

AVICO

# CODING TRAINING WITH AVIATION TECHNOLOGIES

## Literature Review Methodology



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# 1 “LITERATURE REVIEW” - WHAT DOES IT MEAN?

A "Literature Review" is a review and synthesis of existing research on a topic or research question. It goes beyond merely describing or summarizing the literature; it analyzes the scholarly literature, establishes connections across writings, and identifies strengths, weaknesses, trends, and missing discussions. A literature review should address different aspects of a topic as it relates to your research question<sup>1</sup>.

A literature review is a significant part of the research process and is often found in academic works, theses, dissertations, or journal articles. These reviews are common in academic literature and should not be confused with book reviews. They serve as a foundation for research in almost every academic field. A literature review is a secondary source that does not report new or original experimental work but presents the current knowledge, including significant findings, theoretical, and methodological contributions to a specific topic<sup>2</sup>.

There are five key steps to conducting a literature review:

- Searching for relevant literature,
- Evaluating sources,
- Identifying themes, debates, and gaps,
- Outlining the structure,
- Writing your literature review.

A good literature review doesn't just summarize sources—it analyzes, synthesizes, and critically evaluates to provide a clear picture of the state of knowledge on the subject<sup>3</sup>.

When incorporating this information into your research or writing, it's crucial to maintain accurate and consistent citation to ensure credibility. Assessing the reliability of the sources and reading key studies and major theories in your field is important. Taking notes during the process and correctly recording your sources will save time later in the writing process and help avoid plagiarism.

## 1.1 Importance of a Good Literature Review

The importance of a good literature review in research is multifaceted, stemming from its comprehensive impact on the research process. A literature review is not merely a summary of relevant sources, but it also involves synthesizing information by restructuring and organizing it, critically evaluating concepts or schools of thought, and familiarizing authors with the extent of knowledge in their field. This process is crucial for understanding the scope and significance of existing knowledge, identifying gaps in information, and demonstrating how research fits within a broader field of study. Furthermore, it contributes to the legitimacy

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<sup>1</sup> <https://libguides.northwestern.edu/literaturereviews>

<sup>2</sup> [https://en.wikipedia.org/wiki/Literature\\_review](https://en.wikipedia.org/wiki/Literature_review)

<sup>3</sup> <https://www.scribbr.com/methodology/literature-review/>



of research by interpreting existing literature in light of recent developments in the field, helping in selecting an appropriate methodology, and enhancing the research's credibility<sup>4</sup>.

Literature reviews are accounts of what has been published on a topic by accredited scholars and researchers. They help situate your research within a scholarly field, leading directly to your theoretical framework or methodology. Literature reviews can be written for various purposes, such as developing or evaluating theories, summarizing the historical or current state of research on a topic, or identifying problems in a field of research<sup>5</sup>.

In summary, a literature review highlights the originality and uniqueness of your research, rationalizes the need for conducting the research, and aids in avoiding plagiarism, thereby preventing rejection of scientific manuscripts. It also assists in establishing the researcher's thorough investigation into the topic and gains the readers' trust for having conducted an extensive fact-finding and factchecking mission<sup>6</sup>.

## 1.2 Clarify the topic

Before initiating your literature search, it is essential to have a well-defined topic. This topic should not only be narrow enough to be manageable but also have a clear statement indicating whether the final text is intended for an academic or a professional audience. This clarity is fundamental in directing the scope and approach of your literature review.

At the outset, it's advisable to choose a topic that encompasses a broad field of research. Selecting a subject area that you are already somewhat familiar with can be beneficial. This pre-existing familiarity can serve as a solid foundation, preventing the need to start from scratch. It is not necessary to be an expert in the chosen topic right away. However, having read a few related articles can provide a valuable starting point and facilitate further exploration and deeper understanding of the subject.

This revised text provides a clear structure and purpose for the literature review process, emphasizing the importance of a well-defined topic and the benefits of starting with some background knowledge in the chosen field.

## 1.3 Look for books and articles

When embarking on your literature review, a strategic approach to sourcing material is crucial. Begin by skimming through recent issues of leading books and journals in your field. Pay special attention to their most-cited articles, as these can provide valuable insights into key trends and influential research.

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<sup>4</sup> <https://pubrica.com/academy/research/why-is-it-important-to-do-a-literature-review-in-research/>

<sup>5</sup> <https://guides.lib.uconn.edu/literaturereview/intro>

<sup>6</sup> <https://pubrica.com/academy/research/why-is-it-important-to-do-a-literature-review-in-research/>



For additional inspiration and a broader perspective, utilize Google Scholar and subject-specific databases, as well as the resources available through online libraries. This diverse approach ensures a comprehensive understanding of the field.

If you have previously read articles related to your topic, revisiting their reference lists can be highly beneficial. These lists can lead you to other relevant and valuable sources that you may not have encountered otherwise. As you explore these materials, make note of any specific ideas that capture your interest. Creating a shortlist of potential topics based on these ideas can help in focusing your research efforts.

After conducting this initial exploration, the next step is to refine your broad area of study. This refinement should be a gradual process, allowing your topic to become increasingly specific. This narrowing down helps in establishing a clear and focused research question, which is essential for a thorough and targeted literature review.

## 1.4 Consider the type of review and processing of found information

When considering the type of literature review and processing the found information, it's important to understand the various types of reviews available and how they might best suit your research needs. Each type of literature review (Figure 1) has its own characteristics and is used for different purposes in research.



Figure 1 Different types of literature review

## 1.5 Determine the relevance

It's crucial that the focus of your research not only sparks your interest but also aligns with AVICO's objectives. Given that AVICO is dedicated to providing coding training across all levels of vocational education through the innovative application of unmanned aerial vehicle technology, the relevance of your topic is paramount. For instance, you might explore how coding skills, enhanced by UAV technology, can be leveraged in vocational settings to drive



technological entrepreneurship.

It's imperative that your research not only piques your own interest but also aligns seamlessly with the specific aims of the AVICO project. AVICO's focus on enhancing coding training through the innovative use of unmanned aerial vehicle (UAV) technology in vocational education demands that your topic have direct relevance. When selecting your research focus, consider the implications of UAV technology in fostering advanced vocational skills, and how this integration can promote a culture of technological entrepreneurship. In this way, your research will not only be engaging to you but will also be instrumental in advancing AVICO's mission to revolutionize vocational education and training, with an eye towards commercial viability and the exploitation of project outcomes in real-world applications. This approach will ensure that your work is both personally rewarding and strategically aligned with the transformative objectives of AVICO.

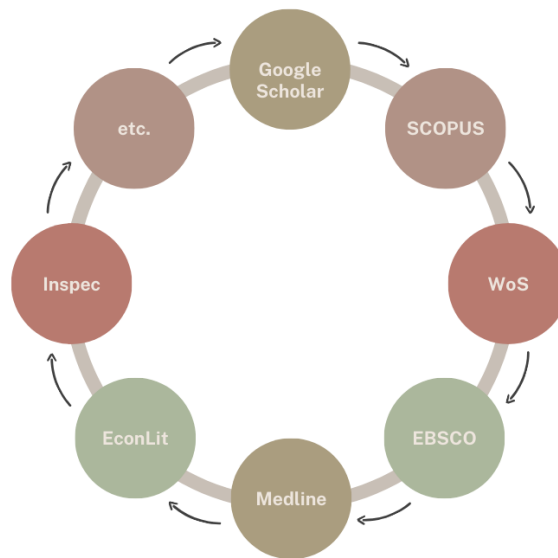
## **2 HOW TO PROVIDE A LITERATURE REVIEW**

### **2.1 Search for literature using keywords and citations**

In the initial phase of conducting a literature review for the AVICO project, start by devising a comprehensive list of keywords pertinent to your research topic and queries. These keywords should reflect the core aspects of coding education and unmanned aerial vehicle (UAV) technology in vocational training contexts.

Once your keywords are established, proceed to systematically search through an array of selected databases, such as Google Scholar, SCOPUS, Web of Science (WoS), EBSCO, Medline, EconLit, and Inspec, which are depicted in the provided visual (Figure 2).

These platforms are instrumental in locating scholarly journals and articles that form the backbone of your literature review. Upon discovering articles that align with your research objectives, meticulously examine their reference lists for additional relevant sources. This step is crucial for unearthing significant publications that may not have surfaced during your initial keyword search. Monitor the recurrence of certain citations, as repeated appearances of specific authors, books, or articles can indicate critical contributions to the field. Utilize tools like Google Scholar to determine the citation frequency of articles; a high citation count is a strong indicator of the article's influence and significance in the domain of digital competences and entrepreneurship in vocational education.



*Figure 2 Searching in selected databases*

This methodical approach to literature collection not only enriches your review with authoritative sources but also ensures alignment with AVICO's focus on integrating UAV technology into coding training. By highlighting influential works, you can forge a robust foundation for AVICO's mission to advance vocational education, emphasizing the commercial and practical applications of the project's innovative elements.

## 2.2 Evaluate and select sources

In the process of refining your literature review for the AVICO project, it is critical to thoroughly evaluate and select sources that are not only valuable but also pertinent to your research focus. Due to the expansive nature of the subject matter, it is impractical to read every available document. Instead, a strategic approach is necessary to determine which publications will most effectively inform and enhance your review. Consider the following criteria to assess the value of each source:

- **Purpose of the Research:** Determine what specific question or problem the author is addressing. Consider the scope and the objectives of their investigation.
- **Key Concepts and Presentation:** Identify the central concepts being discussed. Evaluate how these ideas are structured and the clarity with which they are conveyed.
- **Contribution to the Field:** Reflect on how the publication fits within the wider scholarly context. Does it support, expand upon, or contest the existing body of knowledge?
- **Relevance to Your Research:** Assess how the source contributes to your understanding of UAV technology in vocational coding training. Pinpoint the main insights and arguments and how they align with AVICO's objectives.
- **Methodological Rigor:** Scrutinize the methods used in the research. Are they appropriate and well-executed? Do they add credibility to the findings?
- **Author's Expertise:** Consider the author's credentials and the publication's standing in the

field. Is the source widely recognized and cited by peers?

*Notice: Make sure the sources you use are credible. The scope of your review will depend on the topic: in the sciences you usually only review recent literature, but in the humanities you might take a long historical perspective (for example, to trace how a concept has changed in meaning over time).*

## 2.3 Cite your sources

Maintaining meticulous records of your sources and their respective citations is a fundamental aspect of academic integrity and is essential in preventing plagiarism. As you compile information for the AVICO project's literature review, ensure that every source is accompanied by a proper citation. This practice not only acknowledges the original authors' contributions but also allows readers to trace the research lineage and verify the information presented.

Incorporating a citation management tool (Figure 3) can greatly facilitate this process. Modern text editors often come equipped with integrated citation functionalities or allow for add-ons that can automate and format citations according to various academic styles, such as APA, MLA, or Chicago. Utilizing such tools can streamline the writing process, reduce errors, and save considerable time.

Moreover, by organizing your references with a citation management tool, you can easily:

- **Insert in-text citations:** Automatically add citations within the body of your document where references to sources are made.
- **Generate bibliographies:** Compile a comprehensive list of references at the end of the document, formatted according to the chosen citation style.
- **Manage citation data:** Keep a database of citation details for each source, which can be reused in future projects or shared with colleagues.
- **Update citations:** Conveniently update multiple citations throughout the document if any changes to the reference list are necessary.

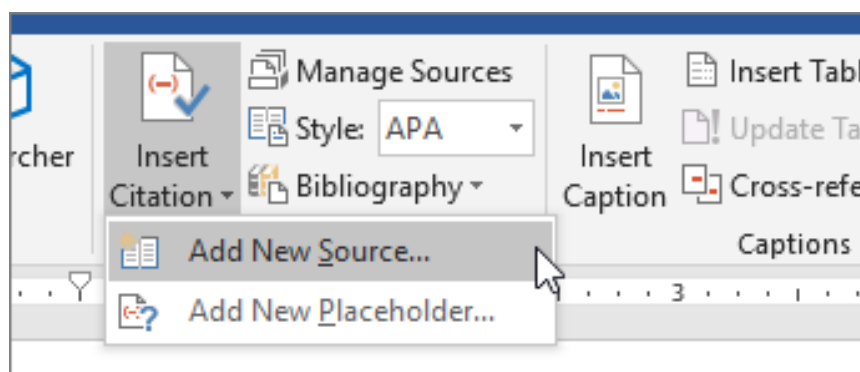


Figure 3 Citation management tool

Engaging with these tools not only enhances the accuracy of your citations but also upholds the scholarly rigor expected in a project like AVICO. By effectively managing your citations, you contribute to the creation of a reliable and trustworthy academic document that underscores



the value of ethical research practices.

## 3 DEVELOPMENT OF THE LITERATURE REVIEW

Developing a literature review for the AVICO project entails a structured approach, ensuring each stage is meticulously addressed to establish a comprehensive understanding of the field. This methodology comprises the following key stages:

1. **Problem Formulation:** Define the scope of your inquiry within UAV technology in vocational coding training. Break down the topic into its constituent elements to facilitate a focused investigation.
2. **Literature Search:** Engage in a systematic search for materials that are pertinent to UAV technology's role in vocational education. This includes scholarly articles, industry reports, and other relevant publications.
3. **Data Evaluation:** Critically assess the gathered literature to discern which sources provide significant insights into coding training via UAV technology. This process involves considering the credibility, relevance, and impact of the research.
4. **Analysis and Interpretation:** Synthesize the findings from the selected literature to identify trends, patterns, and gaps in the existing body of knowledge. Discuss how these elements contribute to the broader understanding of the topic and inform the AVICO project's objectives.

Before commencing with the literature review, clarify the following aspects to align with the AVICO project's requirements:

- Determine the optimal range of sources to include, ensuring a balance between breadth and depth.
- Decide on the types of sources to review, including scholarly journals, technical reports, and other pertinent publications.
- Choose the appropriate approach for engaging with the sources—whether summarizing, synthesizing, or critiquing—and decide if you need to evaluate the quality and relevance of each source.
- Discuss the potential for subheadings to organize the review, including background information such as definitions, historical context, or conceptual frameworks.

Use existing literature reviews in the field of UAV technology and vocational education as models to guide the structure and content of your review. These models can provide insight into effective thematic or issue-based approaches.

Narrowing the topic is essential for a focused literature review. The more specific your topic, the more targeted your search and evaluation can be, leading to a more robust and relevant collection of literature.



Given the AVICO project's emphasis on innovative application, ensure that the sources reflect the most current developments in the field. However, include a concise historical review where relevant to provide context.

Additional sections may be included in your literature review as necessary, such as:

- **Historical Context:** Outline the evolution of UAV technology in education and its impact on vocational training.
- **Current Situation:** Present an up-to-date overview of UAV technology in coding education, highlighting current applications and challenges.
- **Future Inquiry:** Propose questions spurred by the review that signal new avenues for research and exploration within the AVICO project's framework.

## 4 COMMON MISTAKES TO AVOID

When conducting a literature review for the AVICO project, should be vigilant to avoid common pitfalls that could undermine the quality and integrity of the review. Here are some key missteps to steer clear of:

1. **Irrelevant Sources:** Ensure every source included in the literature review has a direct connection to the project's focus on UAV technology in vocational coding education. Irrelevant sources dilute the review's focus and utility.
2. **Insufficient Definition and Identification:** Invest ample time in clearly defining the research scope and meticulously identifying sources that directly relate to AVICO's objectives, ensuring relevance and depth.
3. **Overreliance on Secondary Sources:** Balance the review with primary research studies and data. Secondary sources are valuable but cannot substitute the original research's nuanced insights and empirical evidence.
4. **Confirmation Bias:** Include a range of studies in the review, even those that may challenge or contradict your assumptions. Addressing contrary findings and alternative interpretations enriches the review and fosters a more comprehensive understanding.
5. **Neglecting Methodological Rigor:** Evaluate the methodology of studies not just for their conclusions. A rigorous approach to assessing research design and execution is crucial for building a reliable literature base.
6. **Outdated Research:** Prioritize current studies to ensure the review reflects the latest advancements and discussions in the field, while also including foundational or seminal works for context.
7. **Inadequate Citation Practices:** Maintain rigorous citation practices to avoid plagiarism and provide clear pathways for readers to follow your research trail.
8. **Superficial Analysis:** Go beyond mere summarization of sources. Analyze and synthesize

Research to draw out patterns, themes, and critical insights that are pertinent to AVICO's focus areas.

- **Ignoring Negative Results:** Do not overlook studies with negative or null results, as they



can provide valuable information on what does not work or needs further investigation.

- Lack of Diverse Perspectives: Seek out sources from diverse methodologies, disciplines, and viewpoints to ensure a well-rounded review that captures the multifaceted nature of UAV technology in vocational education.
- Failure to Update the Review: As your research progresses, continually update the literature review to incorporate new findings and maintain its relevance to ongoing project developments.

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