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### Title

Building Users' Search Skills for Systematic Reviews: Development of Self-Directed Learning Through Qualitative Synthesis of Guidelines

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# Building Users' Search Skills for Systematic Reviews:

Development of Self-Directed Learning Through Qualitative Synthesis of Guidelines

Jeffery L. Loo

UC San Diego Library

Conference Paper

Medical Library Association 2020

## ABSTRACT

**BACKGROUND:** When conducting a systematic review, the search for evidence can be a challenging process for novice searchers. There are complicated procedures with multiple sources of guidelines, and the prevailing instruction targets intermediate and higher skill levels. To address these challenges, this project created self-instruction materials framed along an explicit search workflow. This instruction was developed through a qualitative content analysis of four major systematic review guidelines. The result is a comprehensive yet straightforward self-instruction guide for advanced literature search skills. This paper reports the development methodology and observations from the guide's use in reference consultations.

**DESCRIPTION:** Instructional development began with the qualitative content analysis of search guidelines by four organizations (Cochrane, NAM, AHRQ, and CRD). Over 300 recommended search objectives and tasks were extracted, with many duplications across the guidelines. This analysis defined the phases of a comprehensive search workflow and synthesized recommendations into search tasks and stepwise procedures. The workflow has five phases addressing search strategy design, search conduct, results management, document retrieval, and search reporting. Additionally, a directory of 150+ recommended databases was compiled. The resulting self-instruction guide is assigned as preparatory reading before a reference consultation, serves as a discussion framework during the session, and functions as a reference tool afterward. The guide was evaluated through librarian peer review and user feedback.

**CONCLUSIONS:** The self-instruction guide supports the UC San Diego Library's systematic review service. It is situated in the consultation process as pre-session reading, discussion framework, and post-reference support. Anecdotal evidence indicates the guide may prompt a user-driven consultation and may facilitate instruction on advanced literature searching. Because the guide synthesizes multiple guidelines, it has the potential to standardize library services for systematic reviews. Future evaluation would assess the guide's pedagogical usability. The guide is publicly available for re-use and customization.

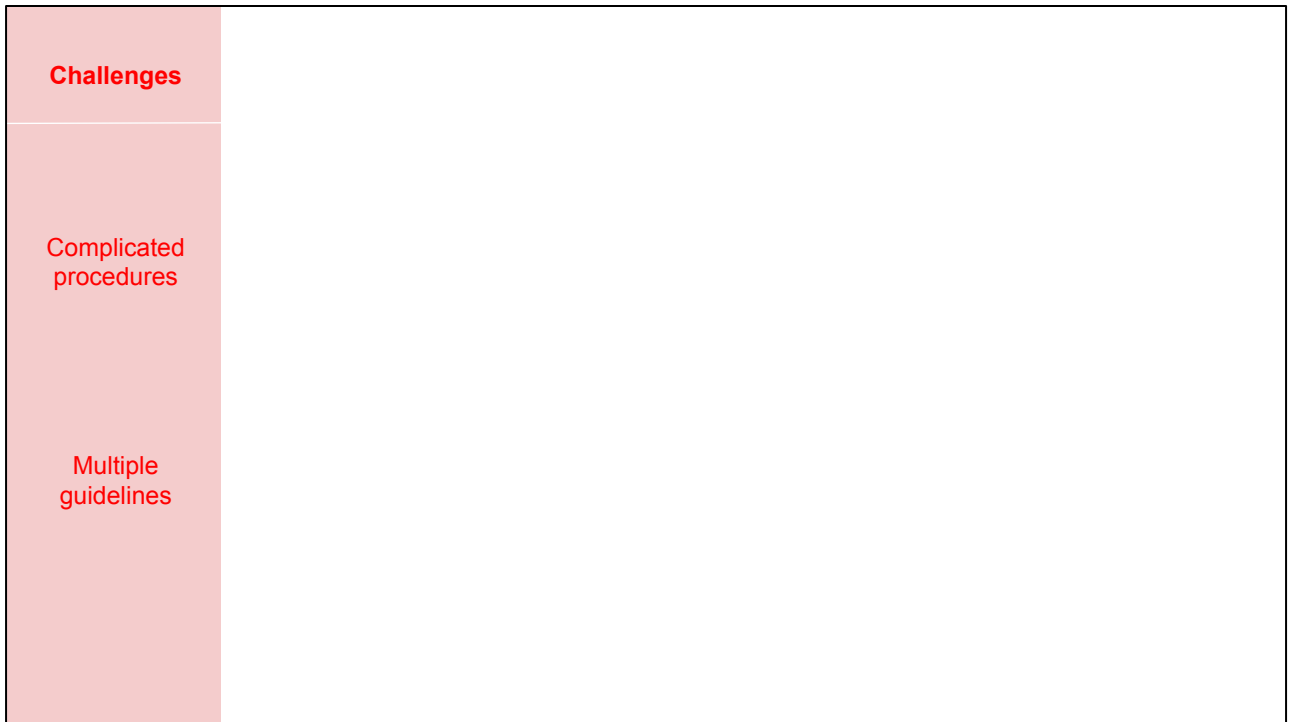
**BIOGRAPHY:**

Jeffery L. Loo, PhD, is the Clinical Librarian at the UC San Diego Library. His professional interests focus on instruction, practitioner research, and information services.

## **Objective**

Teach **advanced literature searching** for systematic reviews

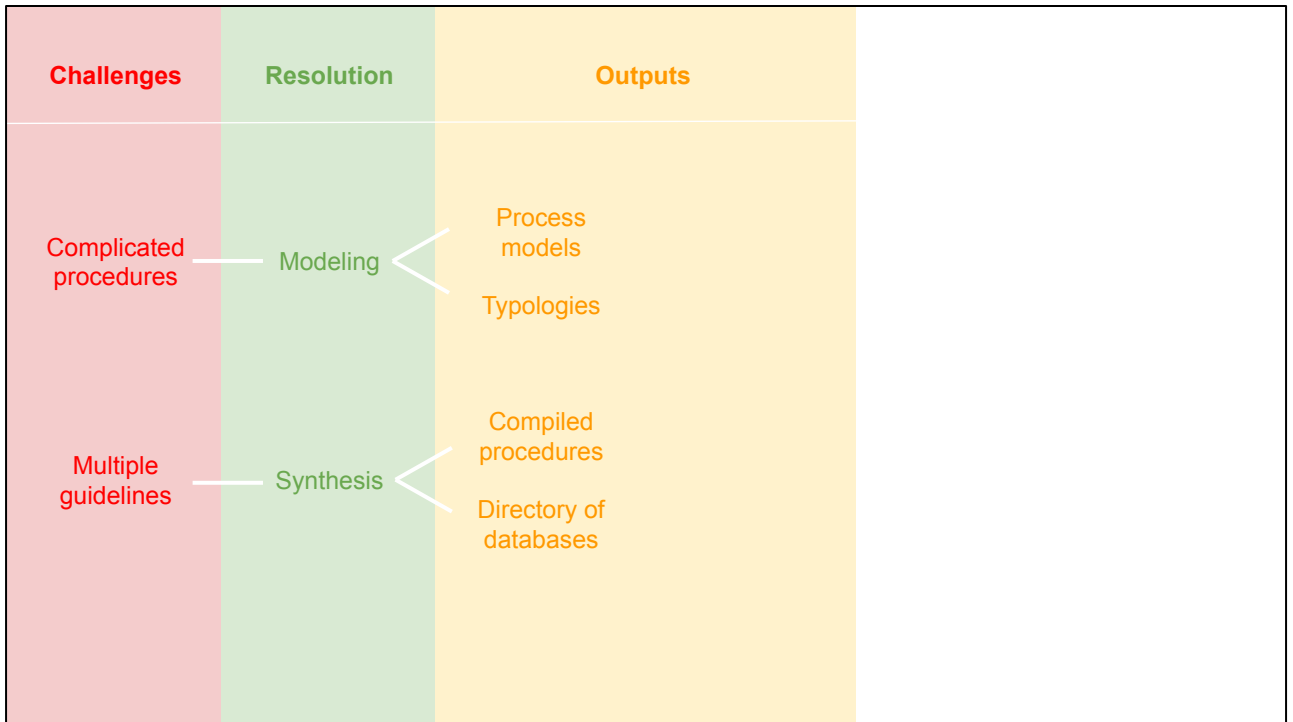
This project aims to teach advanced literature searching for systematic reviews.



It addresses two significant challenges of learning literature search skills.

First, there are complicated procedures. Conducting the literature search for a systematic review includes designing an exhaustive, reproducible search; using different search methods; and searching multiple databases.

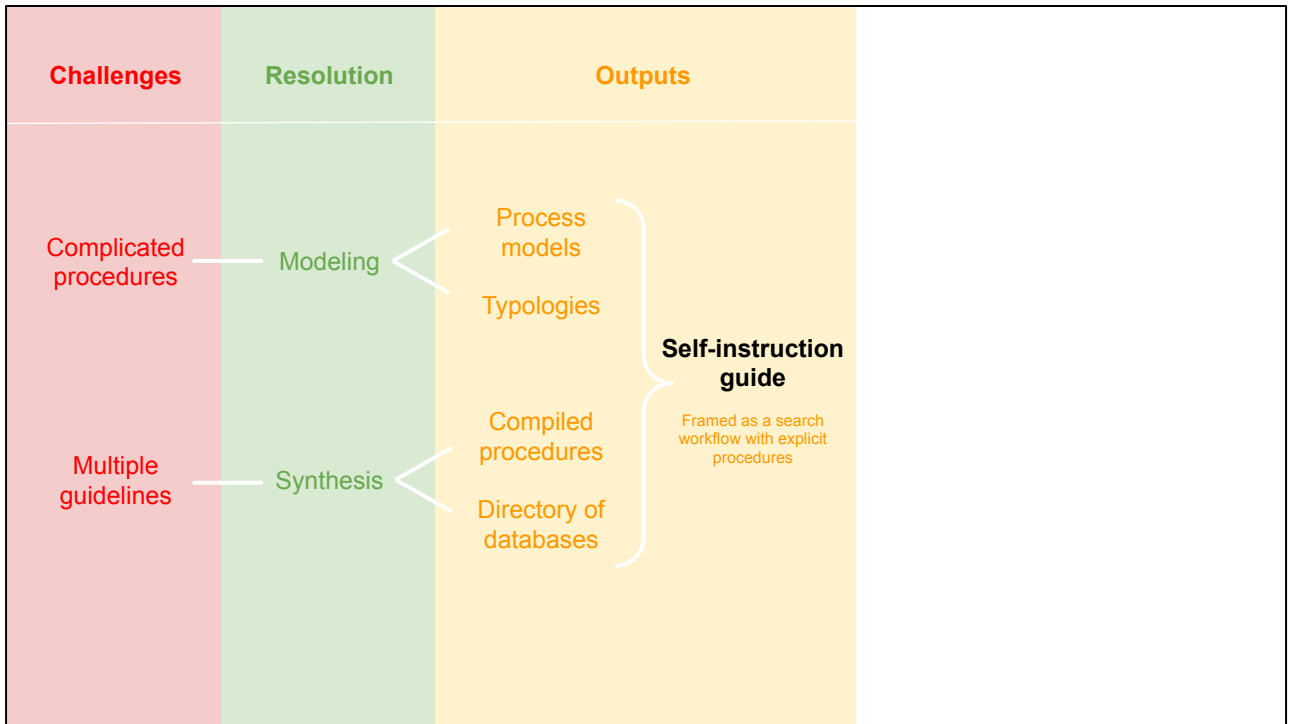
A second challenge is that many guidelines are available. Multiple organizations have guidelines for the search process - including Cochrane, the National Academy of Medicine, AHRQ, and the Centre for Reviews and Dissemination.



To address the complicated procedures, I developed models that summarize and explain the search process.

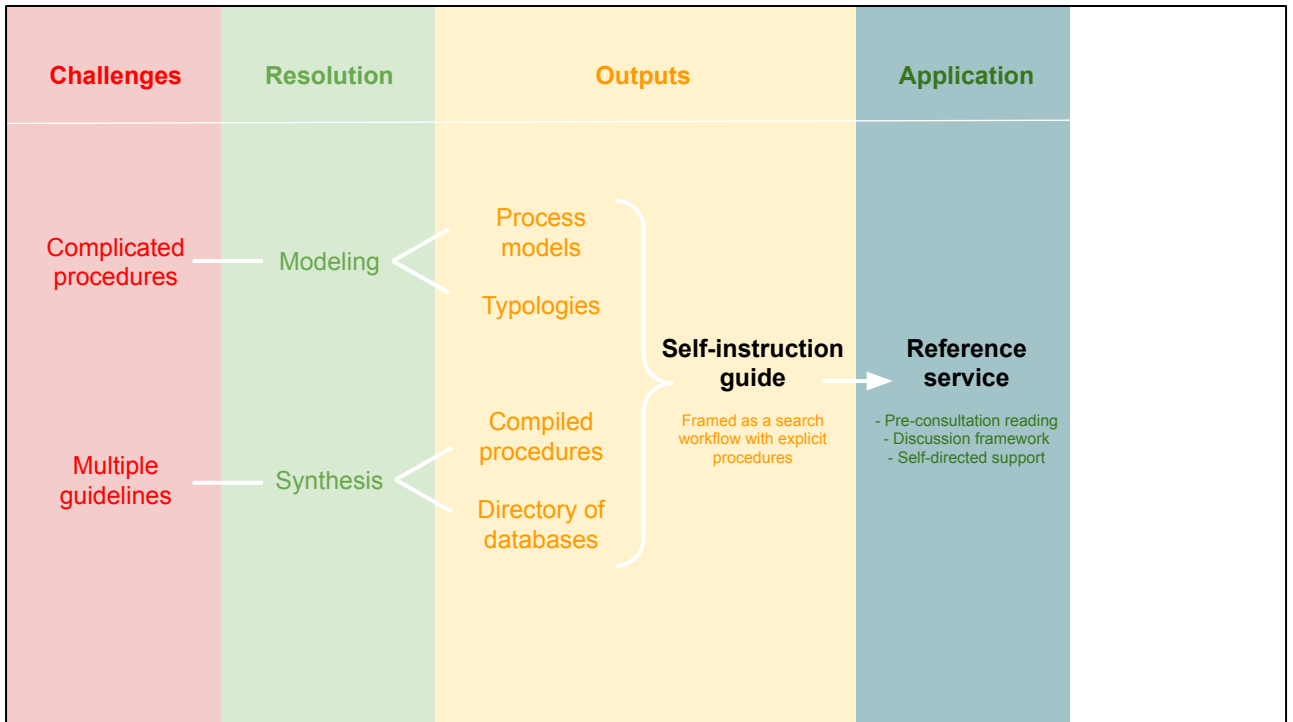
Specifically, I developed process models and typologies that explain search techniques and resources.

To address the challenge with multiple guidelines, I conducted synthesis. This process compiled search procedures and developed a directory of databases.



Afterwards, the four elements were integrated into a self-instruction guide that teaches literature searching for systematic reviews.

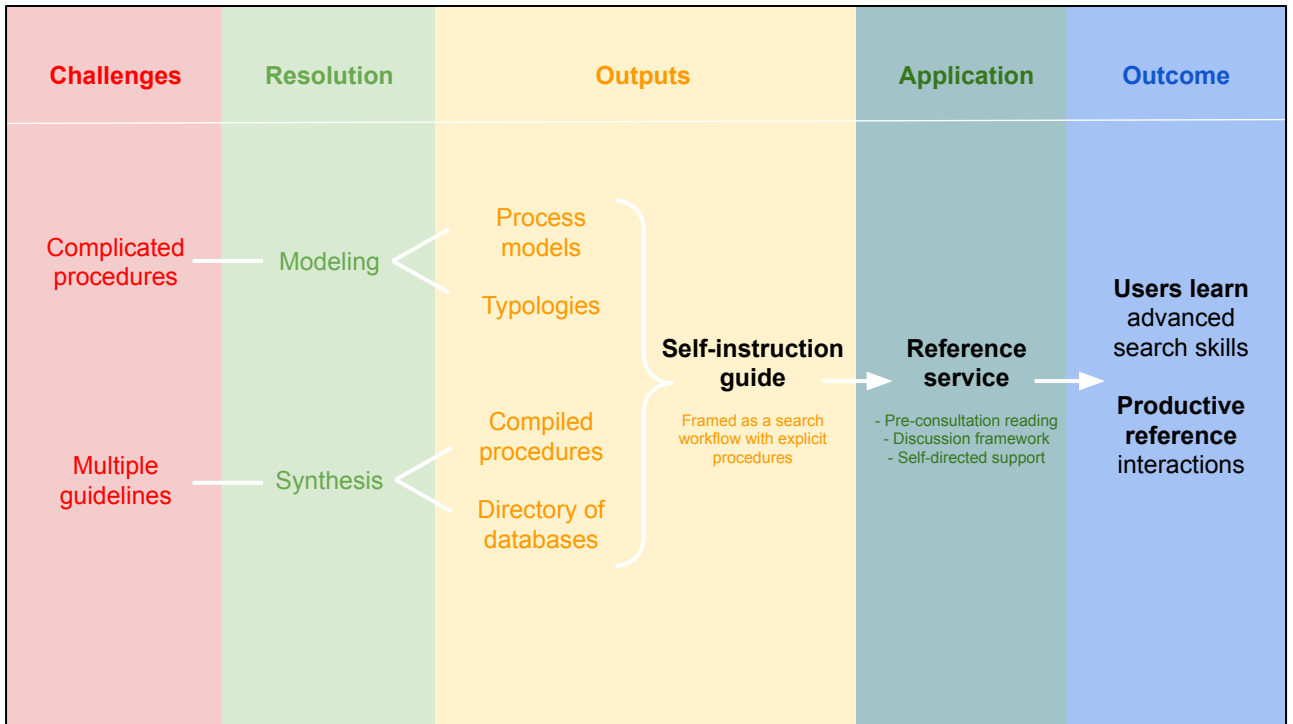
The guide is directed at novice searchers and is organized along a clear search workflow that gives detailed, explicit procedures.



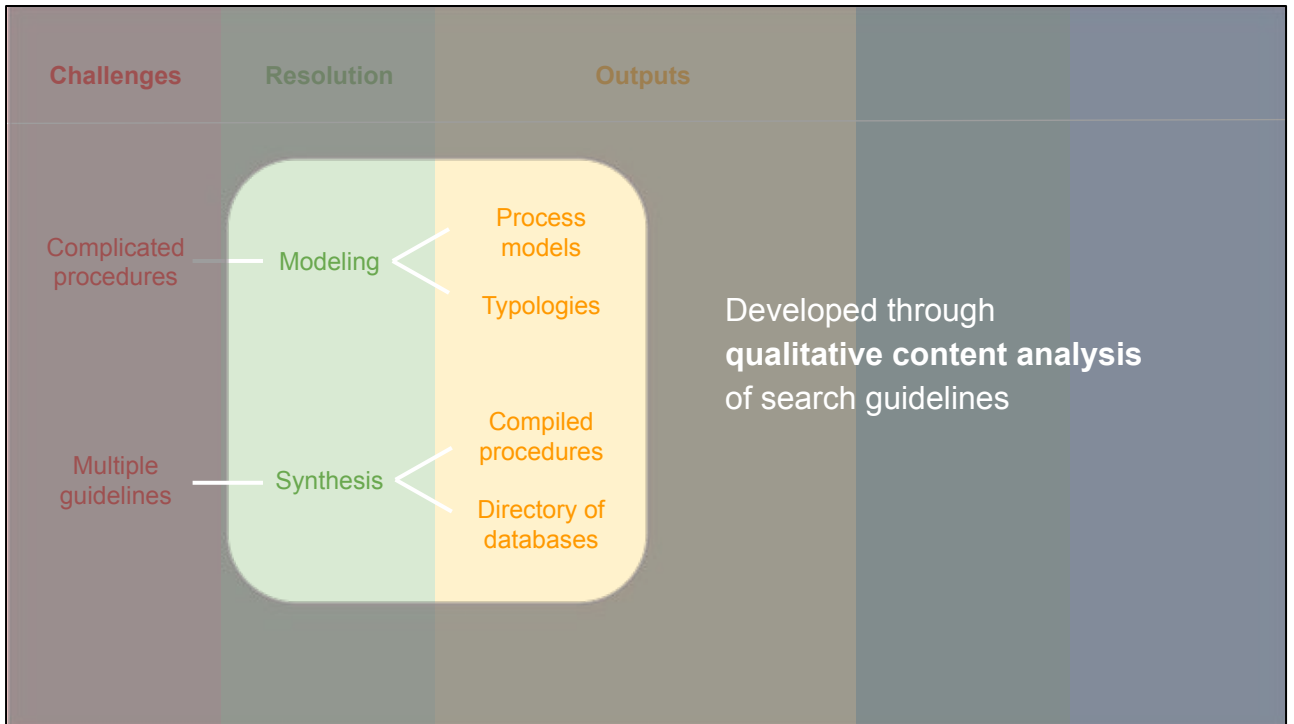
I applied this guide to the UC San Diego Library’s systematic review service. This service provides reference support to users formulating a search strategy in a healthcare systematic review.

The guide is used at three time points during the reference consultation. First, patrons review the guide to prepare for a consultation. Next, the guide serves as a discussion framework and instructional materials during the consultation. After the reference session, patrons use the guide for self-directed support.





According to preliminary evaluation results, this guide may facilitate self-directed learning of advanced search methods. Additionally, use of the guide for reference consultations may lead to more productive interactions with users.



To develop the models and to synthesize procedures, I conducted a qualitative content analysis of the search guidelines of four leading organizations.

## Qualitative content analysis methodology

### 1. Read manuals

Focus on the search guidelines of:

- Cochrane (2019)
- National Academy of Medicine (2011)
- AHRQ (2008, 2011)
- Centre for Reviews and Dissemination (2009)

### 2. Extract relevant passages

Extract relevant content into spreadsheet

*Result:*

350+ search definitions, guidelines, and procedures collected

### 3. Code the text

Organize into 4 categories:

- Search phase
- Search activity
- Search task
- Search procedure

### 4. Model and synthesize

Identify patterns to develop:

- Explanatory models
- Compiled resources

This analysis consists of four activities: systematic reading, extraction of relevant passages, coding, and modelling and synthesis.

## Qualitative content analysis methodology

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First, I systematically read the manuals for systematic review preparation by the following four organizations: Cochrane, National Academy of Medicine, AHRQ, and the Centre for Reviews and Dissemination.

I focused on their literature search guidelines.

## Qualitative content analysis methodology

### 1. Read manuals

Focus on the search guidelines of:

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I extracted relevant passages that define a search concept or describe a search procedure. I excerpted or summarized these passages into a spreadsheet and added metadata to identify their text source and location.

I collected more than 350 units of search definitions, guidelines, and procedures. There was significant duplication across the guidelines by the four organizations.

## Qualitative content analysis methodology

### 1. Read manuals

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The next phase is the coding of the text.

I organized the collected passages into four categories:

- search phase, which represents a distinct period in the search process
- search activities involved in each phase
- search tasks conducted during each search activity, and finally
- search procedures, which are the directions for completing a task or activity.

I developed these categories through a preliminary review of the passages using a grounded coding process.

I reviewed each text passage and labeled it with its corresponding category.

## Qualitative content analysis methodology

### 1. Read manuals

Focus on the search guidelines of:

- Cochrane (2019)
- National Academy of Medicine (2011)
- AHRQ (2008, 2011)
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Organize into 4 categories:

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Identify patterns to develop:

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- Compiled resources

The final phase of analysis is modeling and synthesis.

By identifying patterns in the collected guidelines, I developed explanatory models and compiled procedures and resources for systematic searching.

Analytical Outputs	Value
1. Process models	Explain search workflow
2. Typologies	Differentiate search methods
3. Compiled procedures	Provide directions
4. Directory of databases	Connect to evidence sources

There are four outputs of this analysis:

- Process models to explain the search workflow
- Typologies to differentiate search methods
- Compiled procedures that provide explicit directions for search, and a
- Directory of databases to connect users with the appropriate evidence sources

I will review each output with a focus on its role in search instruction.



#### Output 1

#### A **process model**

outlines the sequence of procedures and practices in a systematic search.

The process model is the first output of the analysis.

A process model outlines the sequence of procedures and desired practices in a systematic search.

## Process model

Phase	Activity	Task
A. Search strategy design	1. Observe goals	1. Observe goals
	2. Use multiple search methods and evidence sources	2. Use multiple methods and sources
	3. Design the search strategy	3.1 Focus on key concepts
		3.2. Get ready for text word and controlled vocabulary searches
4. Evaluate and revise the search strategy	3.3. Compile search terms for each concept	
	3.4. Combine search terms into a search strategy	
	4.1. Run preliminary searches	
	4.2. Check whether the search retrieves known studies	
B. Search conduct	5. Conduct the search	4.3. Share the search strategy and results for evaluation
		4.4. Revise the search strategy
		5.1. Minimize search bias
		5.2. Document the search process contemporaneously
C. Results management	6. Organize search results	5.3. Translate the search strategy for each database used
		5.4. Decide when to stop searching
		6.1. Export search results to a reference management app
D. Document retrieval	7. Retrieve and archive publications	6.2. Track and document search results
		6.3. Collate multiple publications of the same study
E. Search reporting	8. Update the search at the time of publication	7. Retrieve and archive publications
	9. Report the search process	8. Update search
		9. Report search

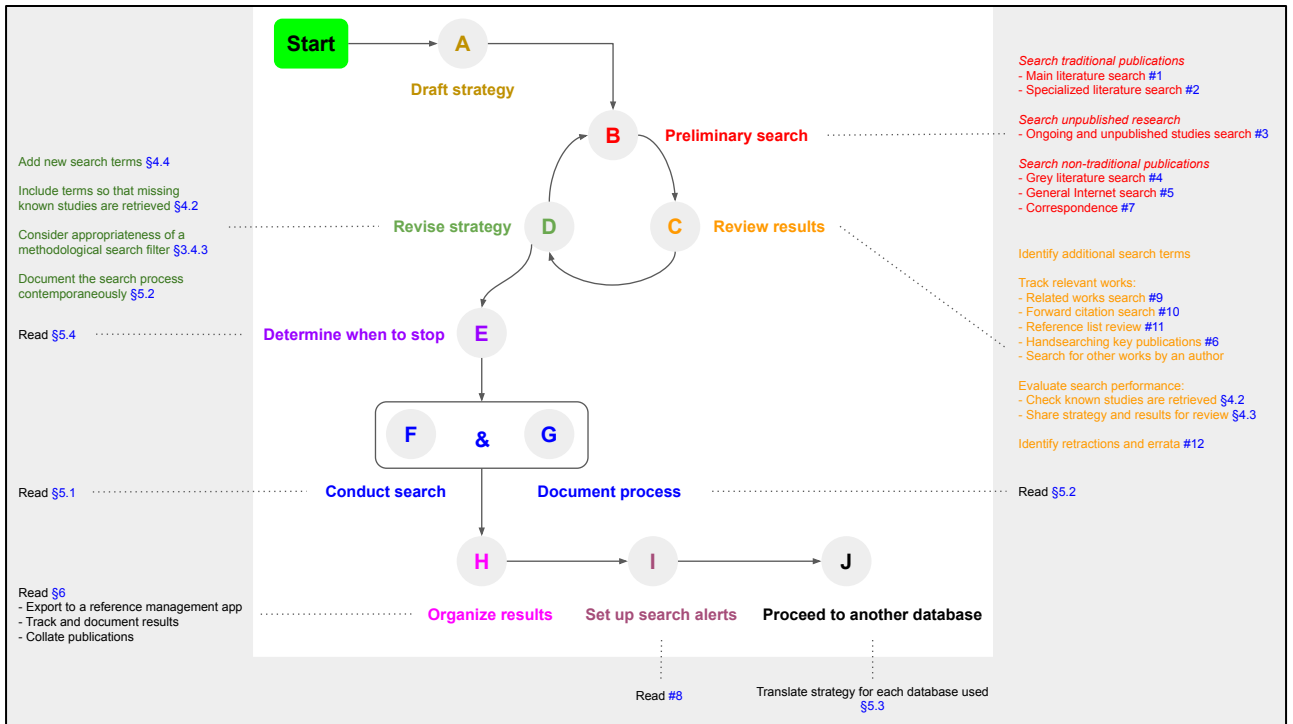
**5 phases**

**9 activities**

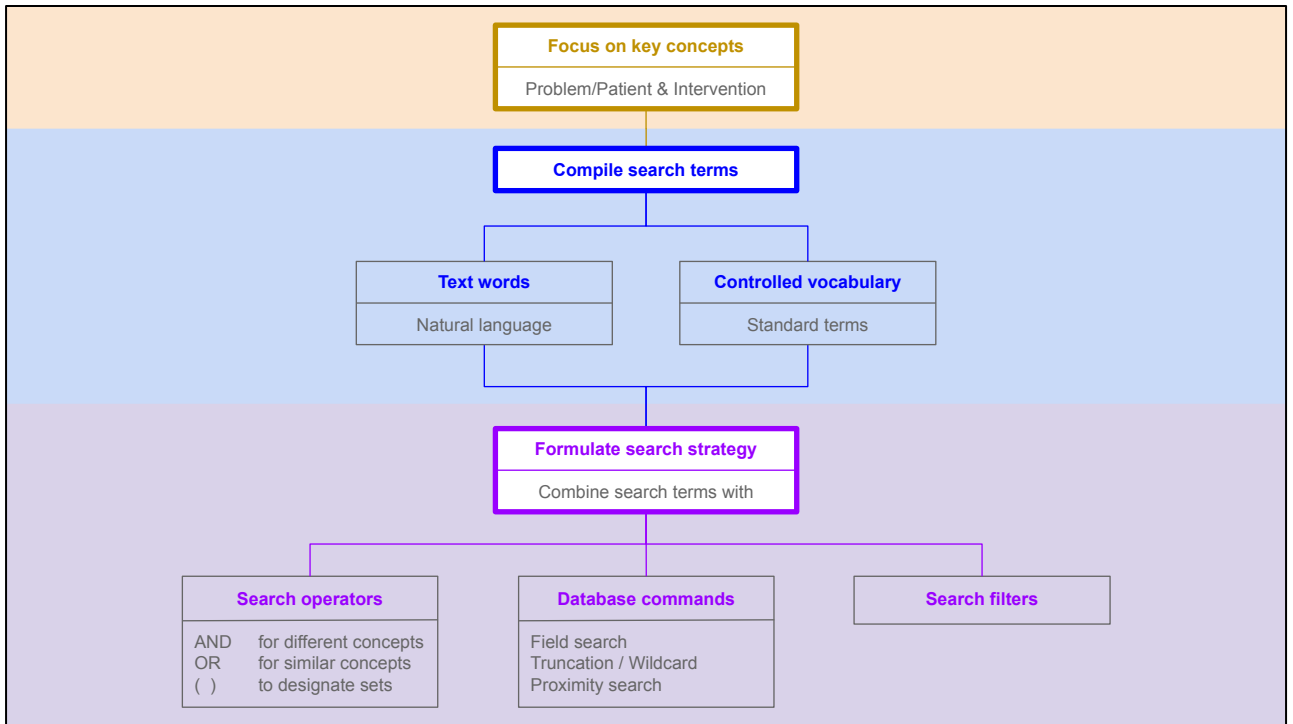
**20 tasks**

The process model consists of five phases: search strategy design, search conduct, results management, document retrieval, and search reporting.

Across these phases, there are nine activities, which consist of 20 tasks total.



Here is a visual version of the process model.



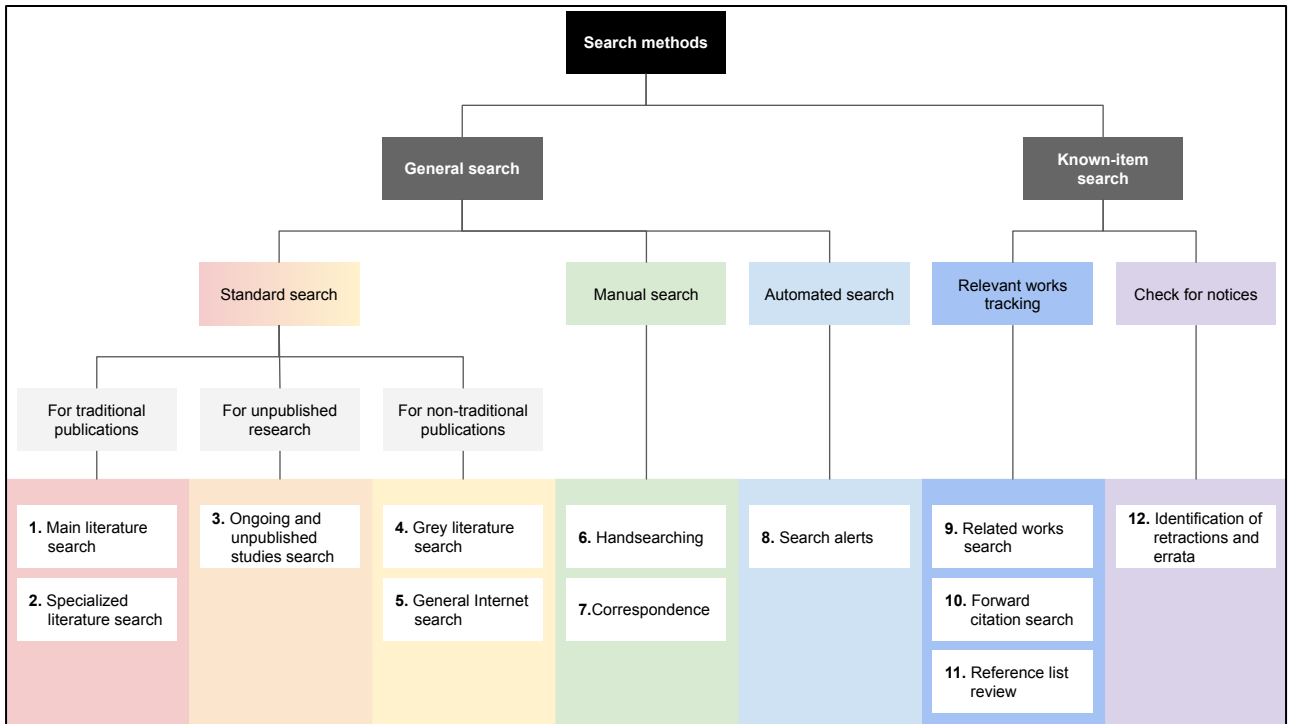
I unpacked the search strategy design phase into this separate visual model.

## Output 2

A **typology** is a systematic categorization of things according to shared characteristics.

A second analytical output is typologies.

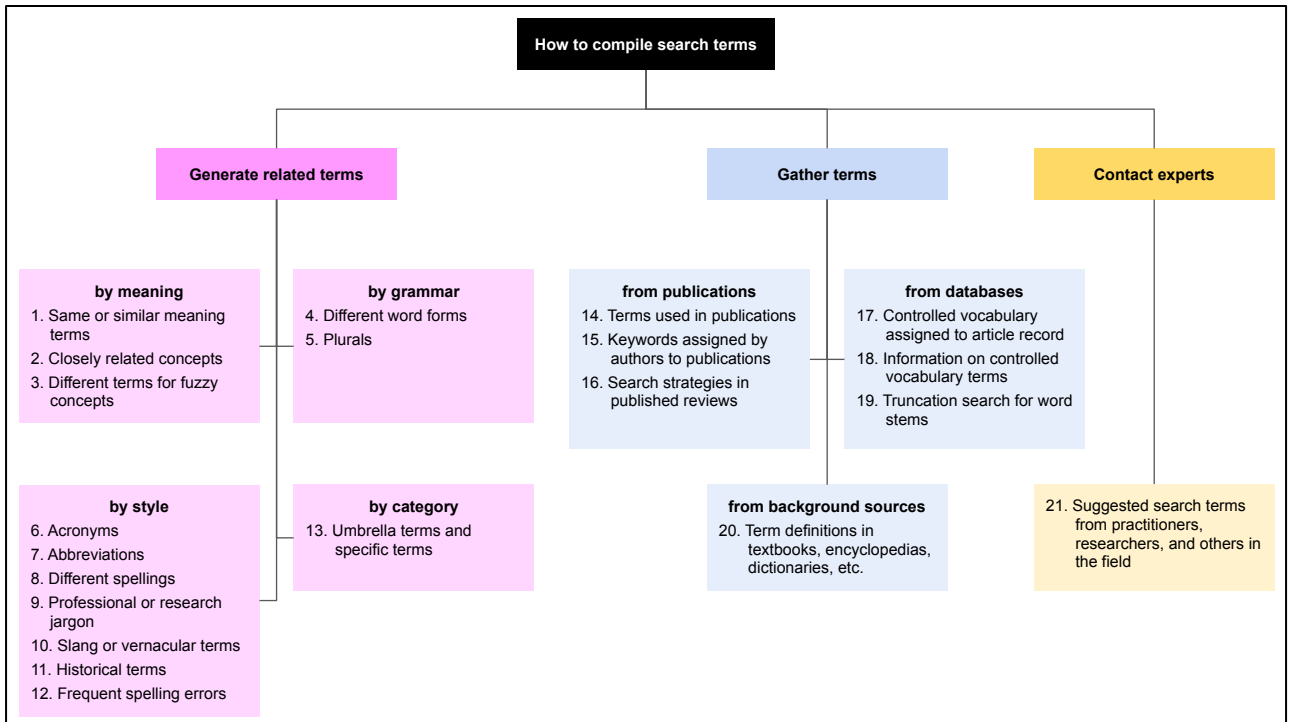
A typology is a systematic categorization of things according to shared characteristics.



Here is a typology of search methods. It illustrates the variety of methods and how they differ.

The typology distinguishes two principal categories: general searches and known-item searches. These two types divide into sub-categories that include 12 specific search techniques.

By showing how search methods are different, the reader can infer which technique is appropriate.



Here is another typology. This one organizes the methods for compiling search terms.

Typology



Process model



Typologies and process models are valuable learning aids. A typology is like a map that previews the search, and the process model is the directions for executing the search.



### Output 3

#### Compiled procedures

- Search guidelines organized into **task sequence order**
- Step-by-step **workflow**

The next analytical output is compiled procedures.

I organized the search guidelines from the four systematic review organizations into task sequence order.

This compilation serves as a step-by-step workflow for users to follow.

#### Output 4

### Directory of databases

150+ databases organized by:

- search method
- evidence type
- role

Finally, I compiled recommended evidence sources into a directory of databases.

Currently, there are more than 150 databases in this directory. Databases are organized by search method, evidence type, and role in specific topics and geographical areas.

Databases and Sources of Systematic Review Evidence ☆

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Resource Number	Priority	Category	Sub-Category	Name	Link	Availability
1	Essential	Major bibliographic databases		MEDLINE / PubMed	<a href="http://lib.ucsd.edu/p">http://lib.ucsd.edu/p</a>	UC San Diego Library
2	Essential	Major bibliographic databases		Embase	<a href="http://www.embase">http://www.embase</a>	UC San Diego Library
3	Essential	Major bibliographic databases		Cochrane Central Register of Controlled Trials (CENTRAL)	<a href="https://www.cochran">https://www.cochran</a>	UC San Diego Library
4		Major bibliographic databases		TRIP (Turning Research Into Practice)	<a href="http://uclibs.org/PID">http://uclibs.org/PID</a>	UC San Diego Library
5		Major bibliographic databases		National Library of Medicine Resources	<a href="https://gateway.nlm">https://gateway.nlm</a>	Free
6		Subject-specific databases	Acupuncture	AcuTrials	<a href="http://acutrials.ocon">http://acutrials.ocon</a>	Free
7		Subject-specific databases	Alternative Medicine, Osteopathy, Chiropractic	MANTIS	<a href="http://www.healthin">http://www.healthin</a>	Charged
8	Recommended if relevant	Subject-specific databases	Biology and Pharmacology	BIOSIS Previews	<a href="http://uclibs.org/PID">http://uclibs.org/PID</a>	UC San Diego Library
9		Subject-specific databases	Biology and Pharmacology	Derwent Drug File	<a href="http://www.ovid.com">http://www.ovid.com</a>	Charged
10		Subject-specific databases	Biology and Pharmacology	International Pharmaceutical Abstracts	<a href="https://health.ebsco">https://health.ebsco</a>	Charged
11		Subject-specific databases	Chiropractic	ICL: Index to Chiropractic Literature	<a href="https://www.chiroin">https://www.chiroin</a>	Free
12		Subject-specific databases	Communication Disorders	ComDisDome	<a href="http://www.proques">http://www.proques</a>	Charged
13		Subject-specific databases	Community and Social Issues	CommunityWISE	<a href="http://www.oxmill.co">http://www.oxmill.co</a>	Charged
14		Subject-specific databases	Complementary and Alternative Medicine	Allied and Complementary Medicine Database (AMED)	<a href="https://health.ebsco">https://health.ebsco</a>	Charged
15		Subject-specific databases	Complementary and Alternative Medicine	CAMbase	<a href="http://cambase.dnz">http://cambase.dnz</a>	Free
16		Subject-specific databases	Criminal Justice	Criminal Justice Abstracts	<a href="https://www.ebsco.c">https://www.ebsco.c</a>	Charged
17		Subject-specific databases	Criminal Justice	NCJRS: National Criminal Justice Reference Service	<a href="https://www.ncjrs.gc">https://www.ncjrs.gc</a>	Free
18		Subject-specific databases	Education	British Education Index	<a href="https://www.ebsco.c">https://www.ebsco.c</a>	Charged

Here is a preview of this directory.

Databases are labeled with priority, category and availability in our Library.

## Phase 2

### Combine:

- Process model
- Typologies
- Compiled procedures
- Directory of databases

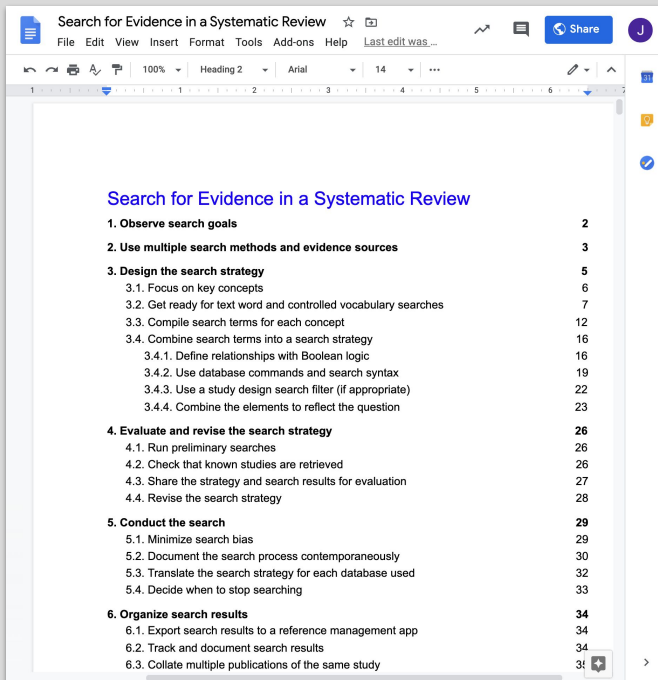


After the qualitative content analysis, I could advance to the next phase of this project.

I combined the analytical outputs to write a self-instruction guide for literature searches in systematic reviews. The intended audience is novice searchers.

## Self-instruction guide

 [lib.ucsd.edu/systematic-search](http://lib.ucsd.edu/systematic-search)



The screenshot shows a document viewer displaying a table of contents for a guide titled "Search for Evidence in a Systematic Review". The document is displayed in a window with a menu bar (File, Edit, View, Insert, Format, Tools, Add-ons, Help) and a toolbar. The table of contents is as follows:

<b>Search for Evidence in a Systematic Review</b>	
<b>1. Observe search goals</b>	<b>2</b>
<b>2. Use multiple search methods and evidence sources</b>	<b>3</b>
<b>3. Design the search strategy</b>	<b>5</b>
3.1. Focus on key concepts	6
3.2. Get ready for text word and controlled vocabulary searches	7
3.3. Compile search terms for each concept	12
3.4. Combine search terms into a search strategy	16
3.4.1. Define relationships with Boolean logic	16
3.4.2. Use database commands and search syntax	19
3.4.3. Use a study design search filter (if appropriate)	22
3.4.4. Combine the elements to reflect the question	23
<b>4. Evaluate and revise the search strategy</b>	<b>26</b>
4.1. Run preliminary searches	26
4.2. Check that known studies are retrieved	26
4.3. Share the strategy and search results for evaluation	27
4.4. Revise the search strategy	28
<b>5. Conduct the search</b>	<b>29</b>
5.1. Minimize search bias	29
5.2. Document the search process contemporaneously	30
5.3. Translate the search strategy for each database used	32
5.4. Decide when to stop searching	33
<b>6. Organize search results</b>	<b>34</b>
6.1. Export search results to a reference management app	34
6.2. Track and document search results	34
6.3. Collate multiple publications of the same study	34

The guide is titled: Search for Evidence in a Systematic Review.

It is publicly available at this web address: [lib.ucsd.edu/systematic-search](http://lib.ucsd.edu/systematic-search).

## **Self-instruction features**

- Progressive stages of learning
- Frameworks for explanation
- Step-by-step directions
- Recommendations

The guide has four features to facilitate self-instruction:

- Progressive stages of learning
- Frameworks for explanation
- Step-by-step directions, and
- Recommendations

I will demonstrate each feature of the guide.

## Progressive stages of learning

Proceeds from **foundational concepts** to progressively advanced search **tasks**

Serves as a **checklist**

### Search for Evidence in a Systematic Review

<b>1. Observe search goals</b>	<b>2</b>
<b>2. Use multiple search methods and evidence sources</b>	<b>3</b>
<b>3. Design the search strategy</b>	<b>5</b>
3.1. Focus on key concepts	6
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6.2. Track and document search results	34
6.3. Collate multiple publications of the same study	35
<b>7. Retrieve and archive publications</b>	<b>36</b>
<b>8. Update the search at the time of publication</b>	<b>37</b>
<b>9. Report the search process</b>	<b>38</b>
<b>10. Find support with evidence sources</b>	<b>40</b>
<b>Appendix: Explanation of search methods</b>	<b>41</b>

First, the guide explains the literature search in progressive stages.

As shown in the table of contents, the learning follows a sequential flow from foundational concepts to progressively advanced search tasks. This organizational framework is grounded in the process model. Additionally, this structure serves as a checklist for conducting the literature search comprehensively.

## Frameworks for explanation

Summarize and explain the search process with:

- process model
- typologies

### 1. Observe search goals

#### ➔ Aim to:

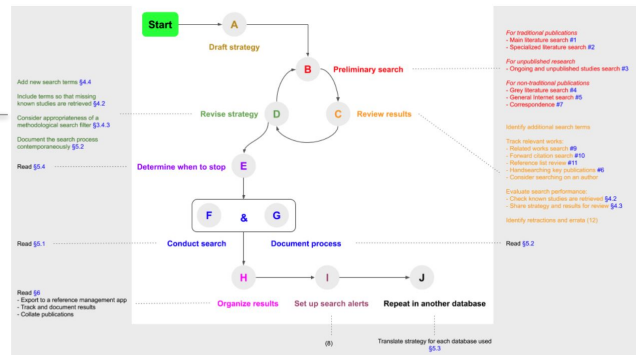
- Collect as much relevant evidence as possible
- Minimize publication and reporting bias

#### Do this →

- Use a variety of search methods
- Search multiple databases
- Design a sensitive search strategy
- Search for published and unpublished research
- Search by an iterative process (pilot search, review results, refine strategy, repeat)
- Document the search process for transparency, reproducibility, and evaluation

#### Overview of the search process →

Process model



Next, instructional frameworks summarize and explain the search process.

The guide uses the typologies and the visual process model to help users differentiate and navigate search techniques.

For instance, the process model appears right at the beginning of the guide.



# Frameworks for explanation

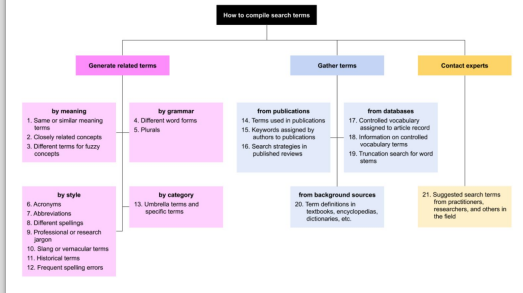
Typologies

## 3.3. Compile search terms for each concept

### Generate a list of the different terms used to phrase a concept

To conduct a comprehensive search, use different text words and controlled vocabulary terms for each research concept.

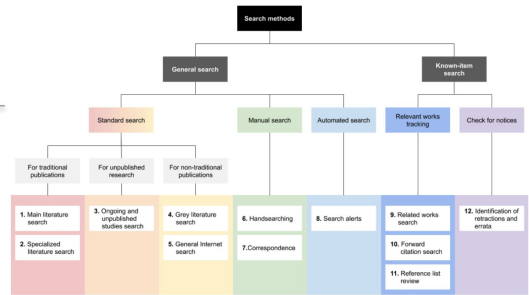
Figure 3. Techniques for compiling search terms



## 2. Use multiple search methods and evidence sources

### Overview

Figure 1. Typology of search methods used in systematic reviews



And here are the typologies.

They give concise visual overviews, distinguish when and how to use search techniques, and orient the user in the search workflow.

## Stepwise directions to build self-sufficiency

Definitions

Procedures

&

Examples

### 4.2. Check that known studies are retrieved

**■ Determine whether a search strategy has excluded a known study. If so, add text words and controlled vocabulary so that the search captures this study.**

Known studies include:

- Studies previously identified as relevant to your review
- Studies cited in the reference lists of relevant papers
- Studies included in similar systematic reviews
- Studies identified from the forward citation search of a relevant paper

*Do this* →

Procedures	Example in PubMed
1. Search for known articles by their unique identifiers (e.g., PMID, DOI, etc.)	1. 20620427[pmid] OR 20620428[pmid]
2. Run your search strategy	2. (heart OR lung) AND risk
3. Identify known articles excluded by your search strategy	3. #1 NOT #2
4. Identify text words and controlled vocabulary from the excluded known articles. Add to your search strategy.	

The next feature is stepwise directions written to be clear and understandable for novice searchers.

Explicit, detailed directions help users become self-sufficient in search formulation and execution.

For example, here are the steps in evaluating a search. There are clear definitions, detailed procedures, and examples as templates.

## Stepwise directions

Line-by-line explanation

Example search statements

### Example search strategy in PubMed

Problem	1. pneumon*[tw] OR "lower respiratory tract infection"[tw] OR "lower respiratory infection"[tw] OR lrti[tw]	A text word search for the problem concept (i.e. pneumonia). * designates truncation, which searches for different word endings. Enclose multi-word phrases in " ". This will find the terms together in the same word order.
	2. pneumonia[mh]	A controlled vocabulary search for the specified MeSH term. [mh] denotes a MeSH term that is 'exploded.'
	3. #1 OR #2	Use OR to combine the various 'problem' terms into a set
Intervention	4. zinc[tw] OR zn[tw] OR hypozinc*[tw]	A text word search for the intervention (zinc) and a related concept (hypozincemia).
	5. zinc[nm]	[nm] denotes a substance name search
	6. zinc[mh]	A controlled vocabulary search for the MeSH term of the intervention.
	7. #4 OR #5 OR #6	Use OR to combine the various 'intervention' terms into a set
Study design	8. randomized controlled trial[pt]	Sets 8-18 are a search filter. It is the <a href="#">Cochrane filter</a> to locate randomized controlled trials in PubMed.
	9. controlled clinical trial[pt]	[pt] denotes a Publication Type term
	10. randomized[tiab]	[tiab] denotes a word found in the title or abstract
	11. placebo[tiab]	
	12. drug therapy[sh]	[sh] denotes a subheading
	13. randomly[tiab]	
	14. trial[tiab]	
	15. groups[tiab]	
	16. #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15	
	17. animals[mh] NOT humans[mh]	
18. #16 NOT #17		
Combination of above concepts	19. #3 AND #7 AND #18	Combines the problem, intervention, and study design concepts together. Use AND to find the overlap in the three sets.

Additionally, here is the section on formulating search statements. There are line-by-line explanations and example search statements.

## Stepwise directions

Clear examples  
to guide the reader

### A Generate search terms by exploring the types of related terms

Related terms by meaning	Example
1. Same or similar meaning terms	hypertension, high blood pressure (synonyms)
2. Closely related concepts	cancer, malignancy, tumor
3. Different terms for fuzzy concepts	patient satisfaction, quality of life, psychological resilience

Related terms by grammar	Example
4. Different word forms	diabetes, diabetic; infect (verb), infection (noun), infectious (adjective), infectiously (adverb)
5. Plurals	viscus, viscera; child, children; eye, eyes

Related terms by style	Example
6. Acronyms	AIDS, acquired immunodeficiency syndrome
7. Abbreviations	CO <sub>2</sub> , carbon dioxide
8. Different spellings	pediatrics vs paediatrics (US vs UK spelling); healthcare, health-care, health care
9. Professional or research jargon	cerebrovascular accident versus stroke; generic versus proprietary names
10. Slang or vernacular terms	bounceback for readmission
11. Historical terms	dipsomania for alcoholism
12. Frequent spelling errors	Alzheimer's misspelled as Alzheimer

Related terms by category	Example
13. Umbrella terms and specific terms	heart disease is an umbrella term for coronary artery disease, arrhythmia, congenital heart defects, etc.

In a final example, this section explains how to generate search terms. There are clear examples to guide the reader.

## Recommendations

Tips

### *Tips*

- Emulate the search strategy of a published systematic review. The search strategies found in [Cochrane Reviews](#) are recommended.
- It is easier to detect errors in short search statements. Break down lengthy statements into separate searches and combine the parts afterwards.
- To facilitate entry of complex search statements, use the advanced search feature of a database.

Spotlight  
common problems

### *Caution*

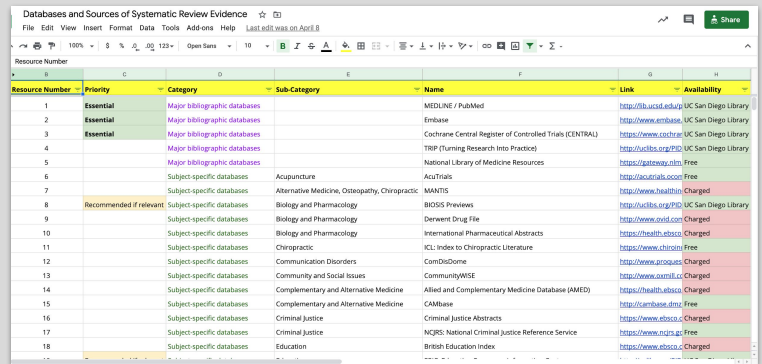
- Databases can vary significantly in the syntax and controlled vocabulary used. You may need to translate your search strategy for each database you use. See the [database syntax comparison guide](#) for examples.
- UC San Diego Library does not provide databases through the 'Ovid' interface. If you find a published search strategy that employs the 'Ovid' syntax and you want to run this search, you will need to translate the strategy into the search syntax used by the database interface provided by the Library.

Finally, recommendations are another self-instruction feature.

The guide gives recommendations for conducting a productive search. It brings attention to tips and common problems in order to help users search proficiently.

## Recommendations

The directory of databases recommends and prioritizes sources



Resource Number	Priority	Category	Sub-Category	Name	Link	Availability
1	Essential	Major bibliographic databases		MEDLINE / PubMed	<a href="http://lib.ucsd.edu/p">http://lib.ucsd.edu/p</a>	UC San Diego Library
2	Essential	Major bibliographic databases		Embase	<a href="http://www.embase.com">http://www.embase.com</a>	UC San Diego Library
3	Essential	Major bibliographic databases		Cochrane Central Register of Controlled Trials (CENTRAL)	<a href="https://www.cochrane.org">https://www.cochrane.org</a>	UC San Diego Library
4		Major bibliographic databases		TDR (Turning Research Into Practice)	<a href="http://tdr.ucsf.edu/">http://tdr.ucsf.edu/</a>	UC San Diego Library
5		Major bibliographic databases		National Library of Medicine Resources	<a href="https://pubmed.ncbi.nlm.nih.gov/">https://pubmed.ncbi.nlm.nih.gov/</a>	Free
6		Subject-specific databases	Acupuncture	AcuTrials	<a href="http://acutrial.com/">http://acutrial.com/</a>	Free
7		Subject-specific databases	Alternative Medicine, Osteopathy, Chiropractic	MANTIS	<a href="http://www.healthon.com/">http://www.healthon.com/</a>	Charged
8	Recommended if relevant	Subject-specific databases	Biology and Pharmacology	BIOSS Previews	<a href="http://ucrlib.org/3D">http://ucrlib.org/3D</a>	UC San Diego Library
9		Subject-specific databases	Biology and Pharmacology	Derwent Drug File	<a href="http://www.ovid.com">http://www.ovid.com</a>	Charged
10		Subject-specific databases	Biology and Pharmacology	International Pharmaceutical Abstracts	<a href="https://health.ebsco.com">https://health.ebsco.com</a>	Charged
11		Subject-specific databases	Chiropractic	ICL Index to Chiropractic Literature	<a href="https://www.chiroton.com/">https://www.chiroton.com/</a>	Free
12		Subject-specific databases	Communication Disorders	ComDisCover	<a href="http://www.jcoquas.com/">http://www.jcoquas.com/</a>	Charged
13		Subject-specific databases	Community and Social Issues	CommUnGHEE	<a href="http://www.comungh.com/">http://www.comungh.com/</a>	Charged
14		Subject-specific databases	Complementary and Alternative Medicine	Allied and Complementary Medicine Database (AMED)	<a href="https://health.ebsco.com">https://health.ebsco.com</a>	Charged
15		Subject-specific databases	Complementary and Alternative Medicine	CAMbase	<a href="http://cambase.dmc.com/">http://cambase.dmc.com/</a>	Free
16		Subject-specific databases	Criminal Justice	Criminal Justice Abstracts	<a href="https://www.ebsco.com">https://www.ebsco.com</a>	Charged
17		Subject-specific databases	Criminal Justice	NCJRS National Criminal Justice Reference Service	<a href="https://www.ncjrs.gov/">https://www.ncjrs.gov/</a>	Free
18		Subject-specific databases	Education	British Education Index	<a href="https://www.ebsco.com">https://www.ebsco.com</a>	Charged

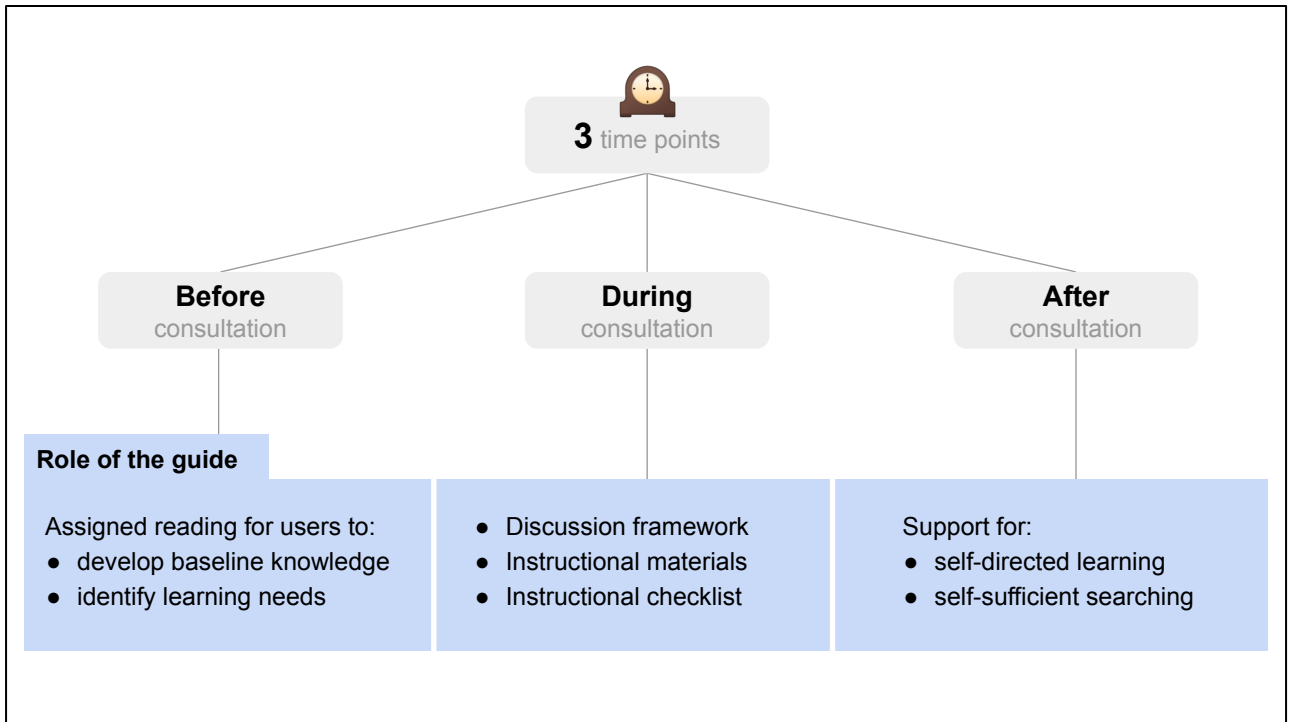
 [lib.ucsd.edu/sr-databases](http://lib.ucsd.edu/sr-databases)

Additionally, the directory of databases recommends and prioritizes evidence sources to use.

### **Application**

The self-instruction guide is used in our **systematic review consultation** service.

I applied the self-instruction guide to the systematic review service at the UC San Diego Library. This service provides reference consultations on literature searches for systematic review projects in healthcare.



I apply the guide at three points during the reference consultation.

Before the consultation, I assign sections for the user to read. This reading introduces the search process, develops baseline knowledge, and, most importantly, helps users identify their learning needs and formulate questions about the search process.

During the reference consultation, the guide serves as a discussion framework and instructional materials. It is also a checklist for teaching search skills progressively and thoroughly.

After the reference session, patrons use the guide for self-guidance. I hope the guide will facilitate self-directed learning and thereby build users' self-sufficiency in searching.



## **Evaluation**

### of the self-instruction guide

<b>Criteria</b>	<b>Method</b>	<b>Preliminary results</b>
Reliability of content	Peer review	<ul style="list-style-type: none"><li>• Content revisions</li><li>• Usability improvements</li></ul>
Perceived value	User feedback	Users described the guide as: <ul style="list-style-type: none"><li>• “useful” learning aid</li><li>• “logical”</li><li>• “easy to follow”</li></ul>
Impact on reference	User observation	The guide may facilitate reference that is: <ul style="list-style-type: none"><li>• driven by user questions</li><li>• driven by learning needs</li><li>• participatory</li></ul>

The preliminary evaluation of the self-instruction guide examined: (1) the reliability of the content; (2) the perceived value of the guide by users; and (3) the impact of the guide on reference consultations.

To assess the reliability of the content, I submitted the guide for peer review by librarians. Feedback from peers at local and external institutions led to content revisions and usability improvements.

To determine the perceived value of the guide by users, I requested user feedback during reference consultations. Users described the guide as a useful learning aid - mainly due to the logical and easy-to-follow procedures.

Finally, I studied the impact of the guide on reference consultations through user observations. Users who read the guide beforehand developed a baseline knowledge and consequently had questions that were clearer and better articulated. These outcomes facilitate a participatory reference interaction that is driven by user needs.

## Future work

### Instructional design

The guide as a syllabus for:

- Classes
- Videos
- Lesson plans
- Worksheets
- Exercises

### Service planning

The process model may help define:

- Service scope
- Delivery approaches
- Shared responsibilities

Moving forward, I will explore the application of this guide to instructional design for in-person classes and online videos. The guide can serve as a syllabus to facilitate lesson planning and the development of worksheets and exercises.

If your library is planning a service for systematic reviews, this guide may contribute to your planning process. Through its comprehensive outline of search activities and tasks, the guide may help with designing service scope, delivery approaches, and shared team responsibilities.

## Re-use

Feel free to  
**share** and **adapt** the guide



[lib.ucsd.edu/systematic-search](https://lib.ucsd.edu/systematic-search)

I encourage you to share and adapt the self-instruction guide for systematic searching.

I hope it can contribute to the reference and instructional needs of your library.

The guide has a Creative Commons license, so it is freely available for re-use and customization.

## Review

- Compiled search [guidelines](#)
- Developed search [process model](#) and [typologies](#)
- Developed [self-instruction guide](#)
- Applied to [reference](#) service
- Impact: [participatory](#) reference and [self-directed](#) learning

In review, this project compiled search guidelines from four systematic review organizations.

A qualitative content analysis of the guidelines developed a process model and typologies to explain the literature search process.

This analysis led to the development of a self-instruction guide with specific procedures organized along progressive stages that facilitate self-directed learning.

Applied to the Library's reference service for systematic reviews, the guide serves as pre-consultation reading, discussion framework, instructional materials, and post-reference support.

Preliminary evaluation suggests the guide may facilitate participatory reference consultations and support user self-sufficiency and self-directed learning for advanced literature searches.

**Share** and **adapt** the instructional guide

→ [lib.ucsd.edu/systematic-search](https://lib.ucsd.edu/systematic-search)

Finally, I share the self-instruction guide openly and encourage you to adapt it to your Library's search instruction and consultation services.

Self-instruction guide  
with stepwise procedures for  
self-sufficiency.

To summarize this project succinctly, I share this haiku poem:

Self-instruction guide  
with stepwise procedures for  
self-sufficiency.

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