4.7

Synthesizing Sources

Linda Frederiksen, Sue F. Phelps, & Royce Kimmons

Learning Objectives

At the conclusion of this chapter, you will be able to:

- synthesize key sources connecting them with the research question and topic area.

Putting the Pieces Together

Combining separate elements into a whole is the dictionary definition of synthesis. It is a way to make connections among and between numerous and varied source materials. A literature review is not an annotated bibliography, organized by title, author, or date of publication. Rather, it is grouped by topic to create a whole view of the literature relevant to your research question.

Your synthesis must demonstrate a critical analysis of the papers you collected as well as your ability to integrate the results of your analysis into your own literature review. Each paper collected should be critically evaluated and weighed for "adequacy, appropriateness, and thoroughness" (Garrard, 2017 [https://edtechbooks.org/-wQv]) before inclusion in your own review. Papers that do not meet this criteria likely should not be included in your literature review.

Begin the synthesis process by creating a grid, table, or an outline where you will summarize, using common themes you have identified and the sources you have found. The summary grid or outline will help you compare and contrast the themes so you can see the relationships among them as well as areas where you may need to do more searching. Whichever method you choose, this type of

organization will help you to both understand the information you find and structure the writing of your review. Remember, although "the means of summarizing can vary, the key at this point is to make sure you understand what you've found and how it relates to your topic and research question" (Bennard et al., 2014 [https://edtechbooks.org/-wQv]).

Summary table

As you read through the material you gather, look for common themes as they may provide the structure for your literature review. And, remember, research is an iterative process: it is not unusual to go back and search information sources for more material.

> At one extreme, if you are claiming, 'There are no prior publications on this topic,' it is more likely that you have not found them yet and may need to broaden your search. At another extreme, writing a complete literature review can be difficult with a well-trod topic. Do not cite it all; instead cite what is most relevant. If that still leaves too much to include, be sure to reference influential sources...as well as high-quality work that clearly connects to the points you make. (Klingner, Scanlon, & Pressley, 2005 [https://edtechbooks.org/-wQv]).

Creating a summary table

Literature reviews can be organized sequentially or by topic, theme, method, results, theory, or argument. It's important to develop categories that are meaningful and relevant to your research question. Take detailed notes on each article and use a consistent format for capturing all the information each article provides. These notes and the summary table can be done manually, using note cards. However, given the amount of information you will be recording, an electronic file created in a word processing or spreadsheet is more manageable. Examples of fields you may want to capture in your notes include:

- Authors' names
- Article title
- Publication year
- Main purpose of the article
- Methodology or research design
- Participants
- Variables
- Measurement
- Results
- Conclusions

Other fields that will be useful when you begin to synthesize the sum total of your research:

- Specific details of the article or research that are especially relevant to your study
- Key terms and definitions
- Statistics
- Strengths or weaknesses in research design

- Relationships to other studies
- Possible gaps in the research or literature (for example, many research articles conclude with the statement "more research is needed in this area")
- Finally, note how closely each article relates to your topic. You may want to rank these as high, medium, or low relevance. For papers that you decide not to include, you may want to note your reasoning for exclusion, such as 'small sample size', 'local case study,' or 'lacks evidence to support assertion.'

This short video demonstrates how a nursing researcher might create a summary table.

Creating a Summary Table

Watch on YouTube https://edtechbooks.org/-LQ
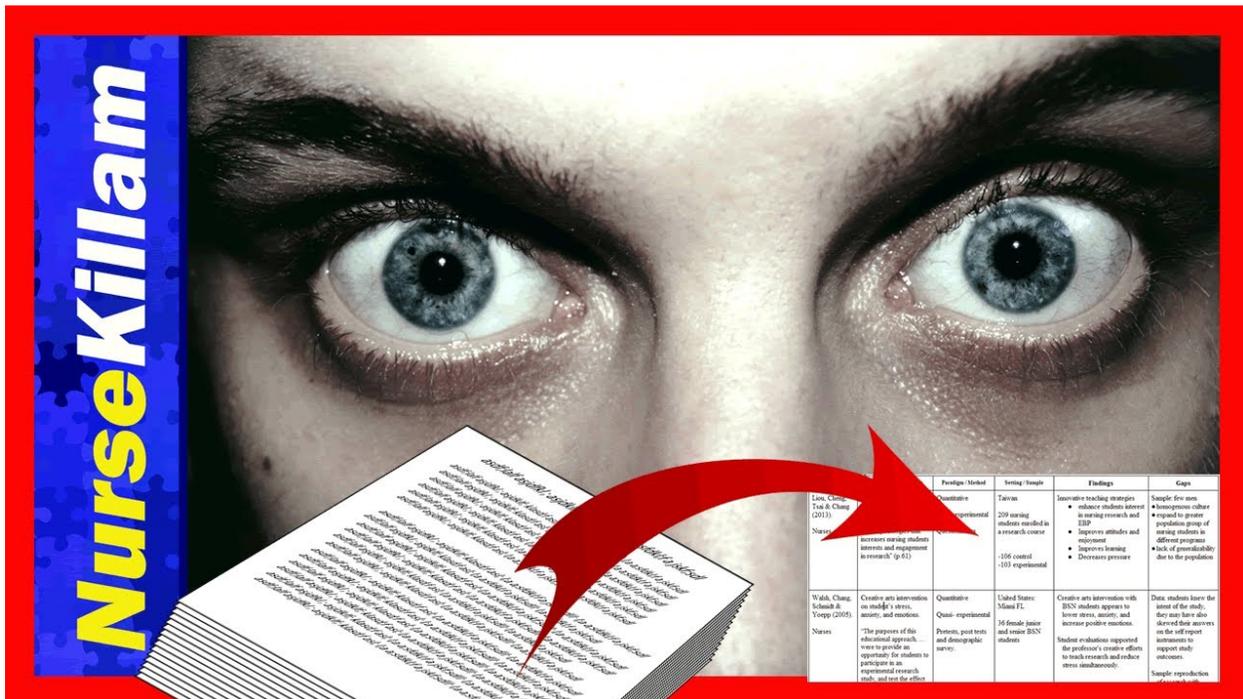
Killam, Laura (2013). Literature review preparation: Creating a summary table. Includes transcript. https://edtechbooks.org/-IH

Summary tables can be organized by author or by theme, for example:

Author/Year	Research Design	Participants or Population Studied	Comparison	Outcome
Smith/2010	Mixed methods	Undergraduates	Graduates	Improved access
King/2016	Survey	Females	Males	Increased representation
Miller/2011	Content analysis	Nurses	Doctors	New procedure

Creating a summary outline

An alternate way to organize your articles for synthesis it to create an outline. After you have collected the articles you intend to use (and have put aside the ones you won't be using), it's time to identify the conclusions that can be drawn from the articles as a group.

Based on your review of the collected articles, group them by categories. You may wish to further organize them by topic and then chronologically or alphabetically by author. For each topic or subtopic you identified during your critical analysis of the paper, determine what those papers have in common. Likewise, determine which ones in the group differ. If there are contradictory findings, you may be able to identify methodological or theoretical differences that could account for the contradiction (for example, differences in population demographics). Determine what general conclusions you can report about the topic or subtopic as the entire group of studies relate to it. For example, you may have several studies that agree on outcome, such as 'hands on learning is best for science in elementary school' or that 'continuing education is the best method for updating nursing certification.' In that case, you may want to organize by methodology used in the studies rather than by outcome.

Organize your outline in a logical order and prepare to write the first draft of your literature review. That order might be from broad to more specific, or it may be sequential or chronological, going from foundational literature to more current. Remember, "an effective literature review need not denote the entire historical record, but rather establish the raison d'etre for the current study and in doing so cite that literature distinctly pertinent for theoretical, methodological, or empirical reasons." (Milardo, 2015, p. 22 [https://edtechbooks.org/-wQv]).

As you organize the summarized documents into a logical structure, you are also appraising and synthesizing complex information from multiple sources. Your literature review is the result of your research that synthesizes new and old information and creates new knowledge.

Additional Resources

- Literature Review: Synthesizing Multiple Sources [https://edtechbooks.org/-YhX] / Indiana University
- Sample Literature Reviews Grid [https://edtechbooks.org/-jCE] / Compiled by Lindsay Roberts

Practice

Select three or four articles on a single topic of interest to you. Then enter them into an outline or table in the categories you feel are important to a research question.

Test Yourself

1. Select two articles from your own summary table or outline and write a paragraph explaining how and why the sources relate to each other and your review of the literature.
2. In your literature review, under what topic or subtopic will you place the paragraph you just wrote?
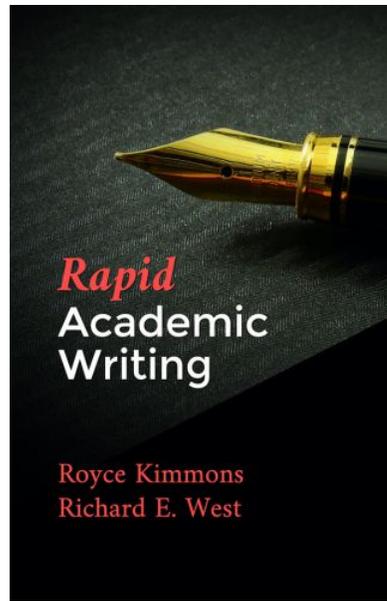
Frederiksen, L., Phelps, S. F., & Kimmons, R. (2018). Synthesizing Sources. In R. Kimmons, *Rapid Academic Writing*. EdTech Books. Retrieved from https://edtechbooks.org/rapidwriting/lit_rev_synthesizing_sources