**  Four Approaches to Reviewing and Synthesizing Literature**

There is confusion around the similarities and differences between the different approaches to reviewing and synthesizing the literature. In this section, we will look at four approaches: literature reviews, systematic reviews of the literature, meta-analysis, and meta-synthesis. These are not all the approaches that exist but are some of the most commonly found in the literature. Before diving into each type to see the differences and similarities, we need to understand that these four types of approaches have in common the fact that they all have the goal of bringing together the results from multiple studies. However, they differ in how they pursue this goal.

Similarities and differences between the different approaches depend on:

* whether they frame an empirical study or they stand alone~~,~~
* whether they use systematic methods to search and select the literature~~,~~
* whether they use formal analysis processes, and
* whether they use qualitative or quantitative methods for the analysis~~.~~

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According to Rowley and Slack (2004), "The **literature review** identifies and organizes the concepts in relevant literature” (p. 31). The purpose of a literature review is to “[distill] the existing literature in a subject field; ... to summarize the state of the art in that subject field. From this review of earlier and recent work, it becomes possible to identify areas in which further research would be beneficial” (p. 32). This is often used to frame a study that the author of the review will conduct. It is not *systematic*, meaning that it does not try to include all the existing literature on the topic of interest or uses methods that are replicable by others, and it does not use analysis methods (e.g., narrative analysis, thematic analysis) to arrive at its conclusions.

There are also **systematic reviews of the literature**, which is a sub-category of literature reviews. A systematic review is a stand-alone manuscript that uses systematic methods to identify a comprehensive set of literature on the topic of interest that seeks to provide an overview of the literature in a specific area and to identify areas that need further research. According to Pham et al., (2014) systematic reviews typically address the “effectiveness of interventions, which often focus on randomized controlled trials” (p. 371). However, this has changed significantly in the recent past. Currently, systematic reviews are conducted in many other areas beyond the effectiveness of interventions and including studies that have used many other research methods besides randomized controlled trials (e.g., Denton, Borrego, & Boklage, 2019). Dr. Borrego and colleagues (2014) have worked to spread the use of systematic reviews in engineering education, arguing that,

More reviews of prior work conducted more systematically would help advance the field by lowering the barrier for both researchers and practitioners to access the literature, enabling more objective critique of past efforts, identifying gaps, and proposing new directions for research. (p. 45)

**“Meta-analysis** is the statistical combination of results from multiple studies in order to yield results which make the best use of all available evidence” (Schmid et al., 2020, p. vii). As such, it pools results from studies to aggregate them mathematically seeking statistical generalization. Given its methodological orientation, meta-analyses exclusively synthesize the findings of comparable studies that used experimental designs.

**Meta-synthesis** is an umbrella term for different study designs that synthesize qualitative primary studies. According to Hannes and Lockwood (2012), it

is the synthesis or amalgamation of individual qualitative research reports (commonly called ‘primary research reports’) that relate to a specific topic or focus in order to arrive at new or enhanced understanding about the phenomenon under study. It entails an interpretive process. (p. 1)

Further, qualitative meta-synthesis integrates the literature with a purpose of bringing a new or enhanced perspective or understanding of a particular topic. It can also develop new theory and unify disparate ideas and types of literature. It includes meta-ethnographies, meta-summaries, meta- aggregations, realist reviews, critical interpretive syntheses, thematic syntheses, among others (see Booth et al., 2016). There are different methods to identify the literature that will be included in a meta-synthesis, so it can be systematic or not. The specific type of meta-synthesis that we will see in these modules is systematic, so it uses methods that are reproducible by others and that seek to access a comprehensive set of literature on the topic. The interpretive process that Hannes and Lockwood mention in their definition refers to the use of analysis procedures (e.g., narrative analysis, discourse analysis, thematic analysis) to develop meta-findings from the selected literature.

Thus, though there are similarities among the four approaches, there are several differences. One is that that the literature review usually does not stand on its own, but provides the framing for a study, while a systematic review, a meta- analysis, and a meta-synthesis are studies in and of themselves. The difference between meta-synthesis and meta-analysis lay in the types of studies included in each and the methods used to synthesize them. A meta-analysis brings together quantitative studies using statistical methods, while a meta-synthesis brings together qualitative studies using interpretive methods. The main differences between a systematic review and a meta-synthesis lay in the literature selection and analysis methods. While a systematic review uses systematic literature search and selection methods, a meta-synthesis may or may not use these methods. And while a meta-synthesis employs analysis and interpretation methods to synthesize the literature’s findings to develop overall findings, a systematic review usually does not.

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