

# DOING A SYSTEMATIC REVIEW

A Student's Guide

2<sup>nd</sup> Edition

Edited by  
**Angela Boland**  
**Gemma Cherry**  
**Rumona Dickson**

 **SAGE**

Los Angeles | London | New Delhi  
Singapore | Washington DC | Melbourne



Los Angeles | London | New Delhi  
Singapore | Washington DC | Melbourne

SAGE Publications Ltd  
1 Oliver's Yard  
55 City Road  
London EC1Y 1SP

SAGE Publications Inc.  
2455 Teller Road  
Thousand Oaks, California 91320

SAGE Publications India Pvt Ltd  
B 1/1 1 Mohan Cooperative Industrial Area  
Mathura Road  
New Delhi 110 044

SAGE Publications Asia-Pacific Pte Ltd  
3 Church Street  
#10-04 Samsung Hub  
Singapore 049483

---

Editor: Mila Steele  
Editorial assistant: John Nightingale  
Production editor: Victoria Nicholas  
Copyeditor: Jen Hinchliffe  
Proofreader:  
Indexer:  
Marketing manager:  
Cover design: Shaun Mercier  
Typeset by: C&M Digital (P) Ltd, Chennai, India  
Printed in the UK

© Angela Boland, M. Gemma Cherry and Rumona Dickson

|   |   |
|---|---|
| Chapter 1 © Rumona<br>Dickson, M. Gemma Cherry<br>and Angela Boland | Chapter 8 © Michaela Brown<br>and Marty Richardson                                      |
| Chapter 2 © Gerlinde<br>Pilkington and Juliet<br>Hounsome           | Chapter 9 © M. Gemma<br>Cherry  |
| Chapter 3 © M. Gemma<br>Cherry and Rumona Dickson                   | Chapter 10 © M. Gemma<br>Cherry and Gerlinde<br>Pilkington                              |
| Chapter 4 © Yenal Dunder<br>and Nigel Fleeman                       | Chapter 11 © M. Gemma<br>Cherry, Helen Smith,<br>Elizabeth Perkins and<br>Angela Boland |
| Chapter 5 © Yenal Dunder<br>and Nigel Fleeman                       | Chapter 12 © Angela<br>Boland, Sophie Beale and<br>M. Gemma Cherry                      |
| Chapter 6 © Nigel Fleeman<br>and Yenal Dunder                       |   |
| Chapter 7 © Janette<br>Greenhalgh and<br>Tamara Brown               |   |

First published 2014

Apart from any fair dealing for the purposes of research or private study, or criticism or review, as permitted under the Copyright, Designs and Patents Act, 1988, this publication may be reproduced, stored or transmitted in any form, or by any means, only with the prior permission in writing of the publishers, or in the case of reprographic reproduction, in accordance with the terms of licences issued by the Copyright Licensing Agency. Enquiries concerning reproduction outside those terms should be sent to the publishers.

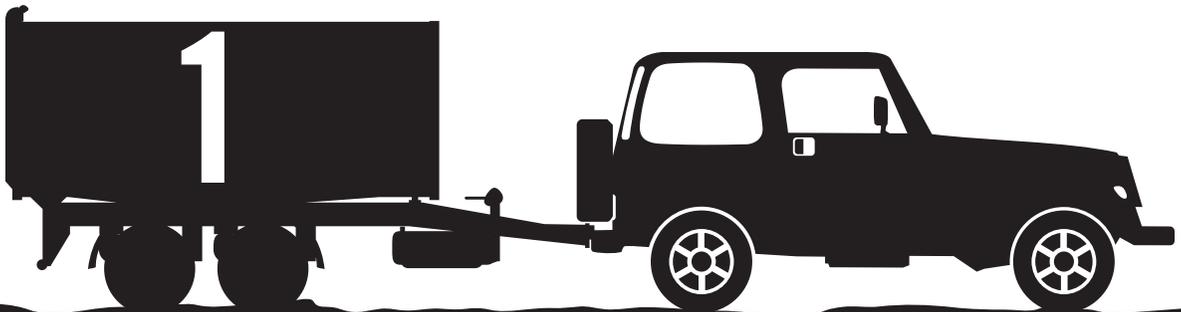
**Library of Congress Control Number: 2017936782**

**British Library Cataloguing in Publication data**

A catalogue record for this book is available from  
the British Library

ISBN 978-1-4739-6700-7  
ISBN 978-1-4739-6701-4 (pbk)

At SAGE we take sustainability seriously. Most of our products are printed in the UK using FSC papers and boards. When we print overseas we ensure sustainable papers are used as measured by the PREPS grading system. We undertake an annual audit to monitor our sustainability.



# Carrying Out a Systematic Review as a Master's Thesis

Rumona Dickson, M. Gemma Cherry and  
Angela Boland

## **This chapter will help you to...**

- Understand the term 'systematic review'
- Gain an awareness of the historical context and development of systematic reviewing
- Appreciate the learning experience provided through conducting a systematic review
- Become familiar with the methods involved in carrying out a systematic review

## Introduction

In this chapter we introduce you to the concept of systematically reviewing literature. First, we discuss what **systematic reviews** are and why we think carrying out a systematic review is a great learning experience. Second, we give you an overview of the evolution of systematic review methodology. Third, we introduce the key steps in the systematic review process and signpost where in the book these are discussed. Finally, we highlight how systematic reviews differ from other types of **literature review**. By the end of the chapter we hope that you will be confident that you have made the right decision to carry out a systematic review and that you are looking forward to starting your research.

## What is a systematic review?

A systematic review is a literature review that is designed to locate, appraise and synthesize the best available evidence relating to a specific **research question** in order to provide informative and **evidence-based** answers. This information can then be used in a number of ways. For example, in addition to advancing the field and informing future practice or research, the information can be combined with professional judgement to make decisions about how to deliver interventions or to make changes to policy. Systematic reviews are considered the best (**'gold standard'**) way to synthesize the findings of several studies investigating the same questions, whether the evidence comes from healthcare, education or another discipline. Systematic reviews follow well-defined and transparent steps and always require the following: definition of the question or problem, identification and **critical appraisal** of the available evidence, synthesis of the findings and the drawing of relevant conclusions.

## A systematic review: a research option for postgraduate students

As a postgraduate student you may be offered the choice of conducting a **primary research** study (e.g. an **observational study**) or a **secondary research** project (e.g. a systematic review) as part of your academic accreditation. There are very good reasons why you are asked to carry out a research project as part of your studies, the most important being that conducting a research project enables you to both understand the research process and gain research skills.

Systematically reviewing the literature has been accepted as a legitimate research methodology since the early 1990s. Many Master's programmes offer instruction in systematic review methods and encourage students to conduct systematic reviews as part

of postgraduate study and assessment. It is widely acknowledged that this approach to research allows students to gain an understanding of different research methods and develop skills in identifying, appraising and synthesizing research findings.

Every Master's course and every academic institution is different. For you, this means that the presentation of your thesis as part of postgraduate study must be carried out within the accepted guidelines of the department or university where your thesis is due to be submitted. Your thesis must be an independent and self-directed piece of academic work; it should offer detailed and original arguments in the exploration of a specific research question and it should offer clarity as to how the research question has been addressed.

Let's assume that you are interested in studying issues related to unintended teenage pregnancy. As a researcher, you have a variety of investigational methods open to you. However, the likelihood of being able to pursue these may be impeded by time and resource constraints, as well as by the specific requirements of your academic institution. Table 1.1 illustrates a number of possible project options that may be open to you and the likelihood of you being able to successfully complete your chosen project as part of your postgraduate thesis.

In our experience, students who opt for primary research mainly explore questions relating to current status and/or correlation factors. The main problem with this kind of research is that its **generalizability** is often hampered by small sample sizes and time constraints. Although conducting a systematic review can be just as time-consuming as undertaking primary research, students who form questions that can be addressed using systematic review methodology have the opportunity to work with a variety of different study designs and populations without necessarily needing to worry about the issues commonly faced by researchers carrying out large-scale primary research. Due to the very nature of a systematic review, students are able to work in the realm of existing research findings while developing critical appraisal and research synthesis skills. A systematic review provides an excellent learning opportunity and allows students to identify and set their own learning objectives.

Good research is rarely carried out on an ad hoc basis. From the outset, you need to be clear about why you are carrying out your systematic review. For example, you may want to evaluate the current state of knowledge or belief about a particular topic of interest, contribute to the development of specific theories or the establishment of a new evidence base and/or make recommendations for future research (or you might just want to carry out your review as quickly and as effortlessly as possible to gain your qualification). However, you need to think about what you want to learn from your postgraduate studies. You might find that balancing your learning objectives with the objectives of your review may be challenging at times; this is most likely to be true if you are reviewing a topic of interest in your professional field

(as we suggest you do). Discussing your learning objectives with your supervisor and exploring alternatives with your classmates or colleagues can often help you to clarify these objectives. Box 1.1 outlines some of the advantages and disadvantages of conducting a systematic review as part of a Master's thesis.

**TABLE 1.1** Example project options for postgraduate students interested in unintended teenage pregnancy

| Question  | Research options                             | Type of research | Risk* of not being able to complete this as a Master's student |
|---|--|------------------|--|
| <b>Relationship questions</b>   |  |                  |  |
| What is the incidence of unintended teenage pregnancy in my practice or region?   | Epidemiological survey                       | Primary          | Low  |
| What programmes are available in my practice or region for reducing teenage pregnancy rates?  | Survey                                       | Primary          | Low  |
| What are the most commonly reported methods used to decrease rates of teenage pregnancy?  | Systematic review                            | Secondary        | Low  |
| <b>Correlation questions</b>  |  |                  |  |
| Is there a relationship between education levels and rates of teenage pregnancy in my practice or region?                           | Survey of existing data                      | Primary          | Moderate   |
| What are pregnant teenagers' views on the importance of sex education?  | <b>Focus groups</b> or structured interviews | Primary          | Low, with small sample size                                    |
| What is the reported relationship between education level and rates of teenage pregnancy?   | Systematic review                            | Secondary        | Low  |
| <b>Causation questions</b>  |  |                  |  |
| Does the provision of emergency contraception in schools decrease teenage pregnancy rates?  | Intervention study                           | Primary          | High   |
| What impact do one-to-one counselling and group meetings have on rates of abortion for teenagers experiencing unintended pregnancy? | Randomized controlled trial                  | Primary          | Very high  |
| What have been shown to be the most effective programmes for decreasing teenage pregnancy rates?                                    | Systematic review                            | Secondary        | Low  |
| <b>Qualitative questions</b>  |  |                  |  |
| What are the views of teenagers on the reasons for high teenage pregnancy rates?  | Focus groups                                 | Primary          | Moderate, with small sample size                               |
| What are the reported views of teenagers on the reasons for high teenage pregnancy rates?   | Systematic review                            | Secondary        | Low  |

\* Low = you are in control or have unlimited access to the data that you need; moderate = you may or may not have to go through an ethics committee, you are dependent on other people to give you data or you need to recruit participants; high = your study is likely to be expensive, excessively time-consuming and/or dependent on the interest of others.

 Box 1.1

## A systematic review as a Master's thesis: advantages and disadvantages

### Advantages

- You are in control of your learning objectives and your project
- You can focus on a topic that you're interested in
- You don't have to gain formal ethical approval for your review before you begin
- You don't have to recruit participants
- You can gain understanding of a number of different research methodologies
- You can gain insight into the strengths and limitations of published literature
- You can develop your critical appraisal skills
- The research can fit in, and around, your family (or social) life

### Disadvantages

- You don't experience writing and defending an ethics application
- It can be isolating as you are likely to be primarily working on your own
- You don't face the challenges of recruiting participants
- You may not get a sense of the topic area in terms of lived experience
- You are reliant on the quality and quantity of available published information to address your research question
- You may find the process dull or boring at times
- There are no short cuts and the process is time-consuming

## Evolution of the systematic review process

There are some common misconceptions about systematic reviewing. Some students (and supervisors) choose primary research projects over systematic reviews because they worry that systematic reviews aren't 'proper research', or that systematic reviews can only be conducted in the field of health. If you are thinking of conducting a systematic review as part of your Master's thesis, then we think that it will set your mind at ease to know a little bit about the history and evolution of the systematic review process and the disciplines in which systematic reviews can be carried out.

It might surprise you to know that the systematic review of published evidence is not new. As early as 1753, James Lind brought together data relating to the prevention of scurvy experienced by sailors. He wrote:

As it is no easy matter to root out prejudices ... it became requisite to exhibit a full and impartial view of what had hitherto been published on the scurvy ... by which the sources of these mistakes may be detected. Indeed, before the subject could be set in a clear and proper light, it was necessary to remove a great deal of rubbish. (Chalmers et al., 2002, p. 14)

From Lind's farsightedness we move to the 1970s. Two important events took place that laid the foundations for a revolution in the way that evidence could be used to inform practice in healthcare and other areas. In the UK, a tuberculosis specialist named Archie Cochrane had recognized that healthcare resources would always be finite. To maximize health benefits, Cochrane proposed that any form of healthcare used in the UK National Health Service (NHS) must be properly evaluated and shown to be clinically effective before use (Cochrane, 1972). He stressed the importance of using evidence from **randomized controlled trials** (RCTs) to inform the allocation of scarce healthcare resources. At about the same time, in the USA, work by Gene Glass (1976) had led to the development of statistical procedures for combining the results of independent studies. The term '**meta-analysis**' was formally coined to refer to the statistical combination of data from individual studies to draw practical conclusions about **clinical effectiveness**. In years to come, outputs of both research communities would combine to form the basic tenets of systematic review methodology.

In 1979, Archie Cochrane lamented:

It is surely a great criticism of our profession that we have not organized a critical summary, by specialty or subspecialty, adapted periodically, of all relevant randomized controlled trials. (Cochrane, 1979, pp. 1–11)

In response, a group of UK clinicians working in perinatal medicine made every effort to identify all RCTs relating to pregnancy and childbirth. They categorized the studies that they found and then synthesized the evidence from these studies. This work led to the development of the Oxford Database of Perinatal Trials (Chalmers et al., 1986). In addition, their groundbreaking work was published in a two-volume book which detailed the systematic and transparent methods that they had used to search for, and report the results of, all relevant studies (Chalmers et al., 1989). This work was instrumental in laying the foundations for significant developments in systematic review methodology, including the establishment of the **Cochrane Collaboration** in 1992. The Cochrane Collaboration is an international network of more than 37,000 dedicated people from over 130 countries who work together to help healthcare providers, policymakers and patients and

their advocates and carers make well-informed decisions about healthcare. They do so by preparing, updating and promoting the systematic reviews that they conduct; these reviews are known throughout the world as Cochrane Reviews (The Cochrane Collaboration, 2017). Since the development of the Cochrane Collaboration, others have followed suit. The **Campbell Collaboration** was established in 2000 and is focused on reviewing literature to demonstrate the effects of social interventions, particularly in the areas of education, crime and justice (The Campbell Collaboration, 2012). More recently, the Department for International Development (DfID) has used the results of systematic reviews to develop national and international policy in many countries worldwide (Department for International Development, 2012).

Why all the fuss? Why have people spent so much time developing a systematic review process? The answer is quite simple. Given the amount, and complexity, of available information and the limitations of time, there has been a real need to develop and establish a process to provide, in a concise way, a summary of the results of research findings. Most notably, the dramatic increase in the amount of accessible research today makes it impossible for decision makers, policymakers and professionals to keep up to date with advances in their field. Systematic reviews allow concise synthesis of a large body of research and therefore address some of these issues.

Why are we telling you all of this? Well, there are two important points to take away from this historical background. First, we want to convince you that systematic review methodology is accepted as a research methodology in its own right; in light of this, we use the terms '**review question**' and 'research question' interchangeably throughout the book. In fact, most funding bodies require a systematic review of the literature to be performed before they will fund a primary research project. In the UK, systematic reviews form the basis for the **National Institute for Health and Care Excellence** (NICE) guidelines for treatment and clinical practice. Throughout the world, Cochrane Collaboration and Campbell Collaboration publications are viewed as the 'gold standard' in systematic reviews. Literature reviews are also an integral component of any doctoral thesis. While you wouldn't necessarily be expected to produce a review as detailed or as comprehensive as a Cochrane or Campbell review for your thesis, if you follow the systematic review methodology outlined in this book, then you can be confident that not only are you conducting research, you are producing some of the highest quality research possible.

Second, we want to show you that although the systematic review process began, and is common, in the field of healthcare, systematic reviews are being carried out

and used to inform decision-making in a variety of disciplines and professions. In fact, if you conduct a quick Internet search combining the terms 'systematic review' with 'education', 'social work', 'veterinary medicine' and so on, you can see for yourself the widespread application of systematic review methodology. Irrespective of the field in which you study, the basic tenets of systematically reviewing the evidence are the same. When researchers or **practitioners** are faced with a problem, they aim to identify, assess and bring together the evidence relating to that problem. This information can then be used to inform changes to policy and/or professional practice.

## What are the basic steps in the systematic review process and how can this book help me to follow them?

There are 10 basic steps to be taken when carrying out a systematic review. These are presented in Box 1.2 along with signposts to the chapter(s) of this book in which they are discussed in more detail. These steps are continually referred to and explored throughout this book, so don't worry if you don't recognize all of the terms at this stage. Use the glossary to help you to become familiar with key terms; we expect that you'll quickly start to understand their relevance to the systematic review process as you read through this book. The authors of a good-quality systematic review will transparently report the methods that were used so that the reader has sufficient information to be able to replicate the review. Additionally, providing details about each step makes it easy for the reader to assess the validity of the review's findings. The remainder of this book provides you with a pragmatic, yet detailed, approach to carrying out each of these steps and we focus our attention on research activities that are essential to the successful completion of your review as part of a postgraduate thesis.

### Box 1.2

## Ten steps in the systematic review process

### Step 1: Planning your review (Chapter 2)

The first step is to plan your review by thinking about how best to use the time and resources available to you.

## Step 2: Performing scoping searches, identifying the review question and writing your protocol (Chapter 3)

In this step you carry out **scoping searches** to help you identify background literature that will help you to define and refine your review question and to set your inclusion and exclusion criteria. You will also write a **protocol**. The protocol is a written plan ('map' of your journey) that enables you to set out the approach you will use to answer the review question.

## Step 3: Literature searching (Chapter 4)

The aim of this step is to identify evidence (published and unpublished), using **bibliographic databases** and other evidence sources that you can use to address your review question.

## Step 4: Screening titles and abstracts (Chapter 5)

In this step you read the titles and abstracts of the studies identified by your searches and discard the ones that aren't at all relevant to your review question and keep the ones that may be relevant.

## Step 5: Obtaining papers (Chapter 5)

This step involves obtaining the full-text papers of the evidence that you identified in Step 4.

## Step 6: Selecting full-text papers (Chapter 5)

This is when you apply your inclusion criteria to your full-text papers and ruthlessly exclude ones that don't fit the criteria.

## Step 7: Data extraction (Chapter 6)

This is when you identify relevant data from each paper, and summarize these data using forms or tables.

## Step 8: Quality assessment (Chapter 7)

In this step you assess each included full-text paper for **methodological quality** using an appropriate **quality assessment tool**.

*(Continued)*

(Continued)

### Step 9: Analysis and synthesis (Chapters 6, 8, 11 and 12)

This is where you scrutinize and synthesize your data, either narratively or through meta-analysis. We discuss how to do this step in Chapter 6 (if you want to undertake a **narrative synthesis**) and Chapter 8 (for those who have appropriate data for meta-analyzing). We also discuss how to analyze **qualitative data** in Chapter 11 and health economics data in Chapter 12.

### Step 10: Writing up, editing and disseminating (Chapters 2, 9, 10, 11 and 12)

This is where you bring all of your hard work together. Step 10 involves writing up your background, methods and results, discussing your findings, drawing conclusions from your review and **disseminating** your findings. We discuss how to carry out this step in Chapters 2, 9 and 10, and also touch upon it in Chapter 11 and Chapter 12 for those looking at qualitative evidence and **economic evaluations**, respectively.

## But don't all types of literature review follow these steps?

When we say that we've carried out a systematic review of the literature, this means that we have clearly planned and fully described the review steps that we've taken; all of our actions are transparent; all of the key methodological decisions have been informed by theory and/or pragmatism and are explicitly set out for the reader to judge. Unfortunately, not all reviews that are published have been written with our definition of systematic in mind. You may be familiar with the terms 'literature review', 'systematic review' and '**narrative review**' but you might not know exactly what the different terms mean. To complicate matters, in the published literature, these terms are frequently used interchangeably. Furthermore, researchers are increasingly using adapted systematic review methodology to perform other types of review, such as '**rapid reviews**' and 'scoping reviews'.

## Literature reviews

The term 'literature review' is often a common catch-all term for any study that assimilates and synthesizes, or describes, the findings of more than one study.

## Narrative reviews

Narrative literature reviews were (historically) and are (currently) typically prepared by 'experts' to provide an overview of a specific topic, to raise overlooked issues and/or identify information gaps, and to encourage new research. Authors of narrative reviews do not usually claim that their reviews are comprehensive. Some of the inherent differences between narrative reviews and systematic reviews, in relation to research process, are displayed in Table 1.2.

## Rapid reviews

Rapid reviews have emerged due to an ever-increasing need for information within a short time frame. Although their exact methods and approaches are yet to be defined, these reviews are primarily systematic reviews in which researchers take legitimate shortcuts in order to deliver findings rapidly. These shortcuts should always be explicitly stated and justified in the write-up of the review. Examples of shortcuts that may be taken are shown in Table 1.2.

## Scoping reviews

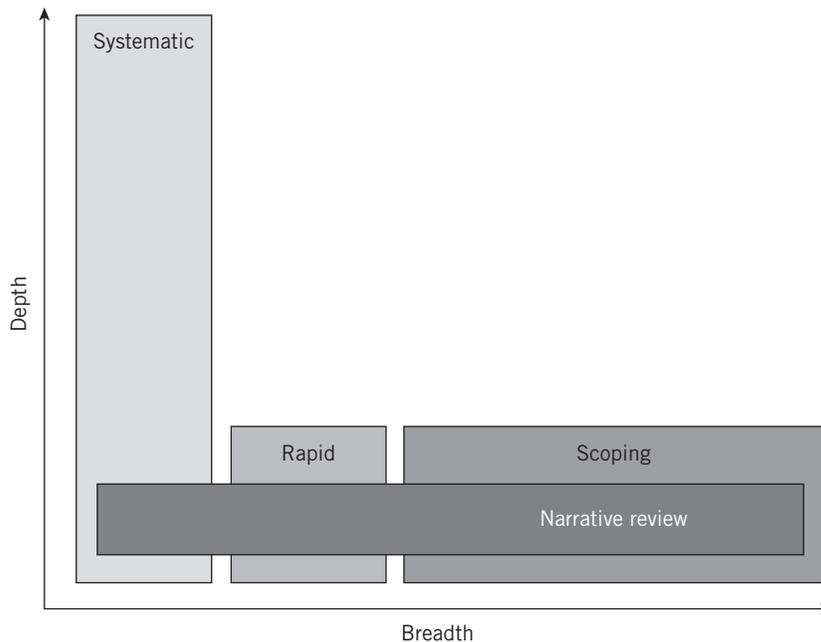
Scoping reviews also differ from systematic reviews, though again the precise definition and methods are still developing and there is currently little consensus in the literature as to what constitutes a scoping review. Having said that, most definitions of scoping reviews include the concept of mapping out the evidence base pertaining to a particular research question or topic area (Arksey and O'Malley, 2005; Levac et al., 2010). Scoping reviews can be performed to outline the breadth and type of literature available relating to a specific topic, or to identify any gaps in the literature in question. In some cases, a scoping review can be performed to assess the feasibility of conducting a systematic review on a topic. Scoping reviews follow a similar process to systematic reviews, though the methods employed at each stage vary slightly. Specifically, researchers carrying out scoping reviews often adopt a more iterative approach, and place greater emphasis on consultation with consumers and stakeholders (Table 1.2).

A simple way to illustrate the difference between narrative reviews, systematic reviews, rapid reviews and scoping reviews is shown in Figure 1.1. Essentially, a narrative review considers great breadth of information, but in little depth. A systematic review is usually narrow in the breadth of information considered but it looks at the data in great depth. A rapid review is as narrow, or maybe narrower, than a systematic review but due to time constraints does not look at the evidence in as much depth. Scoping reviews are broader in scope than rapid reviews but do not go into as much depth as systematic reviews.

**TABLE 1.2** Differences in review processes

|   | <b>Narrative reviews</b>  | <b>Systematic reviews</b>   | <b>Rapid reviews</b>   | <b>Scoping reviews</b>   |
|---|---|---|--|--|
| <b>Defining a question</b>  | May or may not be clearly defined   | Clearly defined and well-focused<br>Always required   | Clearly defined and well-focused<br>Always required  | Clearly defined<br>Broader in focus<br>Always required   |
| <b>Writing a protocol</b>   | Not usually required  | Recommended/essential   | Recommended  | Recommended  |
| <b>Methodology</b>  | Does not follow explicit or rigorous methodology  | Follows explicit and rigorous methodology   | Follows explicit and rigorous methodology  | Follows explicit and rigorous methodology but can be iterative   |
| <b>Searching</b>  | No pre-defined search strategy<br>Not necessarily comprehensive<br>Generally relies only on published literature<br>Search strategies may be based on expert experience | Exhaustive and with an appropriate balance of sensitivity and specificity<br>Carried out across a number of bibliographic databases, hand searching of reference lists from relevant papers and high-yield journals and documents/reports<br>'Grey' (unpublished) literature sometimes searched<br>Comprehensive and explicit searching methods used and reported | Predefined and explicitly stated<br>Possibly limited by:<br>• Search of only one database<br>• Narrow time frame<br>• Reliance on published literature only<br>• No hand searching | Breadth balanced with resource availability<br>Iterative, with additional terms added as a result of identifying key papers (use of citation chaining) |
| <b>Definition of inclusion and exclusion criteria</b>             | Not essential<br>No selection of studies based on study design  | Essential<br>Study design can be selected (e.g. only include qualitative data, RCTs or both)  | Essential<br>More exclusive than in systematic review  | Essential<br>Can be defined post hoc if rationale is reported  |
| <b>Screening titles and abstracts; selecting full-text papers</b> | Generally carried out by one researcher by reading through relevant papers and based on their own experience  | Explicit and systematic screening and selection, using predefined method<br>Usually cross-checked by another researcher   | Explicit and systematic screening and selection, using predefined method<br>Possibly limited by:<br>• Single person screening<br>• Single person selection                         | Explicit and systematic screening and selection, using predefined method<br>Usually cross-checked by another researcher                                |

|                               | <b>Narrative reviews</b>              | <b>Systematic reviews</b>                                     | <b>Rapid reviews</b>   | <b>Scoping reviews</b>   |
|-------------------------------|---------------------------------------|---|--|--|
| <b>Quality assessment</b>     | Not necessarily                       | Yes   | Unlikely   | Unlikely   |
| <b>Data extraction</b>        | Yes                                   | Yes   | Yes<br><b>Possibly limited by:</b> <ul style="list-style-type: none"> <li>• Single person extraction</li> <li>• Cross-checked by one person</li> <li>• Limited data extracted</li> </ul> | Yes, though can be more iterative  |
| <b>Analysis and synthesis</b> | No clear method of synthesis          | Can involve meta-analysis, narrative or qualitative synthesis | Narrative synthesis only   | Numerical analysis of extent and nature of studies<br><br>An analytical framework or thematic analysis can be used to provide an overview of breadth |
| <b>Application</b>            | Any field                             | Any field   | Any field  | Any field  |
| <b>Timescale</b>              | May be carried out relatively quickly | Can be time-consuming due to rigor required                   | Variable but usually shorter than full systematic review   | Variable but usually shorter than full systematic review   |
| <b>Replication</b>            | Not easily replicable                 | Explicit methods and therefore replicable                     | Explicit methods and therefore replicable  | Iterative process but explicit methods and therefore replicable  |



**FIGURE 1.1** The depth and breadth of different types of reviews

## Other types of review

### Integrative reviews

'**Integrative reviews**' are a recent development and were first carried out by researchers in response to the criticism that many systematic reviews only use evidence from RCTs and that the value of systematic reviews is limited in areas where there is little, or no, trial evidence. To be more inclusive, the term integrative review was coined to reflect a literature review that included both **quantitative** and qualitative evidence (Sandelowski et al., 2007). We believe that, with an appropriately stated research question, a single systematic review can include both qualitative and quantitative evidence (and not just evidence from RCTs). A word of warning though, we believe that students should not be advised to conduct an integrative review as part of their postgraduate study unless they are experienced systematic reviewers. The approach is new and methods for use are evolving.

### Realist reviews

This approach is often called realist synthesis and was developed by Pawson and colleagues (2005) as a means of determining what works for whom, in what circumstances, in what respects and how. **Realist reviews** differ from systematic reviews

in a number of ways. Notably, realist reviewers aim to use existing theory to understand and explain how and why different outcomes were observed in a sample of empirical studies. Reviewers first develop a set of 'programme theories' by making assumptions about how an intervention is expected to work and the impact that it is expected to have. Relevant empirical data are then systematically identified and used to populate the theoretical framework. By considering the context in which an intervention is delivered, the mechanisms by which change occurs (or not), and the outcomes of the intervention, programme theories are supported, refuted or modified until a final theory, or set of theories, is identified. Realist reviews can be especially useful for policymakers and decision makers, as their findings are rich and detailed and can be used to further understanding of complex interventions in a way that systematic review methodology may not permit. However, due to its complexity, we wouldn't recommend this type of review as an option for postgraduate students new to systematic reviewing.

## Evidence maps

Evidence-mapping is an emerging method of evidence synthesis that shares some commonalities with scoping reviews. There is currently no published guidance on how to carry out evidence-mapping, or on what constitutes an **evidence map**. Miake-Lye and colleagues (2016) concluded, from a systematic review of self-styled evidence maps, that 'the implied decision (...) of what constitutes an evidence map is a systematic search of a broad field to identify gaps in knowledge and/or future research needs that presents results in a user-friendly format, often a visual figure or graph, or a searchable database' (p. 18). As with integrative reviews, this approach is new and methods for its use will likely evolve as further research is published. Until then, we don't recommend that postgraduate students carry out this type of review as part of their thesis.

## A few thoughts before you begin your systematic review

We like to think of the systematic review process as a journey. Experience has taught us that systematic reviewing can be challenging – especially when you don't have a good plan (protocol) to guide you. We know that untoward conditions mean that you might have to divert from your chosen route (e.g. uncommunicative authors, missing papers, poor-quality studies). Experienced systematic reviewers learn to anticipate what is going to happen next. Whether you are travelling on a busy

motorway or on a rural lane, it is a good idea to pay attention to your journey time (time management) and plan what to do if your vehicle breaks down (contact your supervisor). Collective experience has taught us how to overcome the most common road hazards and we'd like to share our knowledge with you. In this book, we offer a broad range of tips and strategies to help you begin your journey and reach your final destination.

This chapter has introduced the notion of carrying out a systematic review as part of your Master's thesis. In the next chapter, we discuss practical tips to help you plan and manage your review. In Chapters 3 to 9, we talk you through the individual steps involved in conducting a systematic review. In Chapter 10, we lead you through ways to disseminate your review to wider audiences. Finally, Chapters 11 and 12 focus on how to carry out systematic reviews of specific types of evidence: qualitative evidence and economic evaluations, respectively. We recognize that systematic reviews can be 'bitty' in that you might start a new step before the current one is fully finished; this might occur, for example, if you are waiting for papers to arrive in the post or for input from others. As such, the advantage of this book is that it hasn't been set out like a novel (i.e. written for you to read cover to cover once). Instead, each chapter is designed to stand alone. We hope that you will start by reading the whole book in chapter order, but we then expect that you will dip in and out of chapters at appropriate points in your research journey. As we mentioned earlier, some of the concepts explored in the book will seem unfamiliar to you on first reading, which is why we have included a glossary of key terms for you to refer to as and when needed. .

## Frequently Asked Questions

### Question 1: Is a systematic review 'real research'?

This is a valid and common question posed by Master's students. There are some researchers and academics who argue that carrying out a systematic review is not 'real research'. We believe that they are wrong. Submitting a systematic review as a research project for a Master's thesis, or as part of a doctoral thesis, has become commonplace in many universities and across a variety of different disciplines. We believe that the many learning opportunities that are derived from the systematic review process can help students to achieve academic goals and can equip them with the skills that are required to meet the needs of research communities and to enhance their continuing professional development and practice. Indeed, systematic reviews are now regarded as legitimate outputs for the periodic assessments of research conducted within universities worldwide, particularly in the UK and North America.

## Question 2: Am I taking the easy option by carrying out a systematic review?

No, definitely not. Systematic reviewing can be a difficult, time-consuming and solitary activity. It's not for the faint-hearted. While you don't (usually) have to go through the ethics process (which can take time and be fraught with difficulties), there are other challenges to face, such as coping with thousands of possible research reports or government documents or, worse yet, finding none. However, the rewards in terms of outputs and learning opportunities make carrying out a systematic review an excellent choice of project for your thesis. For example, it offers an opportunity to display rigorous and reflective practice in your write-up and the examiner will acknowledge this effort when marking your thesis.

## Question 3: Can a systematic review form part of a doctorate as well as a Master's thesis?

Yes, but it is worth bearing in mind that the focus of the review may differ. Master's students typically need to answer a single specific question, but doctoral students tend to use systematic review methodology to describe the literature and/or theory base that informs their primary research. If you are planning to carry out a systematic review to inform a doctorate then you may well find yourself conducting a series of mini systematic reviews rather than one single review that aims to answer a defined and specific question. Alternatively, you might conduct a single systematic review on a very tightly defined topic and go on to conduct a wide-ranging narrative review to situate the results of your systematic review.

## Question 4: Should I conduct a systematic or a narrative review for my thesis?

We are often asked this question by students who believe that narrative reviews are somehow easier, or less time-consuming, than systematic reviews, and our answer is always the same: we advocate that students should, where possible, conduct a systematic rather than a narrative review for their Master's thesis. Students are often surprised when we tell them that a lot of the steps involved in systematic and narrative reviews overlap, so there isn't usually a lot of difference in workload between the two methods. However, systematic reviews have a number of advantages over narrative reviews. For example, systematic reviews are less open to **bias** than narrative reviews, as they represent a synthesis of the available evidence pertaining to a

specific review question. As such, they can help to advance knowledge, and are often easier to publish than narrative reviews. Students often find the transparent and rigorous nature of systematic review methodology helpful too, as it gives structure to the review process and minimizes the chances of missing any potentially relevant papers. Students also tell us that it can be reassuring to be able to ‘check’ the quality of their review against a **standardized systematic review checklist** (see Chapter 7 for more information). Having said that, some topics lend themselves better to narrative rather than systematic reviews (e.g. reviews of conceptual issues or reviews in which the primary aim is to give a broad overview of a diverse topic area). As such, we recommend that you speak to your supervisor and choose the most appropriate methodological approach for your topic area.

### Question 5: I’m studying for a Master’s in a non-health discipline – can I still conduct a systematic review?

The short answer is: yes, you can! Although the process of systematically reviewing the literature originated in healthcare, systematic reviews are now considered best practice across a range of disciplines and topic areas, including criminology, transport, housing, environmental studies, politics and history. A good-quality systematic review has the potential to advance a field of enquiry regardless of discipline, so please don’t rule out conducting a systematic review solely because you are studying for a Master’s in a non-health discipline. To further illustrate the widespread application and value of systematic review methodology, we have endeavoured to use case examples from systematic reviews conducted across a range of disciplines throughout this book.

### Question 6: Are there any ethical considerations that I need to think about if I decide to conduct a systematic review as my Master’s thesis?

This is a good question, and one that is commonly overlooked by Master’s students. It’s rare to have to seek ethical approval to conduct a systematic review, as it’s commonly assumed that each study included in the review will have been subject to ethical review already. However, that does not mean that there aren’t potential ethical issues that may arise during the conduct of a systematic review (Vergnes et al., 2010). For example, systematic review methodology does not explicitly prevent the inclusion of ‘unethical’ studies, although this is something that would likely be picked up on during **quality assessment** (see Chapter 7). Furthermore, if participants have given informed consent for their data to be included in the primary research studies

included in the review, this consent may not stretch to secondary analysis of this data in the form of a systematic review or meta-analysis. It's unlikely that these issues will arise, but it's important to be mindful of the potential for this, and to discuss these issues with your supervisor if and when you come across them.

## Question 7: Can I ask other people to help me with review activities or do I need to work on my own?

We strongly believe that the best way to conduct a high-quality systematic review is through teamwork, as working independently can be seen as a limitation of the review process. In particular, if you are planning on publishing your work (see Chapter 10), then collaboration on some specific review activities is essential (e.g. **searching, screening** and selecting studies, **data extraction** and quality assessment). However, you must be aware that, as with any assessed assignment, your review is expected to be your own work. Make sure that you check your institutions' guidelines, and take advice from your supervisor *before* involving anyone else in any part of your review. If this isn't permitted by your institution, then it's important to ensure that your work is thorough and that you act as your own colleague (e.g. by **cross-checking** your own data extraction or quality assessment – see Chapters 6 and 7 for more information). We also believe that you should acknowledge this as a limitation when writing up your work. If your final review is good enough, then you may always have the option of getting a potential co-author to perform the cross-checking necessary for publication after your review has been assessed.

## Further Reading and Resources

- Borrego, M., Foster, M. and Froyd, J. (2014) 'Systematic literature reviews in engineering education and other developing interdisciplinary fields', *Journal of Engineering Education*, 103: 45–76.
- Gough, D., Oliver, S. and Thomas, J. (2013) *Learning from Research: Systematic Reviews for Informing Policy Decisions: A Quick Guide*. A paper for the Alliance for Useful Evidence. London: Nesta.
- Langer, L. and Stewart, R. (2014) 'What have we learned from the application of systematic review methodology in international development? – A thematic overview', *Journal of Development Effectiveness*, 6(3): 236–48.
- Pickering, C. and Byrne, J. (2014) 'The benefits of publishing systematic quantitative literature reviews for PhD candidates and other early-career researchers', *Higher Education Research and Development*, 33(3): 534–48.

Pickering, C., Grignon, J., Steven, R., Guitart, D. and Byrne, J. (2015) 'Publishing not perishing: How research students transition from novice to knowledgeable using systematic quantitative literature reviews', *Studies in Higher Education*, 40(10): 1756–69.

Pooley, N., Olariu, E. and Floyd, D. (2016) 'When is the use of a systematic literature review appropriate? A comparison of systematic, rapid, and scoping reviews and their application to the HTA process', *Value in Health*, 19(7): A396.

PODCASTS

READING AND EXAMPLES

ADDITIONAL RESOURCES



Take your systematic review journey online at:  
<https://study.sagepub.com/doingasystematicreview2e>

