Artificial Intelligence in Education:
A Tertiary Scoping Review

Aims

- To explore how AIEd secondary research has developed over the past five years
  - Journals
  - Geographical distribution
  - Author's disciplinary affiliations
- To explore the score and nature of AIEd secondary research
  - Evidence synthesis
  - Main topics / applications
- To assess the quality of AIEd evidence synthesis
- To uncover research gaps identified in AIEd secondary research

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Methodology

- Tertiary scoping review[1] in order to "map the literature […] and provide an opportunity to identify key concepts; gaps in the research; and types and sources of evidence to inform practice, policymaking, and research"[2].
- Using an adapted version of Zawacki-Richter et al.'s (2019) typology of AI.
  - Profiling and Prediction
  - Assessment and Evaluation
  - Adaptive Systems and Personalisation
  - Intelligent Tutoring Systems
  - General AIEd
  - Bibliometric data

1. Kitchenham et al., 2009
2. Daudt et al., 2013, p. 8

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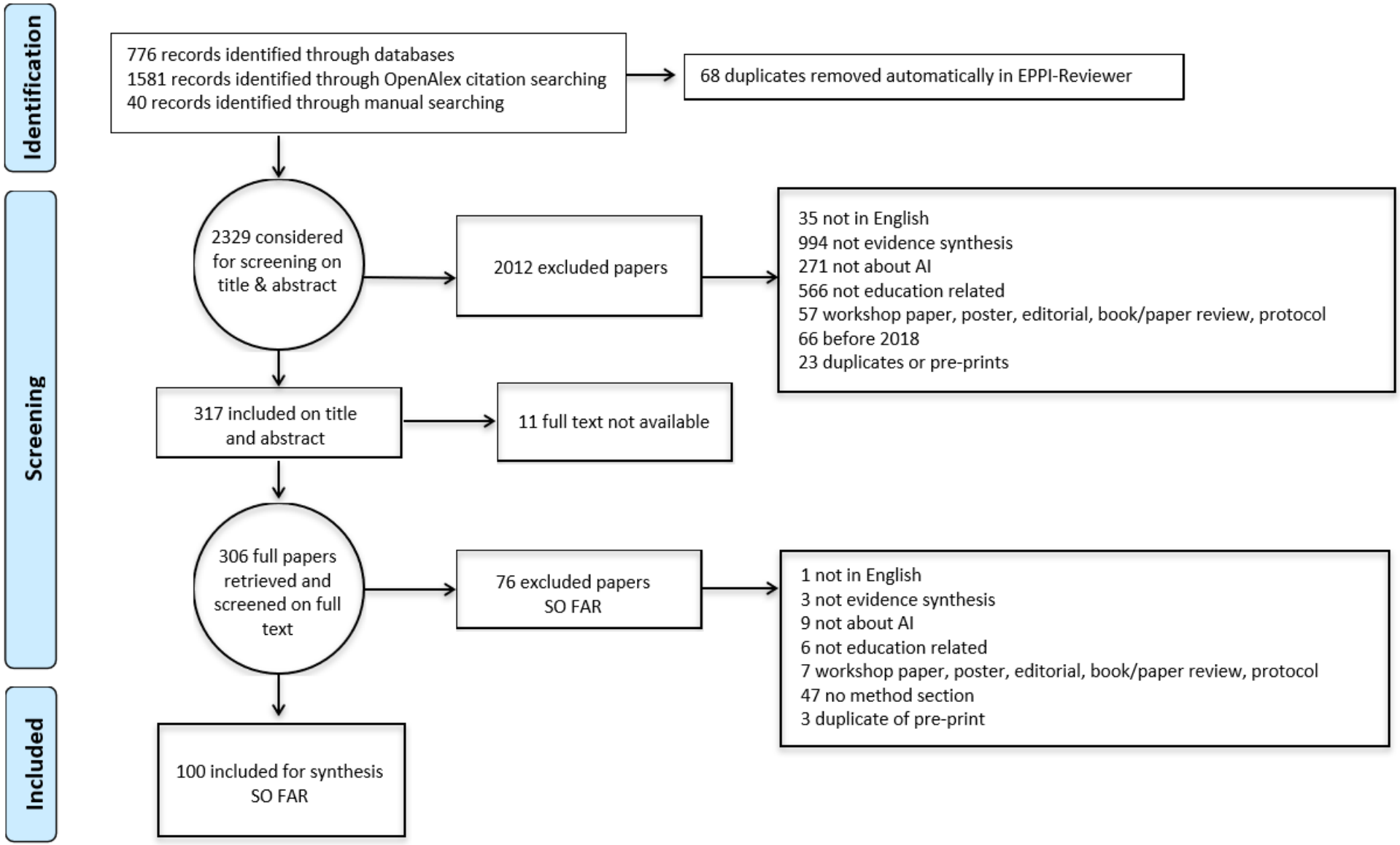
Search strategy

INCLUSION	EXCLUSION
Published 2018 onwards	Published before 2018
Research into applications of AI in formal education learning contexts	Not artificial intelligence in education
Secondary research with a method section	Primary research
Published in English	Published in a language other than English
Indexed in WoS, Scopus, ERIC, snowballed	No method section
Journal articles, conferences papers, reports	Book chapters, posters, editorials, book reviews

- Search string adapted from Zawacki-Richter et al. (2019) & Buntins et al. (Forthcoming)


Identification
Screening
Included
776 records identified through databases
1581 records identified through OpenAlex citation searching
40 records identified through manual searching
68 duplicates removed automatically in EPPI-Reviewer
2329 considered for screening on title & abstract
2012 excluded papers
35 not in English
994 not evidence synthesis
271 not about AI
566 not education related
57 workshop paper, poster, editorial, book/paper review, protocol
66 before 2018
23 duplicates or pre-prints
317 included on title and abstract
11 full text not available
306 full papers retrieved and screened on full text
76 excluded papers SO FAR
1 not in English
3 not evidence synthesis
9 not about AI
6 not education related
7 workshop paper, poster, editorial, book/paper review, protocol
47 no method section
3 duplicate of pre-print
100 included for synthesis SO FAR

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Analysis and synthesis

- Narrative synthesis, tabulation & computer-assisted content analysis
- Interactive evidence gap maps and openly accessible web database using EPPI-Reviewer[1] and EPPI-Mapper[2].
- Quality assessment
  - ➢PRISMA[3], PRISMA-ScR[4]
  - ➢DARE Criteria[5]
    - ✓Scored out of 4
    - ✓inclusion/exclusion criteria & search strategy
    - ✓quality assessment & study information

1. Thomas et al. (2022)
2. EPPI-Centre & Digital Solution Foundry (2022)
3. Page et al. (2021)
4. Tricco et al. (2018)
5. Kitchenham (2009)

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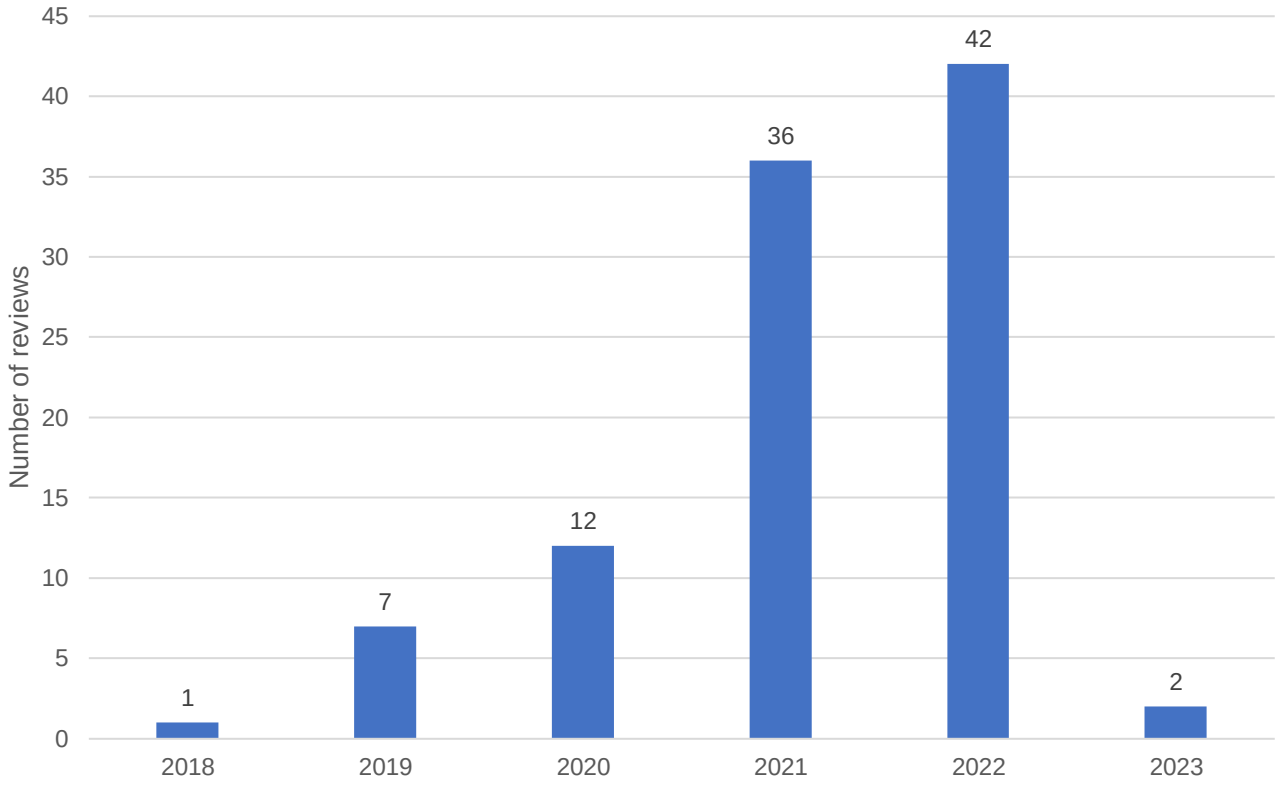
Key Findings so far

- 92% journal articles
- 69% open access
- 66% systematic reviews
- Mostly teams of 2, 3 or 4 authors
- 37% Education
- 66% domestic only collaborations



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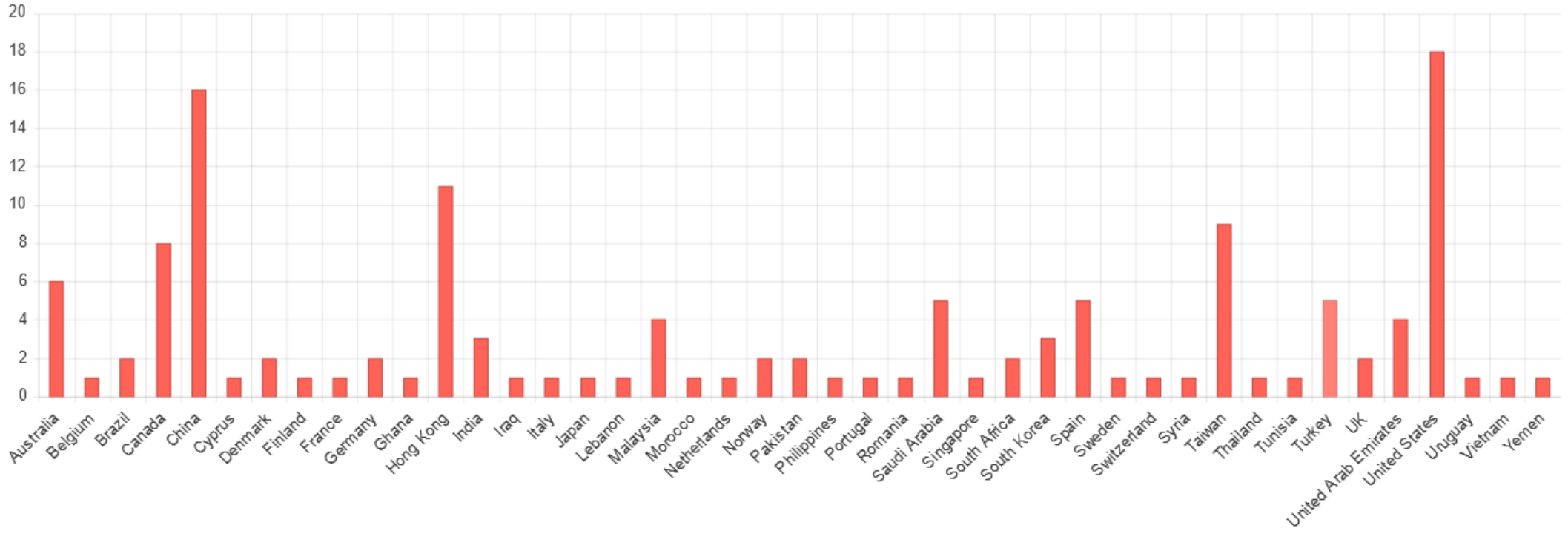
Key Findings so far



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Where to next?

- Keep extracting data including quality assessment
- Do one last check for secondary research
- Start writing up the article
- Produce the openly accessible web database and further interactive evidence gap maps

References

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