

Adapting Systematic Literature Reviews for Undergraduate Thesis Projects: A Conceptual Framework

Muhammad Iqbal, M. Rasyid Ridlo, Agus Jayadi, Nuraeni

muhammadiqbal@undikma.ac.id, rasyidridlo@undikma.ac.id, t.agusjayadi@undikma.ac.id, nuraeni@undikma.ac.id
Faculty of Education and Psychology, Universitas Pendidikan Mandalika, Mataram, Indonesia

Article Info

Article history:

Submission feb 18, 2026
First Revised jun 1, 2026
Accepted jun 21, 2026
Published jul 31, 2026

Keywords:

evidence synthesis
PRISMA
research supervision
scoping review
systematic literature review
undergraduate thesis

ABSTRACT

This article aims to explore conceptual analysis of authoritative SLR guidelines to develop the Undergraduate SLR Model - a simplified yet rigorous seven-stage framework specifically designed for undergraduate thesis projects. Systematic literature review (SLR) has gained increasing adoption in undergraduate educational research, yet most established SLR guidelines were developed for advanced research contexts and impose procedural demands that exceed undergraduate students' capacity in terms of time, database access, methodological training, and team composition. This study employed a conceptual research design through the systematic analysis and synthesis of authoritative SLR guidelines to identify essential methodological principles and adapt them to undergraduate research contexts. The results are unlike existing SLR guides that target graduate or professional researchers, this framework explicitly addresses the constraints of single-researcher settings by introducing supervisor validation as a quality assurance substitute for dual-reviewer screening, limiting database requirements to one primary source with a mandatory supplementary search strategy, and recommending thematic narrative synthesis as a feasible alternative to meta-analysis. The model also provides a decision guide for choosing between SLR and scoping review approaches, practical tools including a simplified PRISMA Flow Diagram and self-assessment checklist, and guidance for collaborative multi-researcher scenarios. This framework offers a methodological reference that enables undergraduate students and their supervisors to conduct literature reviews that are both rigorous in principle and realistic in practice.

© 2026 Authors.

This is an open-access article distributed under the terms of the *Creative Commons Attribution License (CC BY-SA)*



Corresponding Author:

Nuraeni
Universitas Pendidikan Mandalika
Email: nuraeni@undikma.ac.id

How to cite:

Iqbal, M., Ridlo, M. R., Jayadi, A., & Nuraeni, N. (2026). Adapting Systematic Literature Reviews for Undergraduate Thesis Projects: A Conceptual Framework. *Pedagogia: Jurnal Ilmiah Pendidikan*, 18(1), 82–101. <https://doi.org/10.55215/pedagogia.v18i1.90>

Introduction

Systematic literature review (SLR) has emerged as one of the most influential research methodologies in education and the social sciences, increasingly adopted to synthesize evidence and inform practice and policy (Newman & Gough, 2020; Zawacki-Richter et al.,

2020). In the Indonesian higher education context, this trend is equally visible: a growing number of undergraduate thesis projects now employ SLR as their primary research design, driven by program requirements and the proliferation of accessible academic databases such as Google Scholar and Garuda.

However, the adoption of SLR at the undergraduate level presents a significant methodological challenge. Most established SLR guidelines including the foundational works of Al-Jarf (2026), Mannarath (2026), and Xiao & Watson (2019) - were developed for postgraduate and professional researchers with extensive methodological training, multi-person review teams, access to multiple proprietary databases, and flexible timelines. As Pantic & Hamilton (2024) noted, existing SLR guides are "not simplified enough for graduate students to follow independently" a concern that is even more pronounced at the undergraduate level, where students face additional constraints: single-researcher settings without inter-rater reliability mechanisms, restricted database access, and thesis timelines of only one to two semesters.

The consequences of this mismatch are twofold. Some students attempt to follow full SLR protocols literally, resulting in overwhelming workloads and methodological errors, while others adopt the label of "systematic review" without adhering to its fundamental principles producing what Ghamrawi et al. (2025) term pseudo-systematic reviews that claim rigor without the methodological substance to support it. Both outcomes undermine the credibility of undergraduate research. Despite growing recognition of this problem, existing SLR guides for educational research (Ghamrawi et al., 2025; Newman & Gough, 2020; Pantic & Hamilton, 2024) primarily target graduate-level researchers and do not systematically address undergraduate constraints, nor do they sufficiently explore scoping reviews as a more feasible alternative for certain research questions.

This article addresses this gap by developing the Undergraduate SLR Model a seven-stage framework that preserves the core principles of systematic reviewing while adapting procedural requirements to the realities of undergraduate thesis projects. Unlike existing guides, this framework explicitly targets the single-researcher undergraduate context in Indonesian higher education, integrating supervisor validation as a quality assurance mechanism and providing a decision guide for choosing between SLR and scoping review approaches.

To properly contextualize the proposed framework, it is necessary to map the landscape of literature review approaches. Drawing on the typological frameworks of Ghamrawi et al. (2025), De Cassai et al. (2025), Snyder (2019), and Munn et al. (2018), three primary types are relevant to the undergraduate context. A narrative review provides a broad, unsystematic overview of a topic based on the author's judgment; it is common in undergraduate theses but susceptible to selection bias and lacks reproducibility (De Cassai et al., 2025; Ghamrawi et al., 2025). A scoping review takes a more systematic approach to mapping the extent and nature of evidence on a topic, addressing broader research questions without necessarily conducting formal quality appraisal (Schreiber & Cramer, 2024; Peters et al., 2020). The PRISMA Extension for Scoping Reviews (Tricco et al., 2018) provides a 20-item reporting checklist that enhances transparency. Scoping reviews are particularly relevant for undergraduate contexts where research questions are exploratory, literature is heterogeneous, and formal quality appraisal is beyond the student's expertise (Munn et al., 2018).

A systematic literature review (SLR), by contrast, follows an explicit, pre-specified, and reproducible methodology to identify, select, critically appraise, and synthesize all relevant studies addressing a clearly formulated research question (Mannarath, 2026; Veroniki et al., 2025). Key components include structured research question frameworks

(PICO or PEO), comprehensive multi-database search strategies, explicit inclusion and exclusion criteria, dual-reviewer screening with inter-rater reliability checks, formal quality appraisal, and structured synthesis either narrative or meta-analytic (Al-Jarf, 2026; Page et al., 2021). The PRISMA 2020 statement (Page et al., 2021) represents the current gold standard for SLR reporting, comprising 27 items. The **Table 1** synthesizes the key dimensions across these three review types alongside the proposed Undergraduate SLR Model, highlighting that their differences reflect not merely procedural variation but fundamentally different epistemological orientations toward evidence synthesis.

Table 1. Comparison of Literature Review Approaches

Dimension	Narrative Review	Scoping Review	SLR	Undergraduate SLR (Proposed)
Purpose	General overview of a topic	Map scope, key concepts, and gaps	Answer a specific, focused question	Answer a focused question within bounded scope
Protocol	None or informal	Available; flexible	Mandatory and strict	Simplified protocol with supervisor validation
Search Strategy	Selective and subjective	Systematic and broad	Systematic and comprehensive	Systematic but limited to 2–3 databases
Screening	Author's discretion	Criteria-based selection	Dual-reviewer independent screening	Single reviewer with supervisor check
Quality Appraisal	Not conducted	Optional	Mandatory	Simplified checklist
Synthesis	Free narrative	Thematic charting	Structured narrative or meta-analysis	Thematic narrative synthesis
Reproducibility	Low	Moderate	High	Moderate to high

Before proposing any adaptation, it is essential to identify the core principles that underpin SLR's scientific credibility, as these serve as non-negotiable benchmarks for any simplified model. Four principles are central: (a) transparency every methodological decision must be explicitly documented and available for scrutiny (Newman & Gough, 2020); (b) reproducibility the process must be documented in sufficient detail to allow another researcher to arrive at substantially similar results (Al-Jarf, 2026); (c) comprehensiveness the search strategy must systematically capture relevant evidence, even if limited in scope; and (d) consistency inclusion and exclusion criteria must be applied uniformly to all identified studies (Mannarath, 2026). Critically, transparency and consistency are non-negotiable, while reproducibility and comprehensiveness are adaptable in form but not in spirit a distinction that forms the analytical basis for the model proposed in this article.

Given the methodological gap identified above, this article pursues three interrelated objectives. First, it critically examines authoritative SLR guidelines to identify which procedural components are essential for scientific rigor and which can be reasonably adapted to undergraduate constraints. Second, it constructs the Undergraduate SLR Model a seven-stage framework tailored to single-researcher undergraduate thesis projects in Indonesian higher education, where institutional access to proprietary databases is limited and thesis timelines are compressed. Third, it provides practical recommendations and decision tools for students and supervisors, including guidance on when a scoping review may be a more appropriate methodological choice than SLR. The primary scholarly contribution of this article lies in being the first to systematically adapt SLR methodology specifically for the undergraduate single-researcher context, as distinct from existing guides targeting graduate students or multi-researcher teams.

Method

Research Design

This study adopts a conceptual analysis approach, which involves the systematic examination of existing concepts, frameworks, and methodological guidelines to construct a new integrative model (Pawar, 2026; Zhao, 2026; Xiao & Watson, 2019). Conceptual analysis is appropriate when the research objective is to synthesize and reorganize existing knowledge rather than to generate new empirical data a condition that characterizes the present study, which addresses a design problem (the absence of a tailored SLR framework for undergraduate students) rather than a measurement problem. Accordingly, this study does not involve primary data collection from human participants, experiments, or fieldwork.

It is important to acknowledge a key limitation inherent in this design: the proposed framework has been constructed through analytical reasoning grounded in established methodological literature, but has not yet been empirically validated through classroom implementation or comparative assessment of thesis quality. This limitation is explicitly recognized, and empirical testing across diverse institutional contexts is identified as the primary direction for future research.

The data sources for this study are drawn from three layers of methodological literature, each serving a distinct function in constructing the proposed framework. The first layer consists of primary guideline documents authoritative texts defining standard procedures for conducting systematic and scoping reviews. These include Al-Jarf (2026) on SLR procedures, Mannarath (2026) on systematic reviews in the social sciences, Veroniki et al. (2025) and Page et al. (2021) on the PRISMA and PRISMA 2020 statements, Xiao and Watson (2019) on SLR in education research, and Schreiber & Cramer (2024) as refined by Peters et al. (2020) on scoping reviews. These documents serve as the benchmark against which the undergraduate model is constructed.

The second layer comprises pedagogical and applied SLR literature addressing the challenges of conducting systematic reviews in educational contexts, particularly among novice researchers. Key works include Pantic and Hamilton (2024), Ghamrawi et al. (2025), and Newman and Gough (2020), which provide insight into practical adaptations already proposed for less-experienced researchers and inform the further simplification required for the undergraduate level. The third layer encompasses contextual sources examining undergraduate research methodology in Indonesian higher education. While more limited due to the scarcity of published work specifically on undergraduate SLR practices in Indonesia, these sources provide essential grounding for the constraints the proposed framework must accommodate.

Sources across all three layers were selected based on the following criteria: (a) relevance directly addressing SLR methodology, evidence synthesis, or undergraduate research practice; (b) authority comprising seminal guideline documents, peer-reviewed journal articles, or widely adopted reporting standards; (c) recency—prioritizing publications from the past ten years, with inclusion of foundational earlier works where methodologically essential; and (d) accessibility available through open-access platforms or institutional repositories. Sources that addressed only tangential topics, were not peer-reviewed, or lacked sufficient methodological detail were excluded. While this selection process was guided by systematic criteria, it did not follow a formal SLR protocol consistent with the conceptual analysis design of this study.

The construction of the Undergraduate SLR Model follows a five-step analytical framework designed to ensure that the simplification process is systematic, transparent, and

grounded in established methodological standards. The **Table 2** summarizes each step, its purpose, and the expected output.

Table 2. Analytical Framework for Constructing the Undergraduate SLR Model

Step	Activity	Purpose	Output
1	Identification of standard SLR components	Extract procedural stages from authoritative guidelines	Inventory of standard SLR components
2	Assessment against undergraduate constraints	Evaluate feasibility of each component given time, resources, and expertise limitations	Feasibility matrix per component
3	Classification of components	Categorize components as “essential/non-negotiable” or “adaptable/simplifiable”	Component classification schema
4	Construction of Undergraduate SLR Model	Integrate essential components with adapted versions of simplifiable components	Proposed seven-stage model with flowchart
5	Comparative validation	Compare proposed model with existing standards and scoping review frameworks	Validation table and recommendations

In Step 1, standard procedural components of SLR are extracted through close reading of the primary guideline documents identified above, yielding an inventory of discrete stages including research question formulation, protocol development, search strategy design, screening, data extraction, quality appraisal, synthesis, and reporting (Al-Jarf, 2026; Page et al., 2021; Xiao & Watson, 2019). In Step 2, each component is assessed against four constraint dimensions typical of undergraduate researchers: (a) time theses are completed within one to two semesters; (b) resources limited access to proprietary databases; (c) expertise minimal prior training in systematic review methodology; and (d) team composition single researcher settings that preclude dual-reviewer screening and inter-rater reliability checks.

In Step 3, components are classified as either “essential/non-negotiable” those whose omission would fundamentally compromise scientific integrity (e.g., explicit inclusion criteria, documented search processes) or “adaptable/simplifiable” those whose procedural form can be modified without violating the underlying principle (e.g., reducing databases searched while maintaining systematic documentation). In Step 4, essential components and adapted versions of simplifiable components are integrated into a coherent seven-stage model, accompanied by a simplified PRISMA Flow Diagram template and a self-assessment checklist. In Step 5, the proposed model is compared against PRISMA 2020 (Page et al., 2021) and the scoping review framework of Peters et al. (2020) and Tricco et al. (2018) to verify alignment with accepted standards and clarify boundaries between the undergraduate SLR model, a full SLR, and a scoping review. This presents a schematic diagram summarizing the five-step analytical process and the relationship between inputs, analytical steps, and outputs (**Figure 1**).

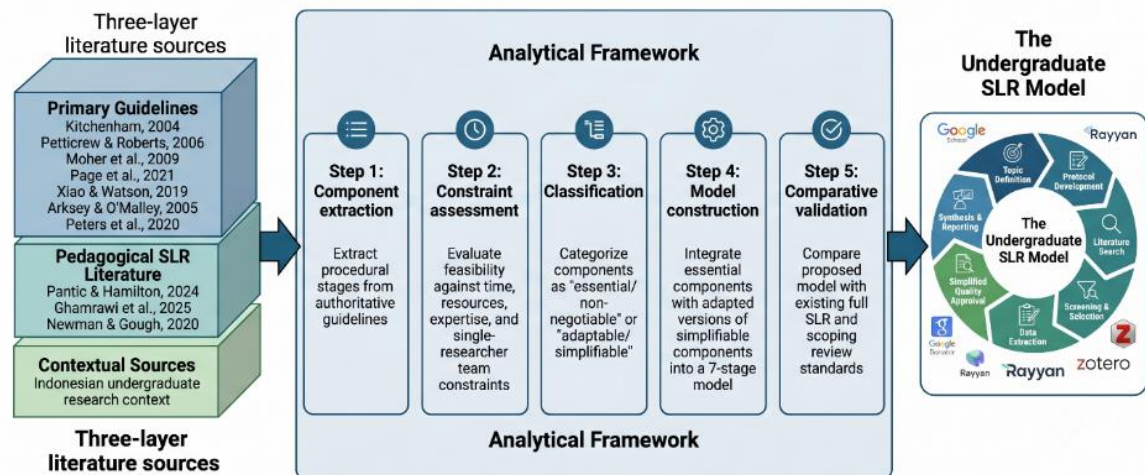


Figure 1. Schematic Diagram of the Conceptual Analysis Process

The evaluation of existing SLR guidelines and the proposed framework is guided by two primary reference standards. First, the PRISMA 2020 statement (Page et al., 2021), comprising 27 reporting items, serves as the gold standard for SLR reporting quality. Rather than requiring full compliance, this study uses PRISMA 2020 to identify which items are essential for minimum scientific credibility at the undergraduate level and which may be reasonably simplified. Second, the PRISMA Extension for Scoping Reviews (Tricco et al., 2018), comprising 20 essential and 2 optional items, is employed as a comparative framework reflecting this article's recognition that scoping reviews may be a more appropriate alternative for certain undergraduate research questions.

Underpinning both standards, four quality principles established in the Introduction serve as minimum thresholds for any review approach: (a) transparency in documenting methodological decisions; (b) consistency in applying selection criteria; (c) systematic documentation of search, screening, and synthesis processes; and (d) adherence to structured reporting standards. These principles form the evaluative lens applied throughout the Results and Discussion section. By rigorously holding the reviewed literature to these foundational benchmarks, researchers can effectively mitigate potential methodological biases and ensure the reproducibility of their findings. Ultimately, implementing this robust evaluative framework not only elevates the overall validity of the study but also strengthens the reliability of the conclusions drawn for future educational practices.

Results and Discussion

Adapting SLR Stages for the Undergraduate Level

This section presents the results of the conceptual analysis and integrates the discussion within each subsection. It is organized into five parts: the adaptation of standard SLR stages for the undergraduate level, the proposed Undergraduate SLR Model, realistic boundaries for undergraduate reviews, tools and supporting resources, and implications for supervisors and students. Beginning with analysis of established SLR guidelines. The analysis of established SLR guidelines yielded seven core procedural stages that constitute a standard systematic review. Each stage was assessed against the four constraint dimensions identified in the Method section time, resources, expertise, and team composition to determine the nature and extent of adaptation required.

Formulating Research Questions

Standard Systematic Literature Review (SLR) practice typically requires research questions to be formulated using structured frameworks such as PICO (Population, Intervention, Comparison, Outcome) or PEO (Population, Exposure, Outcome) (Al-Jarf, 2026; Xiao & Watson, 2019). However, these frameworks presuppose an intervention-outcome paradigm that rarely fits undergraduate educational research, where inquiries more commonly explore "how," "what," or "why" rather than seeking to measure specific empirical effects (Newman & Gough, 2020). Forcing novice researchers to strictly adhere to these rigid clinical models often constrains their intellectual inquiry and oversimplifies the qualitative complexities they aim to investigate. Consequently, there is a critical need to adopt more adaptable, context-sensitive frameworks that can appropriately capture the exploratory and descriptive nature of educational phenomena.

The proposed adaptation introduces a topic-scope-objective (TSO) approach, in which students define: the topic (broad subject area), the scope (specific dimension, including temporal, geographical, and population boundaries), and the objective (what the review aims to achieve mapping, comparing, evaluating, or synthesizing). This preference for broader, explanatory research questions over binary yes/no or magnitude-only formulations reflects a wider methodological principle: questions framed around how a phenomenon operates rather than merely whether or how much open space for richer scholarly contributions across research traditions (Iqbal, 2026). Ultimately, equipping students with this versatile framework ensures that their literature reviews remain systematically focused while still yielding deeply nuanced and contextualized insights.

In SLR contexts, a TSO-framed question similarly creates the analytical space needed for thematic synthesis that goes beyond a simple catalogue of individual study findings. The TSO approach preserves the transparency principle by requiring the student to explicitly articulate the review's purpose and boundaries, while accommodating the broader, more exploratory questions typical of undergraduate educational research. Supervisor validation of the formulated question is built into the process as a quality assurance mechanism and, critically, as a necessary boundary-setting function, given that the flexibility of the TSO framework may inadvertently permit overly broad questions that compromise the focused synthesis that SLR requires.

Protocol Development

A review protocol specifies objectives, methods, and analytical approach before the review begins, serving as a pre-commitment device that prevents post hoc modifications that could introduce bias (Page et al., 2021; Moher et al., 2009). Standard practice involves formal registration on platforms such as PROSPERO a requirement that is impractical and disproportionate for undergraduate projects. To address this constraint, educational institutions can adopt a simplified, internal protocol submission process that maintains methodological rigor without the administrative burden of international registries. By utilizing such an adapted framework, novice researchers can still internalize the foundational principles of transparency and systematic planning essential for conducting high-quality literature reviews.

The undergraduate adaptation proposes a simplified one-page protocol template capturing, for instance, the research question, databases to be searched, preliminary search terms and Boolean operators, planned inclusion and exclusion criteria, data extraction fields, and the anticipated timeline. Supervisor approval substitutes for formal registration as the institutional accountability mechanism. All protocol modifications during the review must be documented with clear justification, maintaining the audit trail fundamental to any systematic approach (Mannarath, 2026; Schreiber & Cramer, 2024). The risk inherent in this

adaptation is that supervisor approval, unlike formal registration, is not publicly verifiable meaning that undocumented post hoc protocol changes remain possible. Students and supervisors must therefore treat the protocol as a binding methodological contract rather than a flexible planning document.

Literature Search Strategy

The search strategy represents the most significant area of adaptation. Standard guidelines recommend searching at least five electronic databases, supplemented by grey literature, hand-searching of key journals, and citation tracking (Mannarath, 2026; Xiao & Watson, 2019) requirements beyond the reach of most undergraduate students in Indonesia, where institutional subscriptions to Scopus or Web of Science are often limited or unavailable. Consequently, an adapted approach must prioritize utilizing high-quality, open-access repositories such as Google Scholar, DOAJ, or ERIC to ensure research feasibility. By shifting the focus from database quantity to the precision of search strings within these accessible platforms, students can still conduct rigorous and methodologically sound literature searches.

The proposed adaptation recommends one primary database complemented by a mandatory supplementary strategy. Google Scholar is recommended as the primary database because it aggregates content from a wide range of sources including records indexed in Scopus, PubMed, and ERIC effectively functioning as a meta-search engine with the broadest coverage among freely accessible platforms (Gusenbauer & Haddaway, 2020). Where institutional access permits, one subject-specific database (ERIC for education, Garuda or SINTA for Indonesian publications, or DOAJ for open-access journals) is encouraged. The mandatory supplementary strategy consists of backward reference checking of all included articles a low-cost technique shown to be among the most effective for identifying additional relevant literature.

This adaptation carries known methodological risks. Google Scholar's non-transparent ranking algorithms, personalized search results, and inconsistent metadata mean that two identical search strings may yield different results for different users on different dates (Gusenbauer & Haddaway, 2020). These limitations make explicit inclusion and exclusion criteria rather than database pre-filtering the primary quality mechanism. Every search must be fully documented in a search log recording the database, date, exact search string, and number of results returned, enabling informed evaluation of the review's coverage and limitations. This systematic documentation is what distinguishes an undergraduate SLR from a narrative review, regardless of the number of databases searched.

Screening Process

Standard SLR requires independent dual-reviewer screening followed by inter-rater reliability calculation using metrics such as Cohen's kappa (κ) (Al-Jarf, 2026; Page et al., 2021) structurally impossible in single-researcher undergraduate settings. To mitigate this inherent limitation, students can be required to explicitly document their inclusion and exclusion decisions in a detailed screening log. Furthermore, implementing periodic consultation sessions where an academic supervisor reviews a random subset of the screened articles can serve as a pragmatic alternative to formal dual-screening. This adapted single-reviewer protocol maintains a high degree of transparency and methodological rigor, ensuring that the selection process remains robust despite personnel constraints.

The proposed adaptation introduces two compensatory mechanisms: pilot screening (applying criteria to a random 10% sample with supervisor discussion before full screening commences) and periodic supervisor validation of borderline cases throughout the process. Screening proceeds in two phases title-and-abstract screening followed by full-text screening with all decisions and exclusion reasons documented in a screening spreadsheet to support

PRISMA flow diagram construction. These collaborative safety nets effectively mitigate individual researcher bias, ensuring a higher degree of reliability in the study selection process despite the absence of multiple independent reviewers. Furthermore, the rigorous tracking of inclusion and exclusion data fosters methodological transparency, empowering undergraduate researchers to meet the robust reporting standards expected in academic publishing (Moreau & Woodhouse, 2025; Atenas et al., 2023).

The critical limitation of this adaptation must be acknowledged: supervisor validation, however conscientious, cannot fully replicate the bias-reduction function of independent dual-reviewer screening. A supervisor who has guided the protocol development and search strategy is not a genuinely independent reviewer. This structural constraint means that undergraduate SLR screening will inevitably carry a higher risk of selection bias than standard SLR a limitation that must be transparently reported in the thesis methodology chapter rather than minimized or obscured. By candidly addressing this inherent constraint, students cultivate scholarly maturity and learn to critically evaluate the boundaries of their own methodological designs (De Cassai et al., 2025; Atenas et al., 2023). Ultimately, framing this adapted SLR as a rigorous educational exercise rather than a flawless clinical review ensures that undergraduate research expectations remain both intellectually ambitious and pragmatically grounded.

Data Extraction

Standard SLR practice calls for dual extraction with reconciliation using a standardized form (Mannarath, 2026). For undergraduate projects, a simplified extraction template with eight to ten core fields is proposed: author(s) and year, title, publication source, research objective(s), methodology or research design, sample or participants, key findings, and relevance to the review question. The template is implemented as a spreadsheet to standardize data collection and facilitate subsequent thematic analysis. Quality is maintained through supervisor spot-checking of approximately 20% of extractions.

A practical risk in single-extractor settings is unconscious confirmation bias the tendency to interpret ambiguous findings in ways that align with the reviewer's expectations. Students should be advised to extract findings verbatim where possible, reserving interpretive synthesis for the dedicated synthesis stage, and to document any interpretive decisions transparently in the extraction notes. This disciplined approach ensures that the extracted raw data remains uncontaminated by premature analytical judgments during the initial data collection phase. Consequently, when the formal synthesis ultimately commences, students can construct their arguments upon a verifiable foundation of objective evidence, thereby safeguarding the overall credibility of their review (Fielding, 2025).

Synthesis Techniques

Standard SLR offers two primary synthesis approaches: meta-analysis for quantitative aggregation of effect sizes, and narrative thematic synthesis for qualitative or mixed-methods integration (Mannarath, 2026; Xiao & Watson, 2019). Meta-analysis requires advanced statistical skills, homogeneous study designs, and a sufficient number of comparable studies conditions rarely met in undergraduate educational research. Therefore, guiding undergraduate students toward narrative thematic synthesis provides a much more feasible and pedagogically appropriate avenue for integrating diverse educational literature. This qualitative approach allows novice researchers to effectively identify overarching patterns and conceptual themes, ultimately fostering deeper analytical skills without being hindered by complex statistical requirements.

The undergraduate model therefore recommends thematic narrative synthesis as the default approach, such as, identifying recurring themes and patterns across included studies, organizing findings into thematic categories, and discussing areas of convergence,

divergence, and evidential gaps. Summary tables presenting key characteristics and findings support the narrative. Basic descriptive statistics may supplement the synthesis where included studies provide sufficient quantitative data, but formal meta-analytic procedures are not expected. Ultimately, by emphasizing thematic coherence over rigorous statistical aggregation, undergraduate researchers can successfully contribute meaningful insights to their field without overextending their methodological capacities.

Reporting follows a simplified PRISMA-based template retaining the 15 to 18 most essential items from the full PRISMA 2020 checklist. It should be noted that the quality of thematic narrative synthesis depends heavily on the reviewer's analytical competence an area where undergraduate students are typically still developing. Thematic categories can be constructed superficially, grouping studies by surface topic rather than by substantive pattern or theoretical relationship. Supervisors should actively guide the synthesis stage, not merely validate its outputs, to ensure that the resulting narrative adds genuine analytical value beyond a descriptive summary of individual studies (Oladimeji et al., 2026; Ocheja et al., 2025).

The Proposed Undergraduate SLR Model

Building on the stage-by-stage analysis above, the Undergraduate SLR Model integrates essential components of standard SLR with adaptations necessary for the undergraduate context into a coherent seven-stage framework. Details the key activities and expected outputs for each stage are elaborated in **Table 3**.

Table 3. The Undergraduate SLR Model: Stages, Activities, and Outputs

No.	Stage	Key Activities	Output
1	Topic Definition & Research Question	Select topic; define scope; formulate question using topic-scope-objective guide; validate with supervisor	Approved research question and scope statement
2	Simplified Protocol Development	Draft one-page protocol: RQ, databases, search terms, inclusion/exclusion criteria, timeline; supervisor sign-off	Signed protocol document
3	Literature Search	Search primary database (Google Scholar) using guided Boolean strings; document every search (date, database, query, results count); conduct backward reference checking on all included articles; optionally search one additional subject-specific database	Search log with complete records
4	Screening & Selection	Title-abstract screening; full-text screening; apply inclusion/exclusion criteria; pilot 10% with supervisor; record reasons for exclusion	Completed screening spreadsheet; simplified PRISMA Flow Diagram
5	Data Extraction	Extract data using simplified template (8–10 fields); supervisor spot-checks 20% of extractions	Populated extraction spreadsheet
6	Simplified Quality Appraisal	Apply 5-item quality checklist to each included study; document scores; flag low-quality studies without excluding	Quality appraisal summary table
7	Synthesis & Reporting	Identify themes; synthesize findings narratively; create summary tables; write up using simplified PRISMA-based template	Completed thesis chapter / article draft

The proposed model operates sequentially yet inherently iteratively. As the review progresses, students may find it necessary to revisit earlier stages for instance, when initial screening reveals that the search strategy requires refinement or that inclusion criteria need precise adjustment. Any such modifications must be meticulously documented in the review protocol with clear justifications, thereby maintaining the strict transparency fundamental to systematic review methodology. To further clarify these methodological adjustments, **Table 4** presents a detailed, stage by stage comparison of standard SLR procedures against the

undergraduate adaptations, explicitly highlighting the core principles of academic rigor preserved at each stage. By systematically mapping these procedural adaptations, educators can ensure that the simplified process does not sacrifice the fundamental integrity of the research. Ultimately, this structured comparison serves as a vital pedagogical guide, empowering students to navigate the complexities of literature synthesis while upholding established scholarly standards.

Table 4. Comparison of Standard SLR Procedures and Undergraduate SLR Adaptations

Stage	Standard SLR Procedure	Undergraduate SLR Adaptation	Principle Preserved
1. Research Question	Structured framework (PICO/PEO); precise, narrow question	Guided topic-scope-objective approach; supervisor-validated question	Transparency
2. Protocol	Comprehensive pre-registered protocol (e.g., PROSPERO)	Simplified one-page protocol template; supervisor approval substitutes registration	Transparency, Reproducibility
3. Search Strategy	Multiple databases (5+); complex Boolean strings; grey literature; hand-searching	1 primary database (Google Scholar) + mandatory backward reference checking; optional additional subject-specific database; guided Boolean construction	Comprehensiveness (adapted), Systematic documentation
4. Screening	Dual-reviewer independent screening; inter-rater reliability (Cohen's κ)	Single reviewer with pilot screening (10% sample); periodic supervisor validation of borderline cases	Consistency
5. Data Extraction	Standardized extraction form; dual extraction with reconciliation	Simplified extraction template (8–10 core fields); single extractor with supervisor spot-checks	Transparency, Consistency
6. Quality Appraisal	Validated instruments (e.g., JBI, CASP, Newcastle-Ottawa); dual appraisal	Simplified 5-item checklist covering clarity, methodology, relevance, validity, and reporting	Transparency (adapted)
7. Synthesis & Reporting	Narrative or meta-analytic synthesis; full PRISMA 2020 compliance (27 items)	Thematic narrative synthesis; simplified PRISMA-based reporting template (15–18 core items)	Transparency, Structured reporting

Taken together, these two tables constitute the analytical core of this article's contribution: they make explicit, for the first time in the literature, precisely where and how undergraduate constraints necessitate procedural adaptation, and which methodological principles each adaptation preserves or approximates. This transparency about trade-offs distinguishes the Undergraduate SLR Model from prior simplified guides that recommend adaptations without systematically justifying them against established standards. By providing such a clear, theoretically grounded rationale for these modifications, educators can confidently implement this framework without compromising the scientific integrity of student research (De Cassai et al., 2025; Ocheja et al., 2025).

Simplified PRISMA Flow Diagram

To support the practical implementation of the adapted methodology, the model is accompanied by specific practical tools, the most prominent being the Simplified PRISMA Flow Diagram. This adapted visual framework strategically retains the essential four-phase structure of the standard protocol, namely Identification, Screening, Eligibility, and Inclusion, ensuring that the foundational rigor of a systematic review is strictly preserved. However, to better accommodate the scope of undergraduate research, the diagram streamlines the process by consolidating various database searches into a single, cohesive

identification pathway. Furthermore, rather than utilizing a complex, multi-branched decision tree for rejected literature, it presents exclusion reasons as a single categorized summary, thereby reducing the cognitive load for novice researchers while maintaining clarity.

Beyond its structural adaptations, this simplified diagram functions as a highly effective operational template for student researchers. It provides fixed methodological categories equipped with designated blank fields for straightforward numerical data entry. By structuring the workflow in this manner, the template seamlessly serves a dual purpose: it acts as a meticulous process documentation tool during the active research phase, and it simultaneously functions as a structured reporting aid for drafting the final manuscript. Ultimately, this practical visualization empowers students to transparently track and report their study selection process (Moreau & Woodhouse, 2025), upholding the integrity of systematic reporting standards without being overwhelmed by excessive procedural intricacies (Atenas et al., 2023).

Self-Assessment Checklist

The Self-Assessment Checklist enables students to evaluate their own SLR process at each stage, organized around the four rigor principles: transparency, reproducibility, comprehensiveness, and consistency. Representative items include: a) "Have I recorded the exact search string for each database?"; b) "Have I documented the date of each search?"; and c) "Have I checked the reference lists of at least three key articles?" The checklist also functions as a structured communication tool between student and supervisor, facilitating targeted feedback and identifying areas requiring additional attention. By proactively addressing these critical checkpoints during consultations, students can rectify potential errors early before they compromise subsequent phases of the review. It cultivating this habit of reflexive evaluation not only builds students' scholarly independence but also ensures a significantly higher standard of methodological rigor in their final manuscript.

Together with the seven-stage model and the comparison tables, these tools constitute a comprehensive yet accessible toolkit that effectively lowers the barrier to entry for undergraduate SLR while preserving the minimum methodological features that distinguish a systematic review from an unsystematic one. By utilizing this structured scaffolding, novice researchers can confidently navigate the inherent complexities of evidence synthesis without being overwhelmed by advanced procedural demands. Furthermore, the adoption of this standardized approach provides educational institutions with a practical, reliable framework to consistently evaluate and guide student research. Empowering undergraduates with such foundational research capabilities not only elevates the caliber of their immediate academic output but also cultivates a rigorous, analytical mindset essential for their future scholarly and professional pursuits.

Realistic Boundaries for Undergraduate SLR

A persistent difficulty for undergraduate students is the absence of clear guidance on realistic scope and boundaries. It is recommended parameters for undergraduate SLR projects, derived from the analysis of existing guidelines and the practical constraints of undergraduate research (Table 5).

Table 5. Recommended Parameters for Undergraduate SLR Projects

Parameter	Recommended Range	Rationale
Publication time span	5–10 years	Balances currency of evidence with sufficient corpus size; may extend to 15 years for emerging topics with limited literature

Parameter	Recommended Range	Rationale
Final corpus size	15–50 articles	Manageable for single-reviewer extraction and synthesis within 1–2 semesters; fewer than 15 may indicate overly narrow scope; more than 50 may be unmanageable
Number of databases	1 primary + supplementary strategy	Google Scholar as primary (broadest free coverage); mandatory backward reference checking; optional additional subject-specific database (ERIC, Garuda, DOAJ)
Language scope	Indonesian and English	Reflects the bilingual academic landscape of Indonesian higher education; may include a third language if directly relevant
Project timeline	1–2 semesters	Aligned with standard undergraduate thesis completion schedule; protocol and search in semester 1, synthesis and writing in semester 2
Reviewer configuration	Single reviewer + supervisor; or 2+ collaborative reviewers	Single-reviewer is standard; collaborative configuration enables dual screening and enhances rigor (see subsection on Collaborative Undergraduate SLR)

These parameters are guidelines rather than rigid rules; the appropriate scope depends on the maturity of the research area, literature availability, and the specific research question. However, two points deserve emphasis. First, these boundaries do not diminish the academic value of the review: a well-conducted systematic review of 20 articles with transparent methodology is substantially more rigorous than a narrative review of 50 articles selected unsystematically. Second, the recommended corpus size of 15 to 50 articles reflects a practical compromise between manageability and analytical sufficiency: a corpus smaller than 15 articles risks insufficient evidence for meaningful thematic synthesis, while one exceeding 50 articles may become unmanageable within a two-semester timeline for a single reviewer. Supervisors should treat these boundaries as starting points for calibration rather than fixed thresholds, adjusting them in response to the specific characteristics of each student's review topic.

Tools and Supporting Resources

This presents an overview of freely available tools supporting different stages of the undergraduate SLR process (**Table 6**). By leveraging these accessible resources, students can efficiently manage literature searching, screening, and synthesis without facing the financial barriers typically associated with premium research software.

Table 6. Recommended Tools and Resources for Undergraduate SLR

Category	Tool	Function	Cost	SLR Stage
Academic Databases	Google Scholar	Broad-coverage literature search	Free	3 (Search)
	ERIC	Education-specific database	Free	3 (Search)
	Garuda / SINTA	Indonesian scholarly publications	Free	3 (Search)
	DOAJ	Open-access journal directory	Free	3 (Search)
Bibliometric Tools	Publish or Perish	Citation analysis; identify high-impact articles	Free	3 (Search)
	VOSviewer	Bibliometric mapping; visualize research landscape	Free	3, 7 (Search, Synthesis)
Screening Tools	Rayyan	Collaborative screening; labelling; conflict resolution	Free	4 (Screening)
	Covidence	End-to-end review management	Paid (free trial)	3–7 (All stages)

Category	Tool	Function	Cost	SLR Stage
Reference Managers	Zotero	Reference management; PDF storage; citation generation	Free	All stages
	Mendeley	Reference management; annotation; networking	Free	All stages
Data Management	Microsoft Excel / Google Sheets	Extraction forms; screening logs; data analysis	Free / institutional	4–7 (Screening–Synthesis)

Several observations warrant discussion. The tool ecosystem for undergraduate SLR is overwhelmingly free and open-access, aligning with the resource constraints of the undergraduate context. Garuda and SINTA are particularly valuable for reviews including Indonesian-language publications, providing access to nationally accredited journals not indexed in international databases. Rayyan merits special mention: although developed for health sciences systematic reviews, its free collaborative screening platform with labelling, exclusion-reason tracking, and export functions substantially streamlines the screening process compared to manual spreadsheet approaches, and its blind screening feature can partially simulate independent dual-reviewer procedures even in single-reviewer contexts when the supervisor participates.

The use of reference managers, such as Zotero or Mendeley, should be considered non-negotiable. Beyond their basic organizational function, they establish a rigorously documented repository of all identified and included studies, thereby directly supporting the transparency and reproducibility of the review. Additionally, VOSviewer's bibliometric visualization capabilities can add substantial analytical depth to the synthesis stage, even though formal bibliometric analysis is not a strictly required component of this undergraduate model. By incorporating such visual mapping tools, students can more effectively identify hidden conceptual clusters and emerging research trends within their selected literature corpus. Ultimately, mastering these foundational software applications equips novice researchers with a robust digital skill set that maximizes both the rigor and efficiency of their scholarly investigations.

Implications for Supervisors and Students

The Supervisor as Methodological Validator

Throughout the proposed model, the supervisor assumes a role extending beyond traditional thesis guidance to encompass rigorous methodological validation. This active involvement includes validating the research question and protocol (Stages 1–2), calibrating inclusion criteria through pilot screening (Stage 4), adjudicating borderline screening decisions (Stage 4), spot-checking data extractions (Stage 5), and reviewing quality appraisal outputs (Stage 6). This expanded role reflects the structural reality of single-reviewer undergraduate research: in the absence of an independent second reviewer, the supervisor serves as the primary quality assurance mechanism. By acting as a collaborative methodological anchor, the supervisor effectively mitigates the inherent risks of individual bias and subjective misinterpretation. Ultimately, this structured mentorship not only safeguards the scientific integrity of the final review but also provides students with an invaluable, hands-on apprenticeship in rigorous academic evaluation.

This role presupposes that supervisors possess at least working familiarity with systematic review methodology a condition that cannot be assumed, particularly among faculty whose own research experience may not include SLR. This represents a significant institutional barrier to implementation: if supervisors lack the methodological competence to validate student protocols, search strategies, and screening decisions, the quality assurance function built into the model collapses. Institutions seeking to implement the Undergraduate

SLR Model should therefore prioritize faculty development programs focused on systematic review methodology, not merely for the benefit of students but as a precondition for the model's viability.

Scaffolding Strategy for Students

The model is designed as a scaffolded learning experience aligned with Vygotskian principles of learning within the zone of proximal development (Taber, 2025): early stages (topic definition, protocol development, search strategy) are heavily supervised, with supervision transitioning to a consultative role as students progress through screening, extraction, and synthesis. Undergraduate programs should consider integrating SLR methodology into the research methods curriculum as a prerequisite for thesis work—even a compact module of three to four sessions covering review types, search strategies, and screening tools would substantially improve student readiness and reduce supervisory burden.

Decision Guide: SLR Versus Scoping Review

The practical decision guide for choosing between SLR and scoping review approaches at the undergraduate level are presented in **Table 7**. By utilizing this evaluative framework, novice researchers can confidently avoid common methodological misalignments and ensure their chosen review type rigorously addresses their specific research inquiries.

Table 7. When to Use SLR Versus Scoping Review at the Undergraduate Level

Condition	Recommended Approach	Rationale
Research question is broad and exploratory (“What is known about X?”)	Scoping review	Scoping reviews are designed to map the extent and nature of evidence on a broad topic
Topic is emerging with limited and heterogeneous literature	Scoping review	Scoping reviews accommodate diverse study designs and do not require quality appraisal
Research question is specific and focused (“What is the effect of X on Y?”)	Undergraduate SLR	SLR is appropriate for answering focused questions through structured synthesis
Student has completed a research methodology course	Undergraduate SLR	Minimum methodological foundation is in place for structured review
Student is conducting a review for the first time with minimal training	Scoping review (as learning exercise)	Lower methodological threshold; can serve as a precursor to future SLR
Thesis timeline is limited to one semester	Scoping review	Scoping reviews typically require less time due to no quality appraisal requirement
Supervisor has experience with systematic review methodology	Undergraduate SLR	Supervisor guidance can compensate for student’s limited experience
Two or more students can collaborate on the same review	Collaborative Undergraduate SLR	Enables dual-reviewer screening and extraction, substantially enhancing rigour toward standard SLR levels

This guide is a starting point for student-supervisor discussion, not an algorithmic prescription. A further institutional consideration deserves mention: in contexts where thesis regulations do not yet recognize scoping reviews as a legitimate thesis methodology, students may face administrative barriers to choosing this approach even when it is methodologically more appropriate. Advocacy for the inclusion of scoping reviews in undergraduate thesis regulations is therefore a parallel recommendation for institutional stakeholders. Updating these regulatory frameworks will align university policies with contemporary academic practices, thereby equipping students with a broader and more relevant methodological repertoire.

Collaborative Undergraduate SLR: The Multi-Researcher Scenario

When two or more undergraduate students collaborate on a single systematic review through formally structured group theses, supervisor-coordinated research groups, or voluntary partnerships the collaborative configuration enables the restoration of several standard SLR procedures structurally impossible in single-reviewer settings. This collaborative modality has been advocated in the qualitative research literature as a means of enhancing methodological quality through investigator triangulation and internal peer debriefing mechanisms (Jayadi et al., 2026). Most notably, genuine dual-reviewer screening and dual data extraction with reconciliation become feasible, allowing formal calculation of inter-rater reliability using Cohen's kappa (κ) and substantially enhancing review rigor toward standard SLR levels.

Collaboration introduces its own challenges, however. Coordination requires shared protocols and synchronized access to screening and extraction tools; Rayyan and cloud-based spreadsheets (Google Sheets) are particularly valuable in this context. Accountability and contribution tracking must be documented for academic integrity and individual assessment purposes. Critically, the pilot screening calibration exercise becomes even more important in collaborative settings, as divergent interpretations of inclusion criteria between reviewers can systematically bias results if not resolved before independent screening commences. Where institutional regulations permit, collaborative SLR is a methodologically advantageous option that supervisors and programs should actively encourage.

Avoiding Pseudo-Systematic Reviews

A persistent risk in undergraduate research is the proliferation of pseudo-systematic reviews studies adopting the label of "systematic review" without adhering to its methodological principles (Ghamrawi et al., 2025; Hammersley, 2020). These studies typically lack documented search strategies, explicit selection criteria, screening documentation, and quality appraisal. The Undergraduate SLR Model addresses this risk not by imposing additional complexity but by providing a clear minimum standard: if a student can affirmatively complete the self-assessment checklist documenting the search strategy, applying consistent criteria, recording screening decisions, and reporting the process transparently the review can legitimately claim systematic rigor.

If these minimum conditions are not met, the work should be relabeled as a narrative or scoping review rather than making unsupported claims of systematic methodology. Supervisors bear institutional responsibility for enforcing this standard, particularly given that pseudo-systematic reviews may pass thesis examination without peer review. By strictly maintaining these methodological boundaries, academic departments protect the integrity of their research repositories while simultaneously teaching students crucial lessons in scientific honesty. Ultimately, preventing the dissemination of methodologically flawed reviews safeguards the broader scholarly community from relying on unreliable, poorly synthesized evidence.

While the Undergraduate SLR Model provides a vital methodological bridge for novice researchers, its primary limitation lies in its currently conceptual nature, which necessitates future empirical validation to evaluate its practical efficacy across diverse institutional contexts and to assess the residual selection bias inherent in single-reviewer configurations. Despite these constraints, the implications of this proposed framework are highly significant for both pedagogical practice and institutional policy. Practically, the model democratizes systematic evidence synthesis, empowering undergraduate students to conduct methodologically transparent and rigorously documented research that realistically aligns with their resource constraints. Institutionally, the adoption of this adapted approach compels universities to critically reevaluate rigid thesis regulations, specifically by

advocating for the formal recognition of scoping reviews as legitimate scholarly alternatives and highlights the urgent necessity for targeted faculty methodological training, thereby fundamentally elevating the overarching quality and integrity of undergraduate academic output.

Conclusion

This article addresses a persistent methodological gap by developing the Undergraduate SLR Model, a seven-stage framework designed to preserve transparency, consistency, and systematic documentation while pragmatically adapting standard SLR procedures to the structural constraints of single researcher undergraduate thesis projects. By systematically distinguishing between non-negotiable core requirements and adaptable components, this study contributes practical scaffolding tools, including a simplified PRISMA flow diagram and decision guides to make rigorous evidence synthesis highly accessible. However, given the conceptual nature of this framework, future research must prioritize empirical validation by testing the model across diverse Indonesian educational institutions, evaluating student competence development through its scaffolded implementation, and systematically investigating institutional barriers such as supervisor methodological competency and rigid thesis regulations. Ultimately, if widely implemented alongside institutional advocacy for faculty training, this model will meaningfully elevate the quality of undergraduate research by establishing a definitive boundary between genuinely systematic reviews and pseudo-systematic methodologies.

Author Contributions

Conceptualization was contributed by MI, RR, and AJ; methodology by MI, AJ, and N; and formal analysis by MI, RR, and AJ. Investigation was conducted by MI, AJ, and N, with the original draft written by MI, RR, and N. Review and editing were performed by MI, RR, and AJ.

Funding

This research received no external funding.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Use of Artificial Intelligence

Generative AI (ChatGPT 5.6 and Gemini 3.5) was used to assist in drafting portions of the manuscript. All AI-generated text was critically reviewed, revised, and verified by the authors. The authors assume full responsibility for the accuracy and integrity of the final manuscript.

References

- Al-Jarf, R. (2026). An integrative systematic review of studies across diverse educational evaluation domains. *British Journal of Teacher Education and Pedagogy*, 5(3), 40-60. <https://doi.org/10.32996/bjtep.2026.5.3.5>

- Atenas, J., Havemann, L., & Timmermann, C. (2023). Reframing data ethics in research methods education: A pathway to critical data literacy. *International Journal of Educational Technology in Higher Education*, 20(1), 11. <https://doi.org/10.1177/2053951714559253>
- Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.
- De Cassai, A., Dost, B., Tulgar, S., & Boscolo, A. (2025). Methodological standards for conducting high-quality systematic reviews. *Biology*, 14(8), 973. <https://doi.org/10.3390/biology14080973>
- Fielding, J. (2025). Taking an argumentation approach to statistical investigations: Developing student data-ing practices. *ZDM–Mathematics Education*, 57(1), 31-44. <https://doi.org/10.1007/s11858-024-01639-y>
- Ghamrawi, N., Shal, T., Ghamrawi, N. A. R., Abu-Tineh, A., Alshaboul, Y., & Alazaizeh, M. A. (2025). A Step-by-step approach to systematic reviews in educational research. *European Journal of Educational Research*, 14(2), 549–566. <https://doi.org/10.12973/eu-jer.14.2.549>
- Ghamrawi, N., Shal, T., Ghamrawi, N. A., Abu-Tineh, A., Alshaboul, Y., & Alazaizeh, M. A. (2025). A step-by-step approach to systematic reviews in educational research. *European Journal of Educational Research*, 14(2), 549-566. <https://doi.org/10.12973/eu-jer.14.2.549>
- Gusenbauer, M., & Haddaway, N. R. (2020). Which academic search systems are suitable for systematic reviews or meta-analyses? Evaluating retrieval qualities of Google Scholar, PubMed, and 26 other resources. *Research Synthesis Methods*, 11(2), 181–217. <https://doi.org/10.1002/jrsm.1378>
- Hammersley, M. (2020). Reflections on the methodological approach of systematic reviews. In *Systematic reviews in educational research* (pp. 23–39). Springer Fachmedien Wiesbaden. https://doi.org/10.1007/978-3-658-27602-7_2
- Iqbal, M. (2026). Memahami pendekatan kuantitatif dalam penelitian skripsi: Sebuah kajian literatur naratif. *Jurnal Diferensiasi: Jurnal Hasil Penelitian, Pengembangan dan Kajian Kepustakaan di Bidang Pendidikan*, 1(4), 227–236. <https://balejurnal.com/index.php/JDPK/article/view/73>
- Jayadi, A., Kholisussa'di, & Iqbal, M. (2026). Memahami pendekatan kualitatif dalam penelitian skripsi: Sebuah kajian literatur naratif. *Jurnal Diferensiasi: Jurnal Hasil Penelitian, Pengembangan dan Kajian Kepustakaan di Bidang Pendidikan*, 1(4), 237–249. <https://balejurnal.com/index.php/JDPK/article/view/74>
- Mannarath, A. K. (2026). Systematic literature review for an effective research: A structured framework for social science researches. *Quality & Quantity*, 60(2), 4773-4799. <https://doi.org/10.1007/s11135-025-02458-3>
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *PLoS Medicine*, 6(7), e1000097. <https://doi.org/10.1371/journal.pmed.1000097>
- Moreau, M. A., & Woodhouse, E. (2025). Improving transparency in conservation social science research to enhance quality, equity, and collaboration. *Conservation Biology*, 39(2), e70003. <https://doi.org/10.1111/cobi.70003>

- Munn, Z., Peters, M. D. J., Stern, C., Tufanaru, C., McArthur, A., & Aromataris, E. (2018). Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Medical Research Methodology*, 18(1), 143. <https://doi.org/10.1186/s12874-018-0611-x>
- Newman, M., & Gough, D. (2020). Systematic reviews in educational research: Methodology, perspectives and application. In *Systematic Reviews in Educational Research* (pp. 3–22). Springer Fachmedien Wiesbaden. https://doi.org/10.1007/978-3-658-27602-7_1
- Ocheja, P. I., Onoja, P., Agada, J. O., & Ochuema, A. (2025). Supervisor-supervisee relationships in postgraduate research: A wholistic perspective. *International Journal of Global Affairs, Research and Development*, 3(1), 221-230. <https://ijgard.com/index.php/ijgard/article/view/87>
- Oladimeji, O., Londani, M., Moyo, S., Seekoe, E., Saidi, A., Mothiba, T. M., Feza, N. N., Davhana-Maselesele, M., Maart, R., Babalola, J. O., Okoh, A. I., Okonofua, F., Ntusi, N. A. B., & Sibiya, M. N. (2026). Mentorship-infused initiatives for postgraduate research supervision in African higher institutions of learning: A systematic review and meta-synthesis protocol. *BMJ Open*, 16(1), e107670. <https://doi.org/10.1136/bmjopen-2025-107670>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., McGuinness, L. A., Stewart, L. A., Thomas, J., Tricco, A. C., Welch, V. A., Whiting, P., Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, n71. <https://doi.org/10.1136/bmj.n71>
- Pantic, K., & Hamilton, M. (2024). Conducting a systematic literature review in education: A basic approach for graduate students. *Brock Education Journal*, 33(1), 49–65. <https://doi.org/10.26522/brocked.v33i1.1121>
- Pawar, A. S. (2026). A framework-guided conceptual analysis of foundational philosophical questions. *Philpapers*, <https://philpapers.org/go.pl?id=PAWAFC&proxyId=none&u=https%3A%2F%2Fdoi.org%2F10.5281%2Fzenodo.18247528>
- Peters, M. D. J., Marnie, C., Tricco, A. C., Pollock, D., Munn, Z., Alexander, L., McInerney, P., Godfrey, C. M., & Khalil, H. (2020). Updated methodological guidance for the conduct of scoping reviews. *JBIM Evidence Synthesis*, 18(10), 2119–2126. <https://doi.org/10.11124/JBIES-20-00167>
- Schreiber, F., & Cramer, C. (2024). Towards a conceptual systematic review: Proposing a methodological framework. *Educational Review*, 76(6), 1458-1479. <https://doi.org/10.1080/00131911.2022.2116561>
- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104, 333–339. <https://doi.org/10.1016/j.jbusres.2019.07.039>
- Taber, K. S. (2025). Mediated learning leading development—The social development theory of Lev Vygotsky. In *Science Education in Theory and Practice: An*

- Introductory Guide to Learning Theory*, 275-292. Cham: Springer Nature Switzerland.
https://doi.org/10.1007/978-3-031-81351-1_16
- Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., ... Straus, S. E. (2018). PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. *Annals of Internal Medicine*, 169(7), 467–473.
<https://doi.org/10.7326/M18-0850>
- Veroniki, A. A., Hutton, B., Stevens, A., McKenzie, J. E., Page, M. J., Moher, D., McGowan, J., Straus S. E., Li, T., Munn, Z., Pollock, D., Colquhoun, H., Godfrey, C., Smith, M., Tufte, J., Logan, S., Catalá-López, F., Tovey, D., Franco, J. V. A., Chang, S., Garritty, C., Hartling, L., Horsley, T., Langlois, E. V., McInnes, M., Offringa, M., Welch, V., Pritchard, C., Khalil, H., Mittmann, N., Peters, M., Konstantinidis, M., Elsmann, E. B. M., Kelly, S. E., Aldcroft, A., Thirugnanasampanthar, S. S., Dourka, J., Neupane, D., Well, G., Akl, E., Wilson, M., Soares-Weiser, K., & Tricco, A. C. (2025). Update to the PRISMA guidelines for network meta-analyses and scoping reviews and development of guidelines for rapid reviews: A scoping review protocol. *JB I Evidence Synthesis*, 23(3), 517. <https://doi.org/10.11124/JBIES-24-00308>
- Xiao, Y., & Watson, M. (2019). Guidance on conducting a systematic literature review. *Journal of Planning Education and Research*, 39(1), 93–112.
<https://doi.org/10.1177/0739456X17723971>
- Zawacki-Richter, O., Kerres, M., Bedenlier, S., Bond, M., & Buntins, K. (2020). *Systematic reviews in educational research* (O. Zawacki-Richter, M. Kerres, S. Bedenlier, M. Bond, & K. Buntins, Eds.). Springer Fachmedien Wiesbaden.
<https://doi.org/10.1007/978-3-658-27602-7>
- Zhao, M. Y. (2026). Harmony: Towards a unified conceptual framework. *The Journal of Positive Psychology*, 21(2), 241-254.
<https://doi.org/10.1080/17439760.2025.2500564>