Topaz Project: How to conduct a transdisciplinary rapid review

AUTHORS

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ABOUT THE AUSTRALIAN RESEARCH COUNCIL CENTRE OF EXCELLENCE FOR THE DIGITAL CHILD

The Australian Research Council (ARC) Centre of Excellence for the Digital Child is the world's first research centre dedicated to creating positive digital childhoods for all Australian children.

Children are growing, learning and connecting with digital technology that's rapidly evolving and changing. Parents and caregivers are asking: How can technology help my child learn? How do I know good digital engagement from bad? How much technology is safe for my child? How do I keep my child safe online?

Our program of research will help answer these questions for all people who oversee the health, education and happiness of young children, including parents and caregivers; teachers and educators; government and policy makers; and community and business organisations.

We are a collaboration of researchers from Australian universities, led by QUT and including Curtin University, Deakin University, Edith Cowan University, The University of Queensland and University of Wollongong. Our partnerships with government agencies, technology developers, education sectors, policy makers and community groups will help us incorporate real-world insights and link our research to a wide range of real-world applications.

NON-TECHNICAL SUMMARY

This paper is part of a 'how to…' series aimed at supporting researchers from different specialist areas to work together to summarise evidence regarding technology use with, by and for young children.

The purpose of a rapid reviews is to synthesise available evidence in a timely manner in order to meet time pressures of end-user decision-makers. The rapid review was developed to synthesis evidence in an accelerated and more streamlined manner that retains standardised and transparent processes but with some short-cuts to reduce resource and time demands. Rapid reviews are potentially a highly valuable method to provide a timely, trustworthy synthesis of knowledge to support better outcomes for children growing up in a digital world.

The purpose of this paper is to provide a readily accessible resource of information on how to conduct transdisciplinary rapid reviews. This 'how to…' guide builds on the prior recommendations and approaches to conducting rapid reviews and provides explanations of what to do at each step, along with a curated list of resources relevant to each step, in a manner sensitive and inclusive to diverse disciplines.

In conducting a rapid review, first consider if a rapid review is needed and then ensure the necessary resources to conduct the review are available. It is highly encouraged to incorporate end-users (the people who will use the synthesis of evidence) early and throughout the process. Rapid reviews should address answerable questions, in a timely manner, and attempt to fill vital gaps in knowledge through an evidence synthesis. An *a priori* protocol should be developed before commencing the rapid review, to allow for transparency in the process. It is important to design a search for evidence that is effective and efficient so it can capture relevant results in a timely manner. Captured reports are then screened to remove reports that are not relevant. After screening relevant information from the included reports, the strengths and limitations of each report are appraised, to provide an indication of the trustworthiness and meaningfulness of the evidence in each report. An evidence summary is then prepared and presented in a report. The report of a rapid review should typically prioritise the practice needs of end-users over dissemination by more traditional or academic approaches. In line with the overall purpose of rapid reviews, it is important to ensure uptake of the review through effective dissemination and knowledge translation. This involves creating useful information and having this information in readily accessible places to allow those who may be interested in the review to find the information.

Overall, this paper promotes the use of rapid reviews across multiple specialist areas relevant to young children and digital technologies. It draws on resources from various specialist areas, provides examples from a variety of disciplines, and uses inclusive language to be more readable across disciplines. It aims to be an integrated resource supporting transdisciplinary rapid reviews.

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How to…conduct a transdisciplinary rapid review to support evidence-based decision-making with, by and for young children

ABSTRACT

This paper is part of a 'how to…'series aimed at supporting transdisciplinary reviews regarding technology use with, by and for young children. This paper focuses on how to conduct a rapid review. The rapid review was developed to synthesise evidence using an accelerated and more streamlined manner than systematic reviews, that retains standardised and transparent processes but with some short-cuts to reduce resource and time demands. Rapid reviews can be valuable for decision-makers, especially if there is an imminent need for an evidence-based evidence synthesis. The purpose of this paper is to provide a readily accessible resource of information on how to conduct transdisciplinary rapid reviews. This 'how to…' guide builds on the prior recommendations and approaches to conducting rapid reviews and provides explanations of what to do at each step, along with a curated list of resources relevant to each step, in a manner sensitive and inclusive to diverse disciplines. Rapid reviews provide a structured process of finding, appraising and synthesising evidence in a timely manner. Transdisciplinary rapid reviews can create timely evidence syntheses that are highly valuable to end-users to support informed evidence-based decision-making by those with the vision of a digital world that benefits children.

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INTRODUCTION

This paper is part of a 'how to…'series aimed at supporting transdisciplinary reviews regarding technology use with, by and for young children. This paper focuses on how to conduct a rapid review. Other papers in this series are focussed on how to conduct systematic, scoping and realist reviews (Beynon and Straker, 2022a; Beynon and Straker, 2022b; Beynon and Straker, 2022c). A typical systematic review aims to find, appraise and synthesise a body of evidence collated with very precise inclusion criteria to answer a specific research, policy or practice question (or series of questions) in a manner which minimises risk of bias in conclusions drawn. However, systematic reviews typically have large resource requirements and a considerable time lag between conception and final reporting, often taking approximately 1 year (Higgins et al., 2021) (6 months to 2 years) to complete. Such resource and time constraints may not match the needs of end-users.

The rapid review was developed to synthesise evidence in an accelerated and more streamlined manner while retaining standardised and transparent processes, with some short-cuts to reduce resource and time demands (Tricco et al., 2015).

Although there are varying definitions of rapid reviews, the Cochrane Collaboration has recently supported the following definition (Garritty et al., 2021): "A rapid review is a form of knowledge synthesis that accelerates the process of conducting a traditional systematic review through streamlining or omitting various methods to produce evidence for stakeholders in a resource-efficient manner" (Hamel et al., 2021).

As outlined in Table 1, a number of variations are possible with rapid reviews, otherwise known as a rapid evidence assessment, with the aim to balance time and other resource constraints with consideration of bias (Ganann et al., 2010; Haby et al., 2016; Khangura et al., 2012; Tricco et al., 2015).

TABLE 1 POTENTIAL WAYS TO ABBREVATE/STREAMLINE METHODS FOR A RAPID REVIEW

Process	How to abbreviate method
Topic	Restricting the topic or research question
Searching	Restricting to only 2–3 key databases; by language; by year of publication; only readily available evidence
Grey literature	Exclude or only limited inclusion such as limit to relevant organisations
Screening	Take a staged approach, first searching results by study design (systematic reviews first, then other study types). Could be 2 independent reviewers or potentially 1 reviewer and another reviewer verifying (with caution).
Extraction	Most relevant information (not fully comprehensive). Could be 2 independent reviewers or potentially 1 reviewer and another reviewer verifying (with caution).
Synthesis	Various ways to report: narrative summary, meta-analysis, mapping/categorising of evidence, or vote counting (direction of effect, magnitude etc.)
Reporting	Include an executive summary
Methods overall	Include post-hoc adjustments, such as making amendments to the eligibility criteria or the data extracted.

The purpose of a rapid review is to synthesise available evidence in a timely manner in order to meet time pressures of decision-makers (Khangura et al., 2014; Watt et al., 2008). As with all types of reviews, rapid reviews have a number of advantages and disadvantages (Table 2). Compared to systematic reviews, rapid reviews are generally less resource-intensive and have less time lag (1-6 months to complete on average; Featherstone et al., 2015). However, due to the short-cuts taken, there can be concerns regarding the rigor of methods and the reproducibility of results (Featherstone et al., 2015).

Timely rapid reviews can be valuable for decision-makers (Bambra et al., 2010), especially if there is an imminent need for an evidence-based evidence synthesis. A rapid review can also be conducted if there are insufficient resources to conduct a full standard systematic review. Further, a rapid review may be conducted if there was a previously conducted systematic review that needs updating with more recent evidence.

TABLE 2 ADVANTAGES AND DISADVANTAGES OF RAPID REVIEWS

Advantages	Disadvantages
Generally requires fewer resources and have less time lag than full systematic reviews; this benefits end-users	May be susceptible to bias due to the streamlining process such as sampling bias.
Can have a lower risk of bias as primary sources of information included or excluded as processes support identification of much of the relevant evidence, reducing the chance that review authors selectively include evidence supportive of their perspective	Can have a lower perceived value and shortcuts taken may impact on trustworthiness of conclusions
Can be used to synthesise evidence from multiple types of studies, including both quantitative and qualitative data	Can be narrow and constrained in scope

Rapid reviews follow the systematic review process, but certain components/steps are skipped or simplified in order to generate data in more quickly. Rapid reviews are potentially a highly valuable method to provide a timely, trustworthy synthesis of knowledge to support better outcomes for children growing up in a digital world.

The purpose of this paper is to provide a readily accessible resource of information on how to conduct transdisciplinary rapid reviews. The rapid review process is conceptualised to include a number of steps conducted in sequence, with potential for some iteration across steps (see Table 3). The timeline of rapid reviews can vary significantly, from a few days to several weeks or months, depending on the purpose and scope of the review. Some steps may not be relevant to every review, particularly if there is a short timeframe, so steps may need to be skipped. Before starting a rapid review, understand all the steps involved. Document everything as you go.

TABLE 3 STEPS INVOLVED IN CONDUCTING A RAPID REVIEW

Preliminary Activities: Determine need for the review and resources available	
Step 1	**Engage and involve users:** Develop an advisory group to ensure uptake of review
Step 2	**Define and formulate the research question**: Understand purpose of review
Step 3	**Write a protocol:** Establish the methods
Step 4	**Search the literature:** Locate available reports
Step 5	**Screen the reports:** Include relevant reports
Step 6	**Extract data:** Collate relevant information
Step 7	**Evaluate quality of each report**: Consider potential sources of bias
Step 8	**Formulate a synthesis:** Collate and summarise the results
Step 9	**Write the report:** Putting everything together
Step 10	**Disseminate**: Make academic community aware of the findings
Step 11	**Translate knowledge and engage end-users**: Help end-users apply the findings
Follow-up activities: renew or build upon as needed	

Many of the same resources that are used for systematic reviews are useful for rapid reviews. Rapid reviews generally follow the same format as systematic reviews but with some abbreviation of steps or streamlining to produce a more timely report. Therefore, the resources provided here include resources for systematic reviews, with additional resources directly relevant to rapid reviews. There are varying recommendations and methodological approaches for rapid reviews depending on the question, types of included reports, and time available. Therefore, each review is different.

How to conduct a transdisciplinary review to support decision making regarding children and technology

This 'how to…' guide builds on the prior recommendations and approaches to conducting rapid reviews and provides explanations of what to do at each step, along with a curated list of resources relevant to each step, in a manner sensitive and inclusive to diverse disciplines.

RESOURCES – OVERALL RAPID REVIEWS

- National Collaborating Centre for Methods and Tools (NCCMT) Rapid Review Guidebook details each step in undertaking a rapid review with ways to adapt the process given limited resources.
  - Available at: https://www.nccmt.ca/uploads/media/media/0001/02/800fe34eaedbad09edf80ad5081b9291acf1c0c2.pdf
  - Dobbins, M. (2017). Rapid Review Guidebook. Hamilton, ON: National Collaborating Centre for Methods and Tools Available from http://www.nccmt.ca/resources/rapid-review-guidebook.

- Rapid Reviews to Strengthen Health Policy and Systems: A Practical Guide (World Health Organization-WHO 2017) is a guide to performing rapid reviews, including rationale for conducting and uptake of rapid reviews.
  - Tricco, A. C., Langlois, E., & Straus, S. E. (2017). Rapid Reviews to Strengthen Health Policy and Systems: A Practical Guide. Geneva: World Health Organization.

- The STARR (SelecTing Approaches for Rapid Reviews) Decision Tool, guides reviewers in selecting potential approaches to performing a rapid review.
  - Pandor, A., Kaltenthaler, E., Martyn-St James, M., Wong, R., Cooper, K., Dimairo, M., . . . Booth, A. (2019). Delphi consensus reached to produce a decision tool for SelecTing Approaches for Rapid Reviews (STARR). Journal of Clinical Epidemiology, 114, 22-29. http://doi.org/10.1016/j.jclinepi.2019.06.005

- Haby, M. M., Chapman, E., Clark, R., Barreto, J., Reveiz, L., & Lavis, J. N. (2016). What are the best methodologies for rapid reviews of the research evidence for evidence-informed decision making in health policy and practice: a rapid review. Health rRsearch Policy and Systems, 14(1), 1-12. https://doi.org/10.1186/s12961-016-0155-7

- Khangura, S., Konnyu, K., Cushman, R., Grimshaw, J., & Moher, D. (2012). Evidence summaries: the evolution of a rapid review approach. Systematic Reviews, 1(1), 1-9. http://doi.org/10.1186/2046-4053-1-10

- Plüddemann, A., Aronson, J. K., Onakpoya, I., Heneghan, C., & Mahtani, K. R. (2018). Redefining rapid reviews: a flexible framework for restricted systematic reviews. BMJ Evidence-based Medicine, 23(6), 201-203. http://dx.doi.org/10.1136/bmjebm-2018-110990

- The Cochrane Collaboration was established in 1993 in the UK to synthesise medical research evidence from randomised controlled trials. It provides a wealth of resources to support

systematic reviews focussed on health and now covers some non-randomised controlled study designs.

- o Available at https://cccrg.cochrane.org/resources
- o Higgins, J. P., Thomas, J., Chandler, J., Cumpston, M., Li, T., Page, M. J., & Welch, V. A. (2021). Cochrane Handbook for Systematic Reviews of Interventions 6.2 (updated February 2021). Available from www.training.cochrane.org/handbook
- o Cochrane have also now developed rapid review methods:
- o Garritty, C., Gartlehner, G., Nussbaumer-Streit, B., King, V. J., Hamel, C., Kamel, C., . . . Stevens, A. (2021). Cochrane Rapid Reviews Methods Group offers evidence-informed guidance to conduct rapid reviews. Journal of Clinical Epidemiology, 130, 13-22. doi:10.1016/j.jclinepi.2020.10.007

RESOURCES – OVERALL SYSTEMATIC REVIEWS

- Centre for Reviews and Dissemination. (2008). Systematic Reviews: CRD's Guidance for Undertaking Reviews in Healthcare UK: University of York.
  - o Available at https://journals.plos.org/plosone/article/file?type=supplementary&id=info:doi/10.1371/journal.pone.0201887.s005
    - ▪ This manual is focussed on health care and covers the principles and methods of systematic reviews and specific details regarding reviews on clinical tests, public health interventions, adverse effects, economic evaluations diagnostic test accuracy as well as incorporating qualitative evidence in or alongside effectiveness reviews.

- The Joanna Briggs Institute, named after the first matron of the Royal Adelaide Hospital, was established in Australia to ensure appropriate information is accessible to those making healthcare policy and practice decisions. The Institute has pioneered the use of systematic reviews across a broader range of data, disciplines and questions, from quantitative through to qualitative studies and data, than the Cochrane Collaboration.
  - o Aromataris, E., & Munn, Z. (2020). JBI Manual for Evidence Synthesis. In JBI. Available from https://synthesismanual.jbi.global. https://doi.org/10.46658/JBIMES-20-02

- Following the model of the Cochrane Collaboration reviews on health interventions, the Campbell Collaboration was established in 2000 in the USA to promote positive social and economic change, initially through systematic reviews of research evidence on the effectiveness of social interventions (Littell and White, 2018; Petrosino, 2013). It now also includes evidence and gap map reviews and covers a broad range of social issues including education, business, crime, disability, international development and social welfare.
  - o Although, it recommends using the Cochrane handbook, it has a range of training resources.
  - o available at https://www.campbellcollaboration.org/research-resources/training-courses.html covering:

- Question formation
- Searching, coding and quality
- Meta-analysis methods
- Advanced methods
- Policy engagement

- Petticrew, M., & Roberts, H. (2008). Systematic Reviews in the Social Sciences: A Practical Guide. Malden, MA: Blackwell Publishing.
  - This guide is written for social scientists and covers the purpose and methods of systematic reviews including:
    - deciding on a question
    - which types of studies to include
    - creating the eligibility criteria and search strategy
    - appraising the quality and relevance of qualitative and quantitative research
    - how to summarise the results- narratively or quantitatively
    - disseminating the results

- Newman, M., & Gough, D. (2020). Systematic reviews in educational research: Methodology, perspectives and application. In K. M. Zawacki-Richter O., Bedenlier S., Bond M., Buntins K. (Ed.), Systematic Reviews in Educational Research (pp. 3-22): Springer VS, Wiesbaden. Available from https://doi.org/10.1007/978-3-658-27602-7_1. https://library.oapen.org/handle/20.500.12657/23142
  - This guide provides guidance in conducting systematic reviews in the context of education research. It includes various methodological aspects of systematic reviews and experiences of higher education researchers through worked examples.

- Borrego, M., Foster, M. J., & Froyd, J. E. (2014). Systematic literature reviews in engineering education and other developing interdisciplinary fields. Journal of Engineering Education, 103(1), 45-76. https://doi.org/https://doi.org/10.1002/jee.20038
  - This study is an overview of the methods for conducting a systematic review in the field of engineering education.

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Preliminary activities: Determine need for the review and available resources

A: Determine if a rapid review is needed or desirable

- Consider if a rapid review is the right type of review to answer the question and address the issue. Consider who will use the results of the review, and how.
- Engage with end-users early to determine the need for the review (consider Step 1), considering what they would use the information for, and whether this topic is amenable to a rapid review.
- Before beginning a review, check if there are existing or ongoing reviews (or protocols) on the topic. Conduct a preliminary search of the literature in order to refine the topic and determine the gap and need of the rapid review.
    - o Conduct preliminary relevant database searches such as within: Cochrane Database, Campbell Collaboration, PubMed/MEDLINE, EmBase, PROSPERO and DARE (Database of Abstracts of Reviews of Effects), CareData, Educational research abstracts, ERIC (Educational Research Information Centre), Sociological abstracts (formally Sciofile), ACM (Association for Computing Machinery), Digital Library, CINAHL, PsychINFO, Institute of Electrical and Electronics Engineers Xplore.

B: Ensure you have the resources necessary to conduct the review

- Consider the expected time required.
- Consider necessary resources:
    - o Review team
        - ▪ Reviews should generally include a team of more than one person.
        - ▪ In creating the review team, consider the need for domain and content expertise and also review methodological expertise. For example, a review on use of technology in the classroom would benefit from including experts in education on the team. First-time review authors should work with others who are experienced in the procedure of rapid reviews (or at least systematic reviews). Also, it is strongly encouraged to involve library personnel.
        - ▪ By having a team, the tasks are shared. Ensuring that certain tasks (screening the reports, data extraction, assessing risk of bias, etc.) can be performed by at least two people independently, or at least by one person and verified by a second reviewer, can reduce bias and likelihood of errors.
        - ▪ Consider involving stakeholders early in the process (see Step 1).
    - o Access to databases (see Step 4)
    - o Technology (see Step 5 and Step 8)

RESOURCES

Centre for Reviews and Dissemination. (2008). *Systematic Reviews: CRD's Guidance for Undertaking Reviews in Healthcare* UK: University of York.

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Step 1: Engage and involve users: Develop an advisory group to ensure uptake of the review

- Engage the end-users (stakeholders) early to determine the need for the review (see Preliminary Activities). It is important to understand what they would use the information for, and thus precisely what question needs to be answered.
- Engage end-users throughout the process of the rapid review and consider what to include in the report and what type of rapid review report would enable uptake of the findings. Consider this early in the process, to ensure a timely completion of the rapid review and to decrease research waste.
- Set up expectations, timelines and requirements with the advisory groups. It could be useful to conduct a Delphi exercise involving end-users.
- End-users could include policy makers, parents, carers, educators, consumers, clinicians, guidelines developers, designers, engineers, policy makers etc.
- Additionally, for research regarding children, it would be valuable to involve children (relevant to their developmental capacity) as stakeholders.
- End-users could be involved in establishing a research agenda, reformulation/refining the research question (Step 2), refining the protocol (Step 3), commenting on the format of the report (Step 9), forming recommendations based on the report, assisting in knowledge translation and uptake of strategies (Step 11), and potentially assisting in the whole review process. However, extensive involvement may take additional time and resources.
- The level of involvement should be meaningful and match the available resources.

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Step 2: Define and formulate the research question: Understand purpose of review

Rapid reviews should address answerable questions, in a timely manner, and attempt to fill vital gaps in knowledge through an evidence synthesis. In formulating and refining a question, consider engaging the intended end-users of the review (more information on this in Step 1). Particularly for rapid reviews, the research question must be focused and well-defined. Consider what budget and circumstances permit, in terms of time and resources. Rapid reviews are aimed to be a balance between 'the idea' and 'feasibility'. See Figure 1 for example review questions/objectives.

- In creating a balanced question in terms of the 'idea' and 'feasibility', consider the FINER criteria: Feasible, Interesting, Novel, Ethical, and Relevant (Cummings et al., 2013).
  - A feasible review asks a question that the author team is capable to conduct, while considering the time constrains, the team involved, the available resources and having a general idea of the available evidence. Consider what is affordable in time and money, what is manageable in scope, and what can be conducted with the technical expertise available.
  - Ensure the review team (and end-users) are interested in the question. Create a question that interests the investigators, peers, community and end-users.
  - A novel review will aim to fill a gap in knowledge. To decrease research waste, check through preliminary searches to see if there is already an existing or ongoing review of the question (see Preliminary Activities).
  - Ethical issues include a focus on priority questions and the way questions are framed.
  - The review should be relevant by including and engaging a range of end-users. (stakeholders) in developing the review in the early stages and formulating/refining the review question (See Step 1).
- The PICOT approach is one way to format the question for a rapid review (not every component is needed nor is the specific order crucial):
  - P: Population or problem or perspective
  - I: Intervention or phenomena of Interest
  - C: Comparison or Context
  - O: Outcome of interest
  - T: Timing of outcome or timeframe considered

FIGURE 1 EXAMPLE REVIEW QUESTIONS/OBJECTIVES:

o   "For this review, we aimed to address four research questions; what kinds of digital technologies have been used? Who is using these digital technologies? How or in what way are these digital technologies used? What kinds of effects come from using these digital technologies?" (Vargo et al., 2021)

o   "Therefore, we aimed to (1) explore the technology-based approaches reported in the literature, (2) discuss their methods and findings, and (3) suggest alternative approaches in the light of the findings." (Sezgin and Lin, 2019)

o   "What, if any, general principles for effective online or blended teacher education are evident?" (Perry et al., 2021)

o   What is the most recent evidence on how children's internet use can amplify the risk of harm and potentially undermine their well-being? (Stoilova et al., 2021)

RESOURCES

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Step 3: Write a protocol: Establish the methods

Develop an *a priori* protocol before commencing the rapid review, to allow for transparency in the process. The protocol is a plan for the review and reports on what will be done, versus the final report, which documents what was done along with the findings. Rapid reviews may include post-hoc adjustments while conducting the review, such as making amendments to the eligibility criteria or the data extracted due to time constrains. Deviations to the protocol should be detailed in the final report (see Step 9)

- Rapid reviews fundamentally follow the same methods as standard systematic review methods and should follow the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. The protocol should include a rationale for using a 'rapid' approach and detail any deviations/abbreviations from the standard systematic review process to ensure timeliness.
- The STARR (SeleTing Approaches for Rapid Reviews) Decision Tool is a tool to guide reviewers in selecting potential approaches to performing a rapid review.
- Consider early how knowledge will be translated and engage end-users, in order to recognise the best way to reach relevant audiences.
- A protocol extension to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement, PRISMA-P, outlines standards for what systematic review protocols need to include (Moher et al., 2015), which can be used for a rapid review.
- The protocol may include (see each relevant Step for more detail);
    - Title (include "Rapid review protocol")
    - Background, including rationale for conducting a rapid review
    - Objective/s and/or research question/s;
    - Eligibility criteria (inclusion/exclusion) (more details in Steps 4 and 5)
        - In creating the inclusion/exclusion criteria, consider limits such as time period (date of publication), location (certain countries or particular locations/settings such as schools) or language. Depending on the aim/focus of the review, also consider; age range, human studies only, types of report/study (policy documents, randomised control trials, cohort studies)
    - Search strategy (more detail in Step 4)
    - Screening process (more detail in Step 5)
    - Data extraction, analysis and reporting (more details in Steps 6, 7, 8, 9)
        - Outline how risk of bias/quality assessment will be conducted, including which tools will be used and how judgments will be made
        - Describe how a synthesis of included reports will be created (qualitative summary (meta-synthesis) and/or quantitative synthesis (meta-analysis)
    - Reporting and dissemination
        - Early in the process, as early as the protocol stage, consider how the information will be reported and disseminated.
    - Other information (e.g., acknowledgments, contributions of authors, declarations of interest, and sources of support).

- If time permits, make the rapid review protocol publicly available. Rapid review protocols may be published and/or made publicly available on research repositories such as PROSPERO, Open Science Framework, Figshare and Research Square. Some journals also publish review protocols (e.g., JBI Evidence Synthesis, BMJ Open).

RESOURCES

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PROSPERO: Register for systematic reviews, rapid reviews and umbrella reviews (not scoping reviews or literature scans). Available at: https://www.crd.york.ac.uk/prospero/

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Step 4: Search the literature: Locate available reports

A: Create a search strategy

In creating the search strategy for a rapid review, consider if there should be limits on the search such as years and language. The search may not include hand-searching and grey literature. Compared to a systematic review in which comprehensive sources are generally searched with explicated strategies, rapid reviews may have more limited sources searches (such as only two databases) but the search strategy should still be made explicit.

- Generally, an exhaustive search is not feasible in a rapid review. Therefore, the search should aim to be effective and efficient so it can produce relevant results in a timely manner.
- In order to inform policy, practice and products, it can be beneficial to use evidence-based bodies of literature as opposed to single studies. Therefore, it could be helpful to include previous reviews like systematic reviews within the rapid reviews. There could be a staged approach by first searching results by study design, systematic reviews first, then other study type when there is limited summary evidence available. See Figures 2 and 3 as examples of search strategies.
- When creating the search strategy, consult an experienced subject librarian for assistance.
- Determine **what** to search for, and what type of sources will be included: peer-reviewed journal papers, grey literature, etc.
  - o Due to time considerations and depending on the scope of the review, grey literature may or may not be included and searched or may be limited to only certain organisations or repositories such as websites of policy documents.
- Determine **where** to search, i.e., which databases (and other sources) should be searched. Rapid review searches may potentially be limited to two to three databases, with a focus on certain types of studies.
  - o Potential subject-specific bibliographic databases (mainly for published journal articles):
    - ACM Digital Library (computing Machinery)
    - ASSIA (social sciences)
    - BIOSIS (life sciences)
    - British Education Index (education and training)
    - CareData (social care)
    - CINAHL (nursing and allied health)
    - Computer Science (computing)
    - Educational research abstracts (education)
    - Embase
    - ERIC (education)
    - IEEE Xplore (electrical engineering, computer science, and electronics)
    - Medline/PubMed (health and biomedicine, PubMed is free access to Medline and includes some extra citations)
    - ProQuest (multidisciplinary)
    - PsycINFO (psychology and psychiatry)
    - SAGE Journals (multidisciplinary)

- Scopus (multidisciplinary and citation index)
- Sociological abstracts (social science, formally Sciofile)
- SPORTDiscus (sports, fitness and sports medicine)
  o Trials registers and trials results registers (may or may not be searched)
    - ClinicalTrials.gov (US site listing clinical trials in the US and other countries-including Australia
    - WHO International Clinical Trials Registry Platform (ICTRP) portal
    - International Clinical Trials Registry Platform (clinical trials being undertaken worldwide-including Australia)
    - Australian New Zealand Clinical Trials Registry (ANZCTR) (Clinical trials being undertaken in Australia and New Zealand
    - Cochrane Central Register of Controlled Trials (CENTRAL) (randomised trials on health issues)
  o Potential databases to search for grey literature (may or may not be searched):
    - **Subscribed databases** such as Scopus and Web of Science index conference papers, technical and other reports. ProQuest indexes dissertations and theses, conference papers and proceedings. Informit (an Australian database) indexes conference papers and many government documents.
    - **Websites** or key organisations in your research area are useful to search or browse. These may include: government agencies, academic or research institutes, professional associations, and advocacy groups.
    - **Grey literature databases** Specialised databases, such as Open Grey, GreyNet International and MedNar index grey literature in a number of subject areas.
    - Trove is an overarching search interface to search the content of most Australian libraries as well as archives and repositories.
    - **Search engines** such as Google are useful when searching for grey literature. A simple search for your keywords is often the best approach. To restrict the search results, limit to particular domains (.org, .gov) or by file type (pdf). e.g., vaccination rural Australia filetype:pdf or vaccination rural Australia site:org
  o Potential places to search for books or theses (may or may not be searched):
    - **Library catalogues** index local, national and international books. Search these to locate relevant resources. Your institutional or public library may be able to obtain items that are not held in their collections via inter-library loan. (Note: this does not apply to ebooks held in university libraries, which are covered by institutional licences).
    - Use Trove for Australian books and theses and WorldCat for international material.
    - **Digital theses** are indexed in a number of open access resources. These include institutional repositories (see Australasian Open Access Repositories for a list of research repositories), WorldCat, OAIster, the Networked Digital Library of Theses and Dissertations and the British Libraries – EthOS e-theses online service.
- Determine **what key concepts** and words to search. Key concepts and terms may be used differently in different databases, so specific search strategies for each database are usually required.

- Both free-text and subject headings (e.g. Medical Subject Headings [MeSH] and Emtree) should be used. Subject headings are standardised terms used for indexing and using them can create a more effective search.
  - o In creating a search strategy, brainstorm a list of terms including synonyms, alternative spellings and related concepts. Group the concepts/terms to create a search, e.g., one concept could be teenager, which could include: adolescen*, teen*, youth, young adult.
  - o Consider an exploratory search first. This preliminary search should ideally locate key papers that should be captured in the full search. Create a list of key words from titles and abstracts of the key papers in order to build comprehensive and specific search strategy.
- Ensure correct use of the Boolean 'AND' and 'OR' AND 'NOT' operators. Within each concept, terms are joined together with the Boolean 'OR' operator, and the concepts are combined with the Boolean 'AND' operator. The 'NOT' operator should be used carefully to avoid inadvertently removing records that are relevant from the search set, but it can be helpful to reduce search waste.
- Consider what shouldn't be included and what limits could be imposed on the search. These could include language limits or limiting the search based on publication date ranges.

B: Implement the specific searches for each database/registry/source

- Pilot test the search strategy in the relevant sources and check it correctly identifies the key papers/primary sources and is not too sensitive or specific.
- Some refinement of the search strategies is often required, to ensure relevant literature is not missed and to reduce the number of irrelevant reports incorrectly identified. Make the search as efficient and effective as possible.
- If there are too many or too few results, consider consulting a librarian, your team and, potentially, the end-users/stakeholders.
- Once refined, run the search strategy.
- Ensure the process is documented throughout to ensure transparency of the review.

FIGURE 2 AN EXAMPLE - LITERATURE SEARCH PROCESS FOR A RAPID REVIEW ON FRAMEWORKS FOR ONLINE SAFETY EDUCATION. (SOURCE: WALSH ET AL., 2022)

Appendix A. Search strategies for academic databases

Strategy 1:
(online OR digital OR web OR internet OR cyber*) AND
(safety OR harm OR risk OR danger) AND
(child* OR adolesc* ORr teen* OR youth OR student* OR school*) AND
(systematic OR meta analysis OR review)

Strategy 2:
(online OR digital OR internet OR media OR mobile OR tech* OR web OR cyber OR "social network") AND
(risk OR harm OR danger OR abuse OR violence OR threat) AND
(bullying OR cyberbullying OR grooming OR sexting OR exploitation OR stalking) AND
(child* OR adolesc* OR school OR Student* OR Young) AND
(framework OR model OR Guideline OR Standard OR Tool) AND
(safe* OR manage* OR secur* OR educat* OR support) AND
(program* OR project nOR activity OR initiative OR policy OR publication)

Strategy 3:
(online OR digital OR internet OR media OR mobile OR tech* OR web OR cyber OR "social network") AND
(risk OR harm OR danger OR abuse OR violence OR threat) AND
(bullying OR cyberbullying OR grooming OR sexting OR exploitation OR stalking) AND
(child* OR adolesc* OR school OR Student* OR Young) AND
(framework OR model OR Guideline OR Standard OR Tool) AND
(safe* OR manage* OR secur* OR educat* OR support) AND
(program* OR project nOR activity OR initiative OR policy OR publication)

Strategy 4:
(prevent* OR reduc* OR educat* OR promot* OR implement* ORr increas* OR decreas* OR facilitat* OR barrier* OR encourag* OR discourag*) AND (school* or class* OR pupil* OR student*) AND (guideline* OR guidance ORr policy OR policies OR recommendation* OR tool* OR standard* OR "best practice*" OR framework* OR "good practice*" OR "effective practice*") AND (online OR digital OR web OR internet OR cyber*)

Additional searches focused on specific risks including:
Bullying
Cyberbullying
Online child exploitation
Online grooming
Sexting
Exposure to pornography online
Online solicitation
Unwanted contact
Digital reputation
Privacy

Appendix B. Search terms for the internet

Searches included a combination of terms, blending several groups of keywords.

Group 1, online context terms: online, digital, Internet, media, mobile, technology, tech, web, cyber, social network

Group 2, child terms: child, children, childhood, adolescent, adolescence, teen, teenage, young people, young person, youth, student, pupil, school, class

Group 3, safety terms: safety, risk, harm, danger, abuse, maltreatment, violence, threat

Group 4, framework terms: Framework, model, guideline, standard, tool

Group 5, specific risk terms: bullying, cyberbullying, online child exploitation, online grooming, sexting, exposure to pornography online, online solicitation, unwanted contact, digital reputation, privacy.

Group 6, positive prevention terms: Safety, management, security, education, support, critical literacy, digital literacy, media literacy, digital citizenship, digital leadership

FIGURE 3 AN EXAMPLE - PART OF THE DATABASE SEARCH STRATEGY FOR A RAPID REVIEW ON REMOTE AND BLENDED TEACHER EDUCATION (SOURCE: PERRY ET AL., 2021)

Database	Search String/Details	Results
Web of Science (10 collections)	(TI = (teach* OR educat* OR profession*) AND AB = (educat*OR learn* OR CPD OR train* OR develop*) AND TI = (review OR "meta-analysis" OR synthesis OR Evaluation OR Trial OR Impact OR effect) AND AB = (modality OR mode OR online OR "face-to-face" OR blended OR remote OR virtual OR distance)) AND LANGUAGE: (English) Indexes = SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC Timespan = 2005–2020	3314 initial 1400 after exclusion by WoS categories
Proquest (9 databases see record)	TI: (teach* OR educat* OR profession*) AND TI: (educat* OR learn* OR CPD OR train* OR develop*) AND TI: (modality OR mode OR online OR "face-to-face" OR blended OR remote OR virtual OR distance) AND AB: (review OR "meta-analysis" OR synthesis OR Evaluation OR Trial OR Impact OR effect) Language: English Date: 2010 onwards	3638 results

RESOURCES

Centre for Reviews and Dissemination. (2008) Chapter 2: Systematic reviews of clinical tests. In: Systematic reviews: CRD's Guidance for Undertaking Reviews in Healthcare UK: University of York.

Dobbins, M. (2017). *Rapid Review Guidebook*. In. Hamilton, ON: National Collaborating Centre for Methods and Tools Available from http://www.nccmt.ca/resources/rapid-review-guidebook.

Featherstone, R. M., Dryden, D. M., Foisy, M., Guise, J.-M., Mitchell, M. D., Paynter, R. A., . . . Hartling, L. (2015). Advancing knowledge of rapid reviews: an analysis of results, conclusions and recommendations from published review articles examining rapid reviews. *Systematic Reviews, 4*(1), 1-8. http://www.systematicreviewsjournal.com/content/4/1/50.

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Khangura, S., Konnyu, K., Cushman, R., Grimshaw, J., & Moher, D. (2012). Evidence summaries: the evolution of a rapid review approach. *Systematic Reviews, 1*(1), 1-9. http://doi.org/10.1186/2046-4053-1-10

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Step 5: Screen the reports: Include relevant reports

The selection of reports should be transparent, with *a priori* exclusion/inclusion criteria (as detailed in the protocol-Step 3) but further post-hoc selection decisions could be made. If post-hoc selection decisions are made, then these should be outlined in the report (Step 9). The eligibility criteria could have included aspects such as: the population of interest (e.g. , children), the phenomena of interest (e.g., digital apps), the outcome of interest (e.g., educational), any other context of interest, and types of evidence sources.

- Bring together the search results from the different databases, registries, and other sources.
  - o Merge the search results from the different sources, potentially using reference management software such as EndNote or Covidence.
  - o Remove duplicate records of the same report.
- Document each step and keep a record of the process of study selection with a flowchart of the review process, including numbers and details on the flow of the search, duplicates, title/abstract selection, full-text retrieval, data extraction, and presentation of evidence (such as in a PRISMA flow diagram (see flow diagram below) or QUORUM flow diagram). See Figure 4 for an example.
- Basic productivity tools, including: word processors, spreadsheets and reference management software, can help keep track and manage the section process. There are review tools that can assist in the process of screening search results.
  - o Research Screener – an Artificial Intelligence tool developed to reduce the need to manually screen all titles and abstracts. It learns from the decisions made on the first sample of 50 reports and presents a prioritised list of reports for manual review. This iterative process continues until the reviewer is confident subsequent batches of 50 do not include relevant reports.
  - o Abstrackr – a web-based screening tool that can prioritise the screening of records using machine-learning techniques.
  - o Covidence – a web-based software platform for conducting systematic reviews, which includes support for collaborative title and abstract screening, full-text review, risk of bias assessment and data extraction.
  - o DistillerSR – a web-based software application for undertaking bibliographic record screening and data extraction. It has a number of management features to track progress, assess interrater reliability and export data for further analysis.
  - o EPPI-Reviewer– web-based software designed to support all stages of the systematic review process, including reference management, screening, risk of bias assessment, data extraction and synthesis.
  - o Rayyan – a web-based application for collaborative citation screening and full-text selection.

Step 5A: Screen titles and abstracts

- Consider how many reviewers will be screening the evidence and who they will be. For rapid reviews, there could be two independent reviewers or potentially one reviewer and another reviewer verifying the study selection for accuracy. Otherwise, use two reviewers to independently
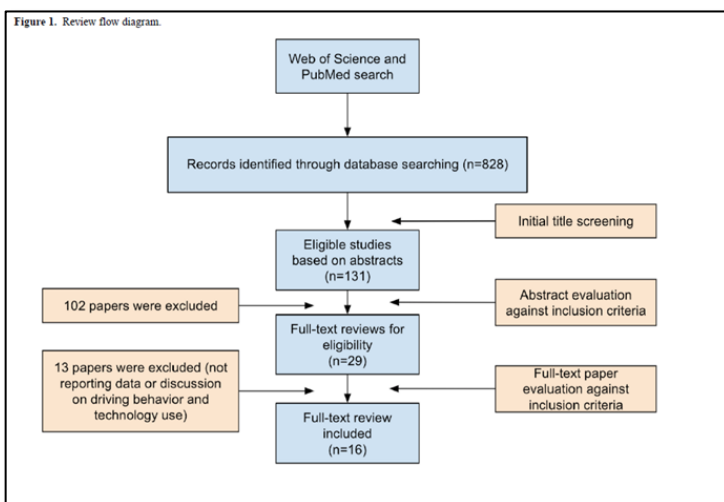
screen at least 20% of titles/abstracts and then use just one reviewer to screen the remaining titles/abstracts with the second reviewer screening all excluded abstracts.

- Use at least two independent reviewers to minimise bias. If multiple reviewers are used, consider how will disagreement be settled, e.g., through discussion and consensus or by using a third party.
- Before starting the process, first pilot test the screening process on a small number of reports.
- If there are any doubts, be over-inclusive at this stage (i.e., if in doubt at the title/abstract screen stage, include the report for full-text review).
- At the title and abstract screening stage, it is not necessary to document the specific reason for excluding each report.

Step 5B: Screen full texts

- Reports that have been included after the title and abstract screen should then be retrieved for full-text review.
- Screening of full texts should be completed and excluded when the report does not meet the eligibility criteria. Reasons for excluding reports should be documented.
- Again, first conduct a pilot exercise to pilot test the full text screening process on a pre-determined number of reports.
- For rapid reviews, there could be two independent reviewers screening the full text reports or potentially one reviewer and another reviewer verifying the study selection for accuracy. Using at least two independent reviewers helps to minimise bias. Otherwise, use one reviewer to screen all full-text reports and a second reviewer to screen all excluded full-text reports to verify the study section.
- If multiple reviewers are used, consider how will disagreement be settled, e.g., through discussion and consensus or by using a third party to be a tie breaker. These methods should be pre-determined and reported in the protocol.

FIGURE 4 AN EXAMPLE - REVIEW FLOW DIAGRAM FROM A RAPID REVIEW ON TECHNOLOGY-BASED INTERVENTIONS, ASSESSMENTS, AND SOLUTIONS FOR SAFE DRIVING TRAINING FOR ADOLESCENTS (SOURCE: SEZGIN AND LIN, 2019).

Figure 1. Review flow diagram.

RESOURCES

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Step 6: Extract data: Collate relevant information

In extracting the data, consider how much detail is important to extract from each included report. This is about collecting the relevant information from the included reports.

- Create a data extraction table to bring all the information together. Depending on the purpose of the review article, some important information to extract could include (as applicable):
    o Author/s
    o Year of publication
    o Type of study
    o Location (country) the report was published or conducted
    o Aims/objective/purpose
    o Population studied and sample size
    o Methods
    o Outcomes measures
    o Key results
- It could be useful to pilot test the data extraction form on a couple reports to ensure all relevant information is captured in a timely manner and, if necessary, amend the data extraction form.
- Generally, the data extraction should be conducted for two people independently, or at least one person and then verified by a second person for accuracy. The data extraction process could be iterative.
- After data have been extracted the reviewers should meet to discuss any discrepancies to reach a consensus or, if necessary, consult with another member of the review team.
- It could be helpful to consult with end-users at this stage to ensure all relevant and necessary information is collected.
- Also, consider using data from existing systematic review to speed up the data extraction process. See Figure 5 for an example study characteristics table.

FIGURE 5 AN EXAMPLE - PART OF A STUDY CHARACTERISTICS TABLE FROM A RAPID REVIEW ON TECHNOLOGY-BASED INTERVENTIONS-ASSESSMENTS, AND SOLUTIONS FOR SAFE DRIVING TRAINING FOR ADOLESCENTS (SOURCE: SEZGIN AND LIN, 2019)

Table 2. Literature summary grouped by the type of technology used.

Study	Country	Method	Sample and size	Significant findings for technology use	Identified barriers to technology use
In-vehicle technologies					
McGehee, 2007 [16]	United States	Driving data analysis (technology used: Drive-Cam)	26 teens (16-17 years old)	Technology with periodic feedback and parental involvement were effective in reducing unsafe driving.	N/A[a]
Musicant, 2010 [12]	Israel	Driving data analysis	32 young drivers (17-24 years old)	Availability of feedback reduced event frequency by 50%,	N/A
Carney, 2010 [17]	United States	Driving data analysis (technology used: Drive-Cam)	18 teens (16 years old)	Intervention with visual feedback and weekly reports and videos to teens and parents increased safe driving.	N/A
Prato, 2010 [18]	Israel	Driving data analysis and survey	62 teen-parent pairs	Different sexes exhibited different risky behaviors; Tendency to seek sensation affects risky driving; Driving behavior of parents, duration of supervised driving, and level of parental monitoring influenced risky behavior.	N/A
Farmer, 2010 [13]	United States	Driving data analysis	85 teens (16-17 years old)	Reinforcement from parents was necessary for sustainable safe driving; Push notifications (emailing report cards and personalized feedback) were more effective than pull notifications (website access).	Alerts can be annoying; Too much information provided could be discouraging for parents
Guttman, 2011 [21]	Israel	Interview	906 parents of young drivers (17-24 years old)	Early stages of driving were considered a better time for installing the technology; Financial benefits and environmental considerations were perceived as incentives; Security of data and privacy of teens were common concerns; Technology may promote parent-teen driver communication; Parents should have access to monitoring data.	Cost; Security and privacy concerns; Confronting the young driver

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Step 7: Evaluate quality of each report: Consider potential sources of bias

Many rapid reviews utilise similar rigorous appraisal tools to systematic reviews. The appraisal tools used are dependent on the type of included report and the purpose of the included report. Critical appraisal is assessing the quality of the study methods to give an indication if the findings are trustworthy and meaningful. Critically appraising to consider potential risk of bias can help determine if the methods of the included report were sufficient that the findings of the report are valid.

- Use previously published and validated quality assessment tools to evaluate the quality of the evidence.
- Many different tools are available. When selecting a tool, consider the types of studies to be reviewed (e.g., systematic reviews, randomised control trials, observational studies or qualitative studies) and the aspects of quality considered critical to the review purpose.

TABLE 4 NHMRC AND OTHER RESOURCES SUGGESTED APPRAISAL TOOLS

Question or Study type	Appraisal tools
Summaries/Guidelines	AGREE II
Systematic reviews	ROBIS AMSTAR 2 SIGN checklist for SR and meta-analysis
For randomised trials	Cochrane RoB 2 tool SIGN checklist for randomised control trials
Non-randomised studies of interventions	ROBINS-I tool Newcastle Ottawa Scale SIGN checklist for case-control and cohort studies STROBE Checklist
Prognostic	QUIPS PROBAST JBI checklist for prevalence studies
Diagnostic	QUADAS-2 SIGN checklist

Qualitative	JBI checklist for Qualitative research
Observational studies of exposures	Navigation Guide risk of bias checklist
Measurement properties	COSMIN
Mixed methods	MMAT McGill Mixed Methods Appraisal tool
Clinical Practice Guidelines	AGREE-II Appraisal of Guidelines for Research and Evaluation
Economic Studies	Consensus Health Economic Criteria (CHEC) List CASP- Economic Evaluation

General process for risk of bias or quality assessment:

- First pilot test the risk of bias tool on a small sample of reports (approximately three to six reports). The pilot test can be used to improve the reliability of assessments and to help ensure that the criteria are being applied consistently and in a timely manner by the reviewer team.
- Commonly, at least two people independently assess the reports, performing the risk of bias assessment using a pre-determined process for resolving disagreements. This is done to reduce errors and ensure judgments are not influenced by one person's preconceptions. Alternatively, one reviewer can perform the risk of bias assessment and a second reviewer can verify the process.
- Disagreements can generally be resolved by discussion, or through consulting another person.
- Risk of bias assessments could also be limited to the studies covering the most important outcomes, considering what would be the most valuable for end-users.

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Risk of bias tools: https://www.nhmrc.gov.au/guidelinesforguidelines/develop/assessing-risk-bias

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Step 8: Formulate a synthesis: Collate and summarise the results

The synthesis of results for a rapid review may only include a narrative descriptive summary of the findings or may include a quantitative summary (meta-analysis), or another method such as mapping/categorising of evidence. It could be beneficial to consult with the end-users to determine the most useful way of presenting the results.

Step 8A: Synthesis of results (Narrative meta-synthesis)

- This could be presented in a number of ways. Consider including a summary of the study characterises, study quality and study results for each included study.
- The overall aim of the syntheses is to organise the findings and results in order to attempt to draw conclusions. Generally, rapid reviews will include recommendations or implications for policy as part of a component of the synthesis.
- When creating a summary of the evidence, consider the best way to present to the information for end-users. An example of an alternative synthesis method could include summarising effect estimates. This provides information on the magnitude and the range of effects. Syntheses can also be presented as box-and-whisker plot or bubble plots.
- Tables and plots structure information to show patterns in the data and convey detailed information, sometimes more efficiently than text. This aids interpretation and helps readers assess the accuracy of the review findings.
- Results can also be grouped by certain characteristics (comparison, outcome domains, populations).

Step 8B: Quantitative synthesis- Meta-analysis (optional)

- Commonly the evidence is summarised narratively and meta-analyses are only included if needed and appropriate.
- If a meta-analysis is appropriate, carefully consider which results should be combined.
- Conducting a meta-analysis has advantages such as increasing statistical power and improving the precision compared to individual study findings alone.
- However, if there is significant variability between the reports, the results of a meta-analysis can be misleading.
- First determine if a meta-analysis is possible.
- Meta-analysis should only be performed if the individual reports are similar enough. Consider elements like study design, participants, interventions, and outcomes. There will be differences between individual reports. The variability between the individual reports is known as heterogeneity, which can include clinical heterogeneity, methodological heterogeneity, and statistical heterogeneity (Askia and Offringa., 2015):
  - o Clinical heterogeneity could be due to differences (or variability) in the participants, interventions and outcomes studied in the individual reports.
  - o Methodological heterogeneity could be due to differences (or variability) in study design and quality of the individual reports.
  - o The acceptable level of clinical and methodological heterogeneity is generally based on a logical judgment call as to whether it makes logical sense to combine reports together.

- Clinical and/or methodological heterogeneity can lead to statistical heterogeneity. Statistical heterogeneity is the overall statistical variability in the results from all the reports. Statistical heterogeneity manifests as greater differences in the results than anticipated due to chance alone and can be assessed through statistical software (such as with P-value, Chi2 test or I^2). I^2 details the percentage of variability in the effect estimates that is due to heterogeneity rather than chance variability.
  - Decisions on whether to include reports together in a meta-analysis should not purely be made on one statistical heterogeneity statistic, and there is no clear cut-off points or agreement on I^2 interpretation (Higgins., 2008; Rücker et al., 2008). However, there are rough guides to interpretation of I^2: 0–40% may represent low heterogeneity, 30–60% may represent moderate heterogeneity, 50–90% may represent substantial heterogeneity, and 75–100% may represent considerable heterogeneity.
- It may not always be possible or appropriate to undertake a meta-analysis. Some reasons include:
  - Time/resource limitations
  - Limited evidence - meta-analysis is not possible if there are no reports or only one report.
  - Incompletely reported outcomes/results
  - Different statistical measures used to access studies
  - Unacceptably high clinical or methodological heterogeneity
  - Unacceptably high statistical heterogeneity
- Conducting a meta-analysis
  - Statistical software such as Stata, R and Comprehensive Meta-Analysis may be used to perform the necessary statistical analyses.
  - Most meta-analysis methods are variations on a weighted average of the effect estimates from the different reports, although meta-analysis of individual participant data is becoming more popular (Riley et al., 2010).
- Meta-analyses based on report group data are usually illustrated using a forest plot.
  - A forest plot shows effect estimates and confidence intervals for each individual report and the overall meta-analysis estimate (Lewis and Clarke., 2001). Each individual report is denoted by a block at the point estimate of result, with a horizontal line extending either side of the block. The size of the block indicates the weight assigned to that report in the meta-analysis while the horizontal line depicts the confidence interval (usually a 95% level of confidence). The confidence interval depicts the range of intervention effects compatible with the study's result. Studies with more power (larger sample sizes) will carry more weight (larger size block), generally have narrower confidence intervals (shorter horizontal lines) and will have more impact on the summary results (depicted as a diamond).

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Step 9: Write the report: Putting everything together

- A number of options exist for the type of final report selected for a rapid review. The report of a rapid review should usually prioritise the practice needs of the end-user over dissemination via more traditional or academic approaches.
- The final report should include the steps taken to carry out the review, the results and the implications.
- Follow-up with end-users regarding the final report to ensure it meets their requirements. Consider including an executive summary for end-users. An executive summary is a concise overview of the report, usually in plain language, and may include the overall methods, results, and a synthesis of the overall findings.
- The final report may not be in the typical IMRAD format (Introduction, Methods, Results and Discussion), as this may not be the most useful for the end-users.
- If publishing in an academic journal (more information in Step 10), check the author guidelines for requirements. Ensure any academic report also includes plain language key messages section that detail the main findings and, potentially, the implications of the results.
- Follow the format as required by the academic journal or the end-users. However, the rapid review should still be transparent and provide sufficient detail about the methods so it is reproducible. If the report does not follow the typical IMRAD format, consider including an appendix of the important components of the methods:
  o Search strategy
  o Inclusion/exclusion criteria
  o Flow diagram of results of the search and screening process
  o Critical appraisal methods and results
  o Data extraction tables
- Consider using support like the STARR (SelecTing Approaches for Rapid Reviews) Decision Tool, which guides reviewers in selecting potential approaches for performing a rapid review and includes details on reporting of rapid review methods.
- Be cautious when interpreting the findings to answer the research question. Consider the limitations and potential biases of the review, particularly when cutting corners. Limitations could be around the search or eligibility parameters such as only using two or three databases, excluding non-English language reports, excluding older reports, and excluding grey literature, which overall could mean relevant reports could be missed or excluded.
- Other possible limitations could be around screening and data extraction of the reports, i.e., when only 1 reviewer performed study selection and/or data extraction, which could mean the process could be less transparent, reproducible and potentially entail increased errors.
- Any deviations from the initial protocol (Step 3) should be reported in the final report, with reasons, such as time constraints, detailed.

RESOURCES

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Step 10: Disseminate: Make academic community aware of the findings

Often rapid reviews are peer-reviewed internally and self-published. Consult with the end-users to decide the best means of disseminating the rapid review.

If appropriate, consider publishing the review in an academic journal. When choosing a journal, consider the scope and aims of the journal, where it is indexed (to ensure it will be able to be located), the impact factor of the journal relative to the field, and the journal requirements. Not all journals publish rapid reviews, so is it vital to check the author guidelines and journal requirements. Consider publishing in a Q1 journal, but also consider the target audience.

- Scimago Journal & Country Rank (https://www.scimagojr.com/journalrank.php) can help locate a relevant journal and detail its impact and JANE can help select a journal appropriate for topic.
- Consider using PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) checklist as a starting point for items to be included in the rapid review report. However, not all elements will be relevant to rapid reviews or amendments may be required. There is currently no PRISMA extension for rapid reviews, but this is currently under development in EQUATOR (Enhancing the Quality and Transparency Of health Research) network. https://www.equator-network.org/
- The report should be transparent and easily available to others. End-user engagement can help the relevance and impact discussion.
    - Promote review to academic audiences
    - Presentations at conferences
    - Posts on social media
    - By direct email to key academics
    - Academic industry newsletters

RESOURCES

Scimago Journal & Country Rank https://www.scimagojr.com/journalrank.php

JANE: https://jane.biosemantics.org/

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., . . . Brennan, S. E. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *Bmj*, 372.

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Step 11: Translate knowledge and engage end-users: Help end-users apply the findings

In line with the overall purpose of rapid reviews, ensure end-user uptake of the review through effective dissemination and knowledge translation. This involves creating useful information and having this information in readily accessible places to allow those who may be interested in the review find the information. In order for research to be useful, the findings need to be communicated effectively.

- Knowledge translation is enhanced with genuine and ongoing end-user engagement – preferably from the early steps of the review process as indicated in Step 1.
- Strategies for effective dissemination and communication:
    o Engage users early and throughout in the review process (including dissemination)
    o Be clear in your strategy and objectives for the review
    o Include a section on policy implications
    o Develop a simple clear message and modify the presentation of the message to match style of different outlets (newspaper, social media, webpage)
    o Be clear about your target audience and end-user
    o Think about the best ways to target your audience to maximise impact
    o Include an executive plain language summary and an infographic
- Ways to get the information out:
    o Involve end-users to guide best modes (having previously assisted with selecting key messages and how to word them)
    o Submissions to funding organisations or advocacy groups
    o Websites
    o Blog posts
    o Newsletters
    o Invitation seminars
    o Direct mailing to agencies
    o Summary of findings
    o Social media
    o Press releases

RESOURCES

Dobbins, M. (2017). *Rapid Review Guidebook*. In. Hamilton, ON: National Collaborating Centre for Methods and Tools Available from http://www.nccmt.ca/resources/rapid-review-guidebook.

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Follow-up activities: Renew or build upon as needed

Depending on the objective of the rapid review and the needs of the end-users, consider a plan to renew and update the rapid review over time. It could be beneficial to update the review if the review question is still relevant to end-users, if there is new information, and if the new information would have a meaningful impact on the results of the review.

CONCLUDING COMMENTS

Rapid reviews provide a structured process for finding, appraising and synthesising evidence in a timely manner. Transdisciplinary rapid reviews can create timely evidence syntheses that are highly valuable to end-users to support informed evidence-based decision-making by those with the vision of a digital world that benefits children.