

UNIVERSITY OF OSLO

Systematic Review

SIG6 Methods Journal Club

Nani Teig, Diego Gonzalez Campos, Wangqiong Ye, and
Vo Van De

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What is a systematic review?

A systematic review is a structured method of reviewing and synthesizing evidence on a specific research question. It involves identifying, appraising, and summarizing all available studies on a topic, using predefined protocols to minimize bias and ensure reproducibility ([Moher et al., 2009](#)).

This approach provides a comprehensive and reliable view of the evidence based on all available research rather than just selected studies.

How does it differ from other reviews?

- Literature review or narrative review
- Scoping review
- Umbrella review
- Meta-analysis ([Grant & Booth, 2009](#))

Examples of Research Questions

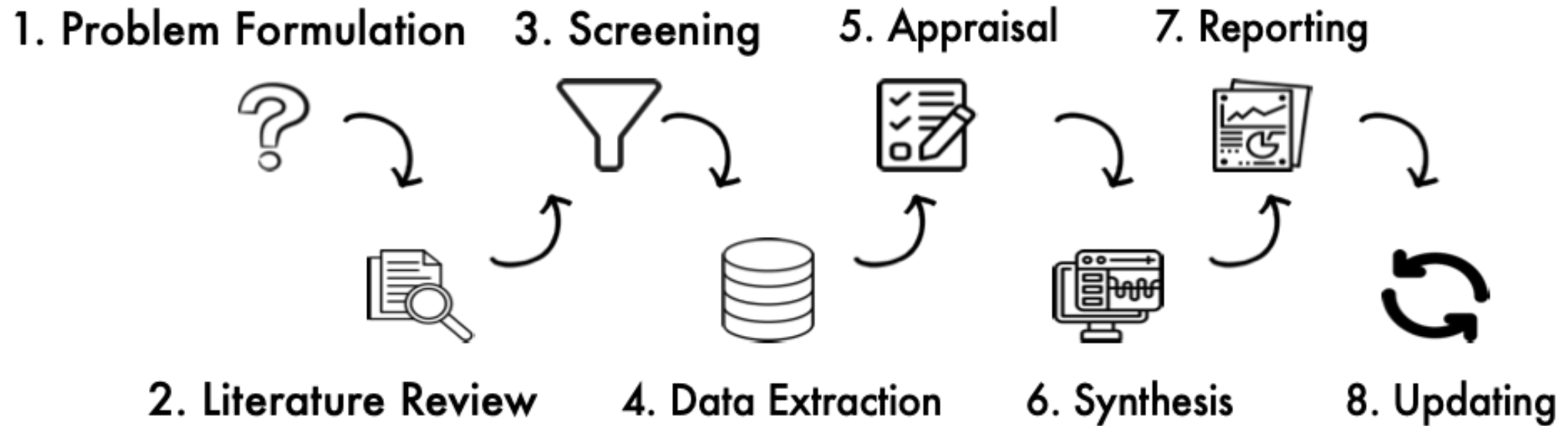
Assessing Scientific Inquiry **(Van Vo & Simmie, 2024)**

1. To what extent is research on assessment of scientific inquiry in educational contexts found in the international literature?
2. What are the predominant components, tasks, tools, and techniques used to assess scientific inquiry?
3. What are the trends and developments in the assessment of scientific inquiry?

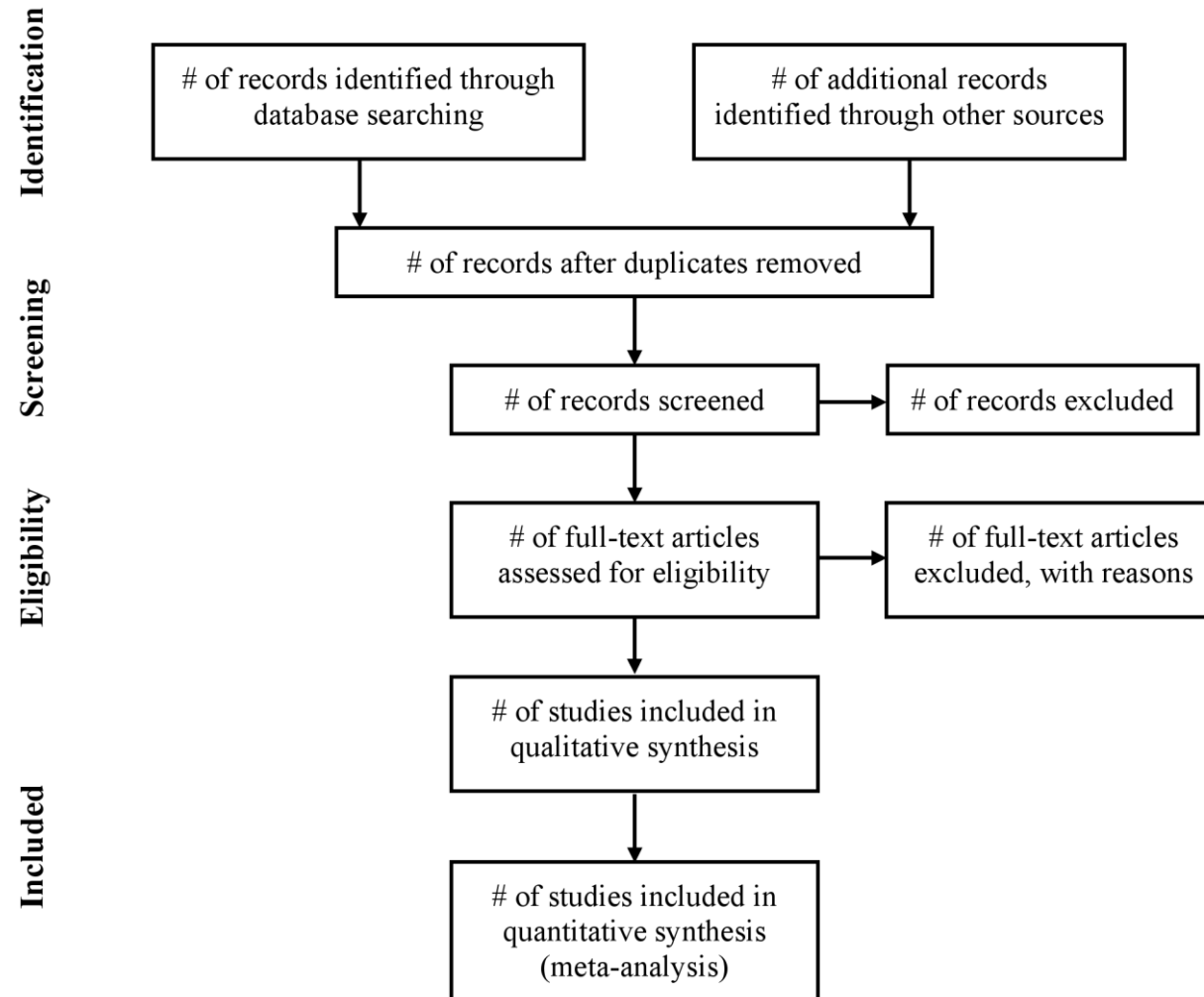
Science teaching and learning (STL) in TIMSS and PISA studies (Teig et al., 2022)

1. What characterises the articles examining STL from TIMSS and PISA in terms of their
 - a) aims;
 - b) data;
 - c) STL measures; and
 - d) research approaches?
2. Which empirical evidence on the
 - a) relationship between STL and student outcomes;
 - b) factors that may explain the variation of STL; and
 - c) patterns of STLare reported in the publications using TIMSS and PISA data?

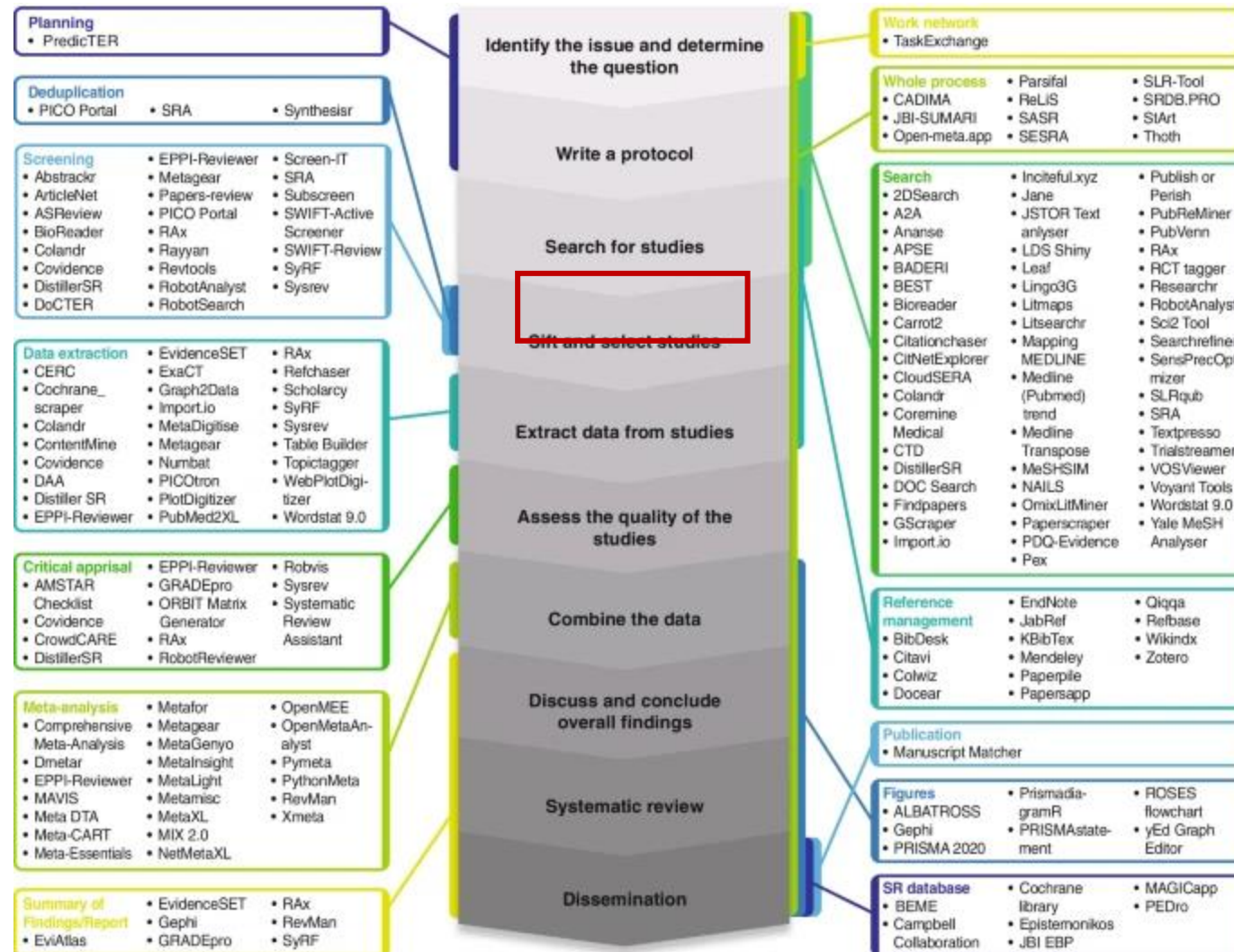
How to conduct a systematic review?



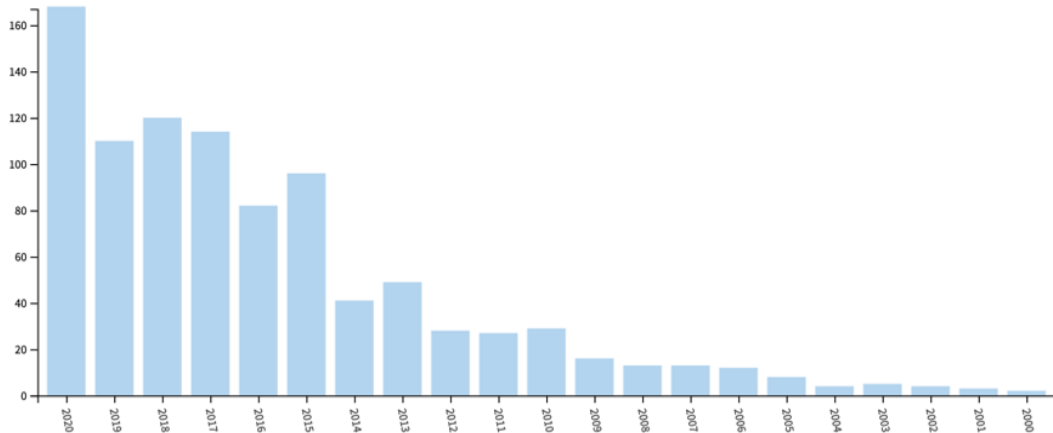
How to report a systematic review?



What role can AI play in conducting systematic reviews?

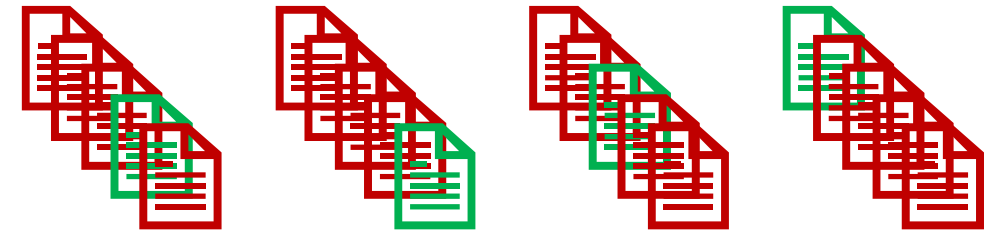
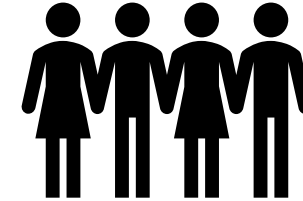


Selecting relevant studies (Screening) - Traditional



Educational video games 2000 – 2020
Web of Science

The number of publications have exponentially increased



Reviewers screen all documents

5% relevant documents

- Screening fatigue
- 13% missed documents (Waffenschmidt et al., 2019)

Selecting relevant studies (Screening) – Using AI

- AI tools can help researchers to find relevant records by using **screening prioritization** with **active learning**



Screening prioritization re-arranges the records to be screened from **random** to a more **intelligent order**

Reviewers do not have to screen all documents.

Image from <https://asreview.nl/>



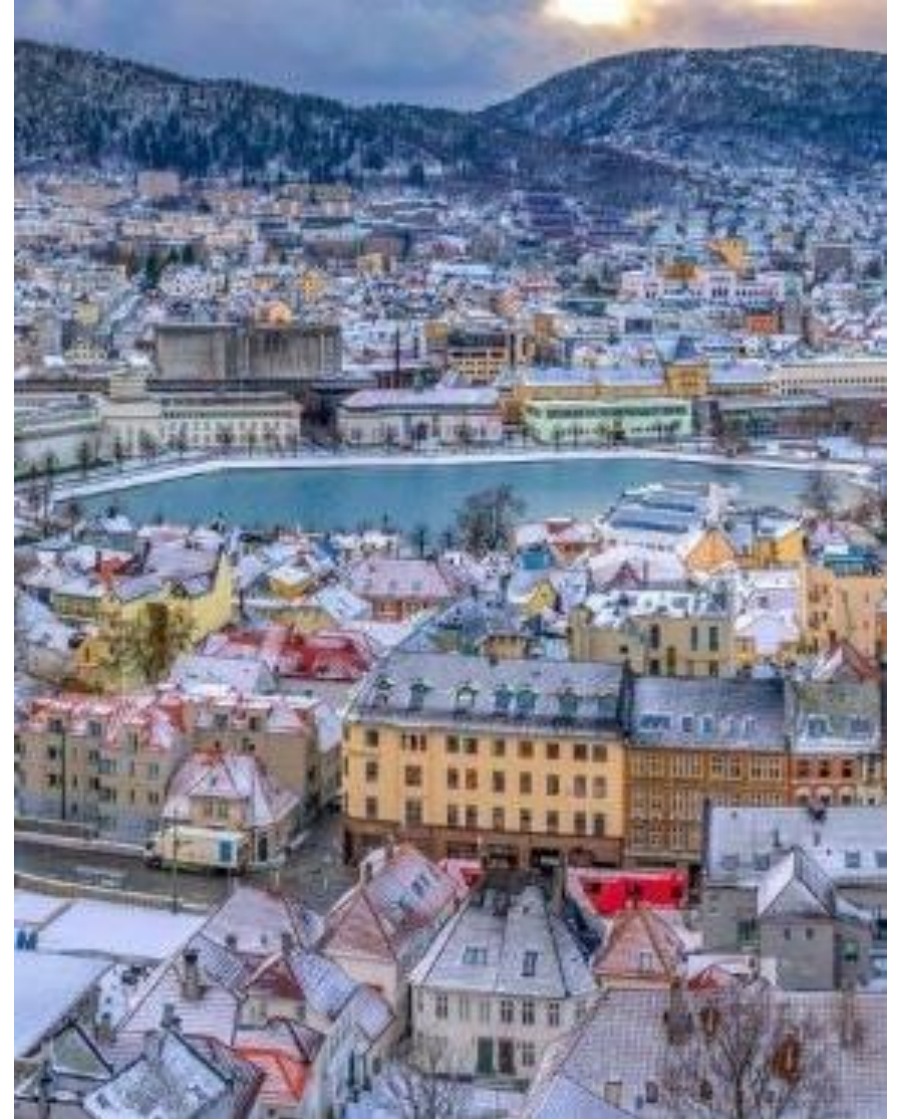
Reflections

1. Which aspect of your research do you think could benefit from a systematic review approach?
2. What aspects of the systematic review process do you find most manageable or challenging?
3. What do you think are the potential benefits and challenges of using AI for reviews?



General course in meta-analysis and systematic review (link)

- 6 – 9 Jan 2025 at 9:15-15:00
- University of Oslo, Norway
- Professor Ronny Scherer and Professor Monica Melby-Lervåg
- This course aims to develop a methodological understanding of the strengths and weaknesses of quantitative meta-analyses and systematic reviews.
- It will provide a step-by-step guide for meta-analyses and present the various techniques used for analysing the data from a meta-analysis, including the techniques used to synthesize single and multiple effects.
- The course is also aimed at developing the participants' understanding of the content, strengths, and weaknesses of reports or articles based on meta-analyses.



<https://boomers-daily.com/2022/02/19/winter-walks-oslo-capital-of-norway-4k/>