databases found

A

LIVE CHAT (click to open)

Use of Oxford e-resources

Oxford subscribes to a wide range of e-resources,

Use the **Database A-Z** - <https://libguides.bodleian.ox.ac.uk/az.php>

Information about databases

Web of Science

[more...](#)



Web of Science Core Collection

[less...](#)



Alternative names: WOS ; Web of Knowledge ; WoK. Web of Science provides seamless access to the Science Citation Expanded®, Social Sciences Citation Index®, and Arts & Humanities Citation Index™.



Activity – what databases are available for your subject?

- Go to SOLO (<https://solo.bodleian.ox.ac.uk>)
- In the **Useful Links** box click on **Database A-Z**.
- Browse for databases in your subject area.
- Tell us the name of one database you've found.

Google Scholar Advantages and Disadvantages

Advantages	Disadvantages
Quick and easy to use	Indiscriminate – picks up non-academic material
Good coverage of major journals and recent publications	Harder to do a detailed search
Understands basic Boolean logic	Unclear how Google creates its search results.
Can link directly to subscribed Oxford e-resources	Metadata often incomplete and older material is sometimes missing.
Basic sorting by date or subject	Few sorting and refining options

Google Scholar at Oxford

Selecting **Settings** from the top of the [Google Scholar Home Page](#)

Select **Library Links**

Searching for **University of Oxford** and selecting it from the list

Saving your settings

You will now see '**Find it @ Oxford**' links next to items in your Google Scholar results that you can use to access the full-text provided by library subscriptions.

Cross-system comparisons of soil nitrogen transformations and nitrous oxide flux
in **tropical forest ecosystems**

PA Matson, PM Vitousek - *Global Biogeochemical Cycles*, 1987 - Wiley Online Library

Abstract Soil nitrogen transformations and nitrous oxide flux across the soil-air interface

were measured in a range of **tropical forest** sites in Costa Rica, Brazil, and Hawaii. Nitrogen

Find it @ Oxford

Research Guide for Chemistry: Home

A guide to research resources for Chemistry

Subjects: [Chemistry](#), [Materials](#), [Patents](#), [Physics](#)

[Home](#)[Books](#)[Journals and Conference Proceedings](#)[Databases](#)[Web resources](#)[Dissertations](#)[Training](#)

Look up your subject guide. Who's your subject librarian?

- [SOLO](#)

Search SOLO, the University's resource discovery tool, for print and ebooks at Oxford. You can search by author, title or subject and limit to a specific library or online resources.

- [SOLO user guide](#)

If you need help with SOLO, take a look at this guide for tips on searching, managing results and using your SOLO account.

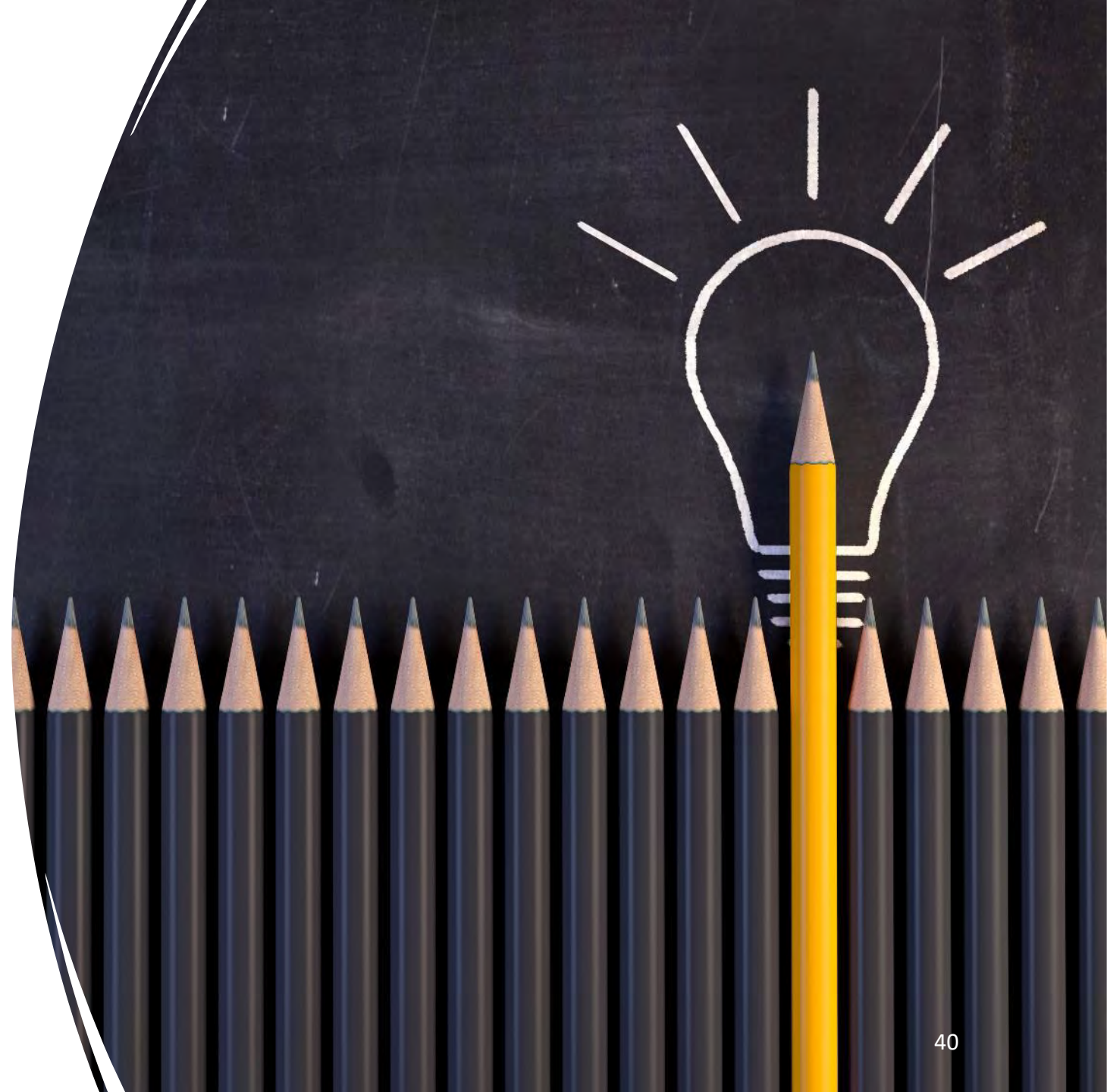


Subject Guides

- **User friendly guides to library resources.**
- You can find the guide for your subject here - <https://libguides.bodleian.ox.ac.uk/subjects>

Top Tip

- Try it yourself.
- Take time to learn to use the databases for your subject.
- Ask a Subject Librarian.

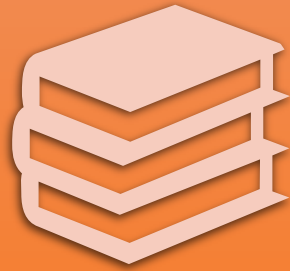




Referencing

What does 'referencing' mean?

Source:



A quote
from a
book



Data from
a research
article



Software
you have
used



An image
or picture

Information:



Why do we need to reference?



Supports your arguments with **evidence** and **examples**



Gives others **credit** and **recognition** for their work



Avoids plagiarism, by clearly showing where you have used the ideas of others



Demonstrates the **quality** of resources you have used and your own **knowledge** of the subject

In-text citations and Reference List

Essay Assignment

The programming language C was first developed in the early 1970s for Bell Telephone Laboratories systems (Kernighan & Ritchie, 1988, p. 1). The language

A full **reference** at the end of the document contains the information required to describe the source

An in-text **citation** to a source is included in the main text

References

Kernighan, B. W., & Ritchie, D. M. (1988). *The C programming language* (2nd ed.). Prentice Hall.

Different Citation Styles

There are many different citation styles but there are two broad types:

- Author-Date
 - Harvard, APA
- Numbered In-Text
 - Chicago, IEEE, Nature

Cite Them Right

- Available as book or website.
- Covers several basic citation styles.
- shows how to cite different item types from conference proceedings to social media.
- <https://www.citethemrightonline.com/Home>

Department Handbook

Your department will have guidance on the style they use.

An Example:

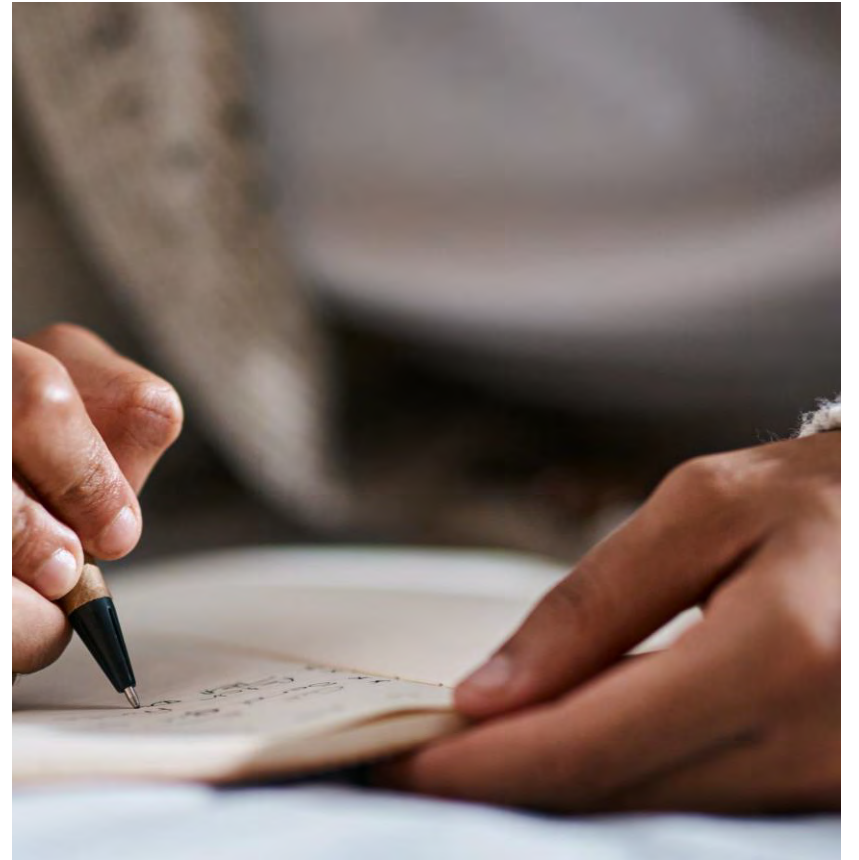
The image shows a screenshot of the Acta Crystallographica Section C journal website. Several elements are highlighted with callouts:

- Journal title:** Acta Crystallographica Section C
- Article title:** Sweet like chocolate
- Article author:** Iain D. H. Oswald^{a*}
- Volume and issue/part Numbers:** Volume 75 | Part 8
- Publication date:** August 2019
- Page numbers:** Pages 1021-1022
- DOI number:** <https://doi.org/10.1107/S2053229619010520>

Other visible elements include the journal logo, ISSN (2053-2296), a navigation menu (home, archive, editors, for authors, for readers, submit, subscribe, open access), a sidebar with navigation icons, and a list of keywords: lactose; powder diffraction; polymorphism; crystal structure. There are also links for similar articles and PowerPoint slides.

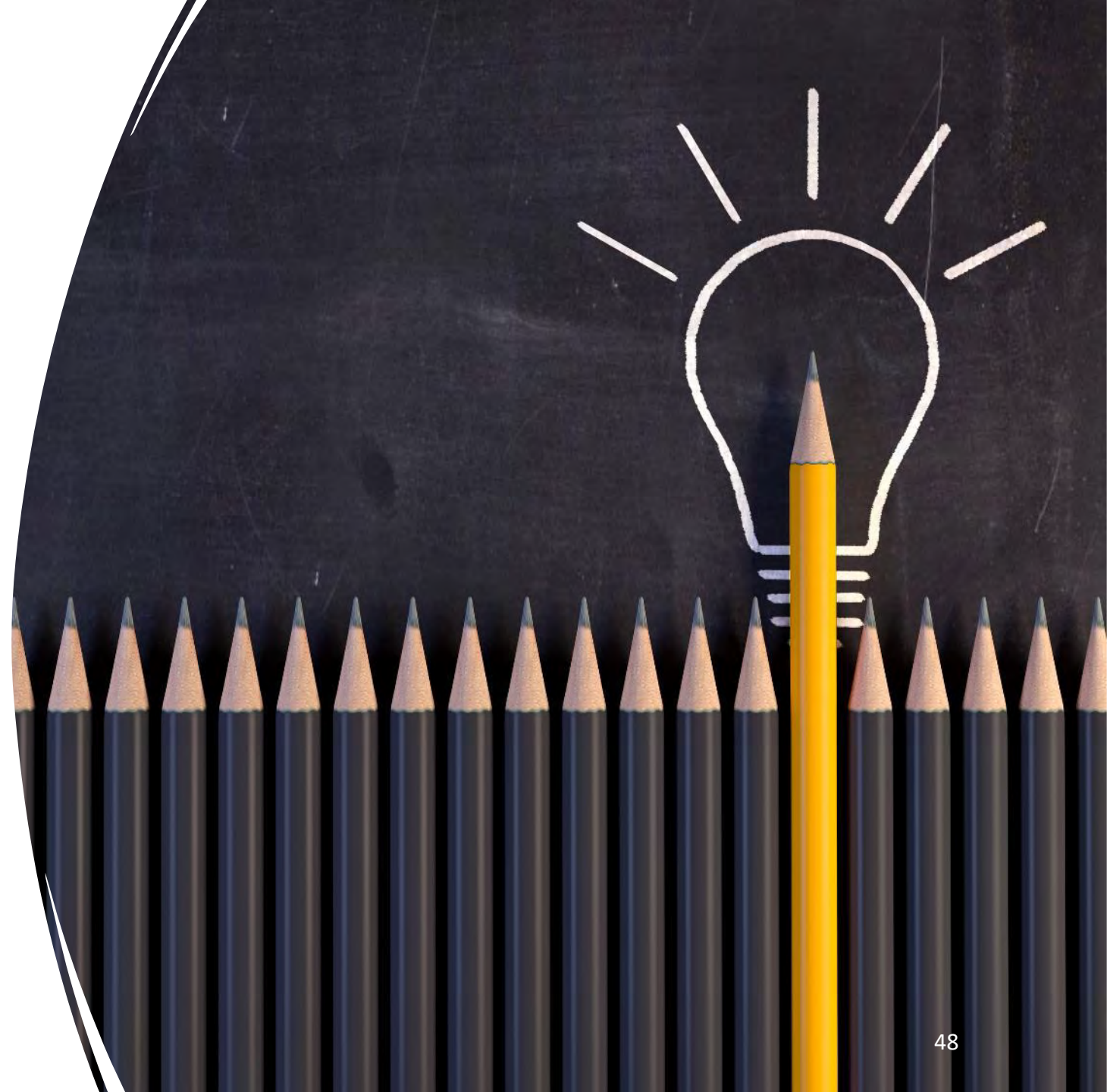
Reference Managers

- **Reference management software** helps you store and organise your references.
- They can **create** in-text citations and reference lists.
- Can **save you time** when writing.
- Different software packages are available.
- **EndNote** and **RefWorks** are **free** for University members.
- Find out more - <https://libguides.bodleian.ox.ac.uk/reference-management>



Top Tip

- Get familiar with your department's preferred referencing style.
- Record authors, titles, publishers, years, page numbers, **EVERYTHING**



Other Research Skills Training

IT Services courses

- Courses in using Stats packages, programming and advanced techniques with Word to help you manage your thesis writing.
- LinkedIn Learning – online video tutorials for developing IT Skills.
- <https://www.it.ox.ac.uk/it-training>

iSkills

- Run by the libraries.
- Include everything from catalogue searching to reference management and open access publishing.
- <https://www.bodleian.ox.ac.uk/ask/workshops#/>

One-to-One Consultations

- Any help you need using library services or resources, just ask a Subject Librarian.
- <https://www.bodleian.ox.ac.uk/ask/subject-librarians>

The background of the slide is a dense, overlapping collage of colorful sticky notes. The colors include shades of blue, green, pink, yellow, and purple. Each sticky note has a large, bold, black question mark printed on it. The notes are scattered across the entire frame, creating a textured and busy visual effect. In the top right corner, there are several white circles of varying sizes, some of which are partially cut off by the edge of the image. A solid blue circle is also visible in the top right corner.

Questions?