

Design and Development of SLRAI Wizards as an AI-Powered Solution to Enhance Learning Experiences in the Research Process

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ABSTRACT

Conducting systematic literature reviews (SLRs) is an essential but demanding task, particularly for students and early-career researchers coping with complex methodologies and expanding bodies of literature. While artificial intelligence (AI) and large language models provide promising assistance, existing tools remain fragmented, difficult to use, and not tailored to the full SLR process. This study introduces SLRAI Wizards, a ChatGPT-based platform designed to guide researchers through planning, conducting, and reporting SLRs using established frameworks such as PRISMA, PRESS, CASP, and MMAT. The platform offers three engagement modes, self-paced, guided, and hybrid, supported by interactive diagrams, embedded tools, and tutorials. A preliminary evaluation was conducted with 41 participants in a two-hour guided online workshop. Survey data indicated strong positive perceptions: participants rated overall satisfaction at $M = 4.33$ ($SD = 0.94$) and reported increased confidence in conducting SLRs using AI tools ($M = 4.42$, $SD = 0.64$). The tool's contribution to understanding the SLR process was highly rated ($M = 4.67$, $SD = 0.62$). Thematic analysis of open-ended responses highlighted four areas of impact: structured research guidance, efficiency gains, enhanced research skills, and motivational support. Users valued features such as the Screening Wizard, which allowed rapid abstract processing, but also called for clearer tutorials and a more intuitive interface. These findings suggest that SLRAI Wizards can lower entry barriers to SLRs, making them more accessible, rigorous, and engaging for novices. As a formative study, results establish feasibility and inform design refinements, paving the way for larger comparative evaluations across learning pathways.

Keywords: ChatGPT; systematic literature review; research skills; research tools; AI-powered

INTRODUCTION

Advancements in technology have reshaped how research is conducted, yet the process remains demanding. From defining research problems to disseminating findings, each stage requires methodological rigor, which can be overwhelming for students and early-career researchers (Alphonse, 2023; Gelling, 2015). Among these stages, conducting a comprehensive literature review (LR) or systematic literature review (SLR) stands out as especially challenging. Reviews are essential for mapping knowledge, identifying gaps, and refining questions, but the exponential

growth of scholarly output makes the task increasingly complex for novices (Chen et al. 2016; Snyder 2019).

Artificial intelligence (AI) tools, particularly large language models (LLMs), have emerged as potential supports for these processes. They can automate routine tasks such as document screening, summarizing literature, and even generating preliminary drafts, thereby reducing the time and effort required for reviews (Noy & Zhang 2023). Despite this promise, many students and novice researchers struggle to integrate AI effectively into their workflows. Challenges include steep learning curves, concerns about opaque decision-making, algorithmic biases, and risks to academic integrity such as plagiarism

or unclear authorship boundaries (Souifi et al. 2024; Storey 2023). These issues underscore the need for clearer guidelines and tools that encourage ethical and responsible AI use in educational and research contexts (Tamanna & Sinha 2024).

To address these complexities, this study introduces SLRAI Wizards, a suite of ChatGPT-based tools developed to support novice researchers in conducting SLRs. The platform was conceptually structured around established methodologies for systematic reviewing such as outlined by Tranfield et al. (2003) and Kraus et al. (2020), ensuring alignment with recognized academic standards. By embedding these methodological foundations into the tool design, SLRAI Wizards aims to reduce both the cognitive demands and procedural barriers that learners face when handling large volumes of research. Rather than focusing on technical software engineering, the development emphasizes usability, researcher-centered integration, and alignment with educational practice.

The platform is introduced through a hybrid learning model that combines self-paced tutorials, online resources, and guided sessions, reflecting contemporary approaches to research training in higher education (Pinnock et al. 2014). This combination acknowledges the evolving modes of engagement where digital tools increasingly complement traditional research instruction. Within this paper, the focus is not on summative testing of effectiveness, but on reporting a preliminary design and development phase. Specifically, we examine how participants in a guided workshop perceive the usability, feasibility, and learning potential of SLRAI Wizards.

The analysis integrates descriptive statistics from structured survey items with thematic insights from open-ended feedback. This combination highlights user preferences, perceptions, and the perceived contribution of the tool to their research process. By presenting these formative findings, the study offers baseline evidence of feasibility and points to practical design implications. At the same time, the results set the stage for future comparative studies that will examine different engagement pathways, such as fully self-paced use or blended hybrid models.

The remainder of this article is structured as follows. Section II reviews related work, highlighting challenges in the research process, the role of SLR, and the potential of AI-enabled solutions. Section III describes the experimental setup used to implement SLRAI Wizards. Section IV presents a case study of the guided workshop evaluation. Finally, Section V discusses the findings, outlines broader implications, and concludes with directions for further research.

RELATED WORK

CHALLENGES IN RESEARCH PROCESS

The research process typically involves formulating a clear problem, reviewing existing literature, gathering and analyzing data, and disseminating findings (Alphonse, 2023; Gelling 2015). Although it appears linear, each stage can require iterative refinements that introduce complexity and demand considerable time and resources (Bernardi, 2020). Interdisciplinary collaboration further complicates matters, since researchers must accommodate varied methodologies and epistemological frameworks (Skivington et al. 2021). Student and novice researchers, in particular, often struggle with limited resources, ambiguous scope, and the pressure to maintain high standards of rigor in relatively short time frames (Pinnock et al. 2014). These obstacles underscore the need for tools and strategies that can streamline workflows without undermining academic integrity.

IMPORTANCE OF LITERATURE REVIEW AND SYSTEMATIC LITERATURE REVIEW IN THE RESEARCH PROCESS

A well-executed LR is essential in defining the scope and significance of any research study. It helps identify key theoretical constructs, uncover research gaps, and establish a foundation for further investigation (Chen et al. 2016; Snyder, 2019). However, conventional narrative reviews are often prone to personal bias and lack transparent methodologies, which can compromise the validity of their findings (Tranfield et al. 2003). To address these shortcomings, SLRs have emerged as a rigorous alternative, employing explicit protocols that reduce bias and enhance reproducibility (Kraus et al. 2020). SLRs are particularly valuable for synthesizing large bodies of literature, documenting search strategies, and employing inclusion criteria and data extraction methods to ensure transparency and accuracy (Dhobi, 2024). These attributes have made SLRs indispensable across research fields where precision and reproducibility are paramount. While SLRs originated in the medical and health sciences, where they have been extensively used to synthesize evidence and inform clinical practices, their application has expanded significantly in recent years (Mohamed Shaffril et al. 2021).

In education, SLRs are increasingly utilized to examine the impact of educational interventions, such as the use of digital games, on learning outcomes like motivation, engagement, and practical skills (Newman & Gough 2020; Raja Rosli et al. 2024; Arif et al. 2024). They also contribute to understanding strategies that enhance science process skills,

design thinking, and inquiry-based learning (Jusoh et al. 2024). In engineering, SLRs play a critical role in advancing sustainability and efficiency, such as by exploring methods to improve the durability of construction materials through CO₂ integration (Zuljar et al. 2024), refining sediment transport models for conservation (Hamizak et al. 2024), and identifying success factors in supply chain management (Pardi et al. 2024). Similarly, in environmental sciences, SLRs address global challenges, such as understanding political motivations behind climate change policymaking (Moore et al. 2024), and exploring strategies to reduce carbon footprints in industries like healthcare through decarbonization, waste management, and infrastructure improvements (Braithwaite et al. 2024).

These examples underscore the growing versatility of SLRs across disciplines. By synthesizing evidence, identifying trends, and guiding practice, SLRs have become a cornerstone of modern research, providing critical insights to advance knowledge and inform decision-making in diverse contexts.

CHALLENGES OF SYSTEMATIC LITERATURE REVIEW

Although SLRs offer enhanced rigor, they can be highly labor-intensive. Researchers often screen hundreds or even thousands of abstracts and full texts to ensure the broadest possible coverage, and this process can be both time-consuming and prone to error if not carefully managed (Snyder 2019; Kraus et al. 2020). Maintaining consistency across multiple reviewers and keeping pace with newly published material can also stretch resources (Moher et al. 2015). Variations in study design, along with incomplete or inconsistent reporting, can introduce bias, making it difficult to draw robust conclusions (Page et al. 2021; Borrego et al. 2014).

Once potentially relevant studies are identified, the extraction and synthesis phases bring additional challenges. Researchers must often manage heterogeneous data, sometimes combining qualitative and quantitative findings, which calls for robust analytical frameworks (Mengist et al. 2020; Cooke et al. 2012). Differences in outcome measures, methodological quality, and contextual factors can complicate the integration of results, increasing the risk of oversight or misinterpretation. These demands can overburden novice researchers who have limited training in systematic methods, underscoring the need for supportive tools and clear guidelines. Streamlining tasks such as screening, data extraction, and documentation could help mitigate the workload while preserving the rigor that characterizes a well-conducted SLR.

CHALLENGES AND BENEFITS OF AI TOOLS TO DO RESEARCH

Recent developments in AI have provided potential solutions to many of the operational hurdles in both traditional LR and SLR. AI-driven platforms, particularly those powered by LLMs, can automate repetitive screening tasks, organize and categorize large bibliographic datasets, and even generate preliminary summaries (Noy & Zhang 2023; Souifi et al. 2024). These features can free researchers to devote more time to critical thinking, methodological design, and data interpretation (Sackett et al. 1996; McGowan et al. 2016). However, challenges remain. Students and first-time users may be overwhelmed by the learning curve, uncertain about how to interpret AI-generated outputs, and worried about possible algorithmic biases (Storey, 2023; Chan et al. 2023). Ethical considerations also persist, such as questions about the “black box” nature of AI and the risk of plagiarism or misattribution (Valbuena 2023; Tamanna & Sinha 2024; Okina 2024). The potential for overreliance on AI, especially in educational contexts, further complicates these concerns, emphasizing the need for clear guidelines and adequate training (Dergaa et al. 2023; Panda & Kaur 2024).

LITERATURE SUMMARY

In sum, the research process poses numerous complexities, and the literature review stage can be particularly demanding. SLRs address key shortcomings of traditional reviews by increasing rigor and transparency, yet they can burden researchers with extensive protocols and data management tasks (Tranfield et al. 2003; Kraus et al. 2020). AI-driven tools, powered by LLMs, offer promising ways to streamline systematic methods, potentially saving time and improving consistency (Noy & Zhang 2023; Souifi et al. 2024). At the same time, ethical and pedagogical considerations remain paramount, especially for students and less experienced researchers (Storey 2023). These factors drive the need for carefully designed AI frameworks that integrate best practices in SLR while accounting for user preferences and learning objectives. Building on these insights, the present study introduces SLRAI Wizards, a ChatGPT-based platform aimed at easing the SLR workload within hybrid educational settings and explores user perceptions of its efficacy and ethical considerations.

DESIGN AND DEVELOPMENT OF SLRAI WIZARDS

SLRAI Wizards is an AI-driven platform designed to streamline the SLR process for both novice and experienced researchers. Built on the foundation of LLMs, such as ChatGPT, this tool incorporates a range of functionalities that address the planning, conducting, and reporting phases

of SLRs. Each phase features specialized tools aligned with global best practices, including PRISMA (Page et al. 2021), Peer Review of Electronic Search Strategies (PRESS) (McGowan et al. 2016), Critical Appraisal Skills Programme (CASP), and MMAT (Hong et al. 2018) tools. The SLRAI Wizards interface is represented as a comprehensive PDF document, as shown in Figure 1, which contains an interactive diagram visually representing the flow of the typical SLR process.

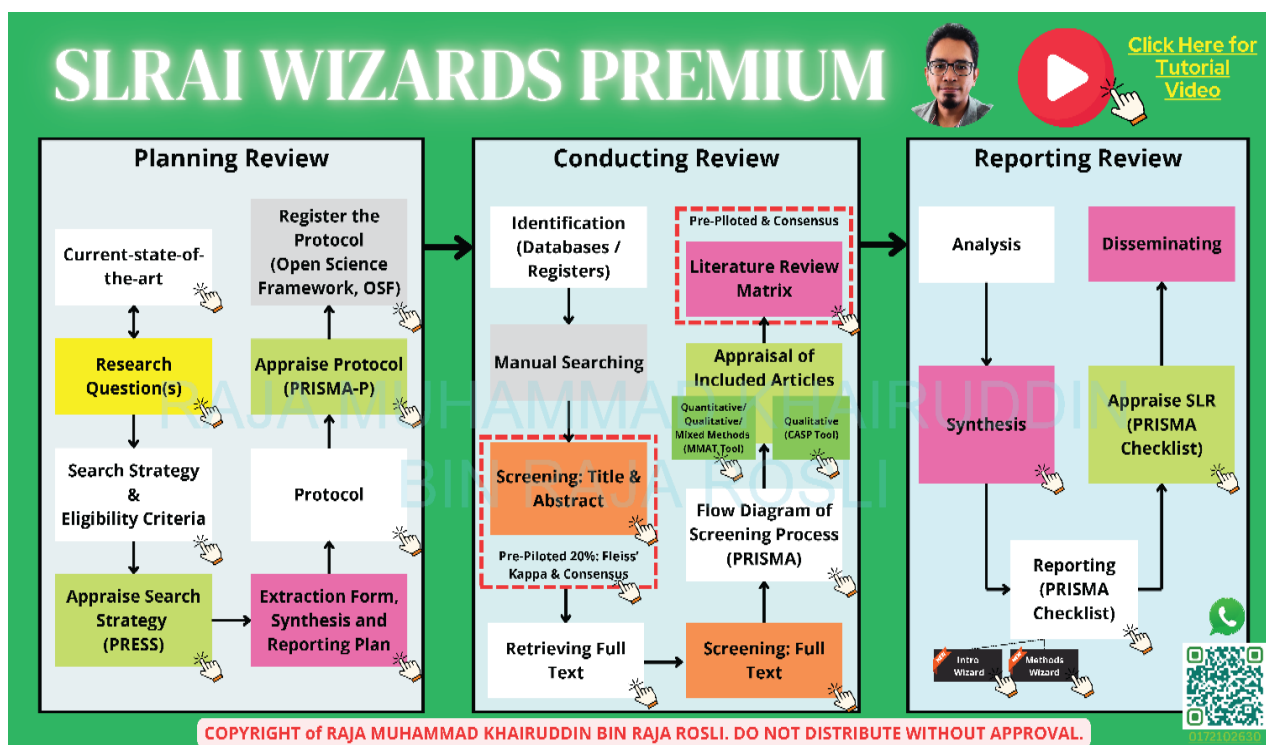


FIGURE 1. SLRAI Wizards framework and interface

This diagram serves as the guiding framework, illustrating the three main phases (Planning Review, Conducting Review, and Reporting Review) and their respective stages. The diagram employs arrows to link the phases and illustrate the sequential process flow, complemented by a color-coding system to categorize the stages. Grey represents optional stages, green highlights steps involving appraisal, light purple indicates direct links to the reporting phase, white is used for typical process steps, and yellow underscores the critical importance of the RQs development stage, emphasizing its role as the heart of the SLR process. Each stage in the diagram is hyperlinked to specific trained ChatGPT tools or important resources to assist users effectively. Users can simply click on any stage in the diagram to be directed to the respective tool or resource they need to progress with, enabling seamless navigation and immediate access. For example:

1. Custom ChatGPT tools such as:
 - a. CASP SLR Appraisal GPT for critical appraisals.
 - b. SLR RQ Gen 2.0 for research question development.
 - c. Extract Form-Gen for data extraction.
2. Important resources include:
 - a. Open Science Framework (OSF) for protocol registration and management.
 - b. Online Calculators for Interrater Reliability, such as Fleiss' Kappa, to ensure consistency during the screening process.

The PDF also includes a hyperlink to an online tutorial video (YouTube: <https://youtu.be/iLZkEJ2s4s>), offering step-by-step guidance on using SLRAI Wizards, enabling

self-paced learning and enhancing user experience. By clicking on the tutorial link, users can gain additional insights and instructions to maximize their use of the platform. The interactive and color-coded design of the SLRAI Wizards diagram ensures that users can navigate through the complex SLR process effortlessly while maintaining methodological rigor. This makes the platform accessible and highly practical for researchers at all levels. In the Planning Review phase, SLRAI Wizards employs tools that help establish a robust foundation for systematic reviews, as listed in Table I. For example, the CASP SLR Appraisal GPT evaluates existing SLRs using the CASP Systematic Review Checklist to identify methodological gaps and generate Risk of Bias tables (Critical Appraisal Skills Programme, 2024b). The SLR RQ Gen 2.0 facilitates the creation of research questions aligned with frameworks such as SPIDER, PICO, and PICO (Cooke et al. 2012; Sackett et al. 1996). To ensure comprehensive search strategies, the SLR Search-strategy supports researchers in developing database-compatible queries that align with PRESS guidelines (McGowan et al. 2016). The PRESS Review

Specialist further enhances search precision by following a 10-step PRESS review process, ensuring rigor and clarity. Additionally, the Extract Form-Gen enables the creation of customizable data extraction templates, enhancing organization and synthesis (Mohamed Shaffril et al. 2021). Figure 2 shows a sample output of using the Extract Form-Gen to generate extraction forms tallied to respective SLR research questions aimed to be addressed. In this example, the researcher provided a review topic and research questions related to factors influencing students' interest in STEM careers. The tool generated a General Distribution of Studies Form. The form includes fields such as Region/State, School Type, Sample Size, and more. This demonstrates how user inputs are translated into organized templates that directly support systematic data extraction. Next, the SLR Protocol tool aids in creating robust SLR protocols by adhering to PRISMA-P guidelines, ensuring transparency and reproducibility (Moher et al. 2015). Finally, the PRISMA-P Protocol Check evaluates these protocols to ensure adherence to global standards.

Great—let's now build your **Data Extraction Forms**, beginning with the **General Distribution of Studies Form** to support mapping the basic characteristics of the included literature.

1. General Distribution of Studies Form

Supports RQ1: What are the characteristics of Malaysian secondary school students studied by research associated with their interest in STEM careers?

Purpose:

To extract *descriptive metadata* about each included study so that patterns in sampling, context, and publication trends can be mapped. This will support your frequency/narrative synthesis and allow you to characterise the existing research landscape.

LR Matrix Table: General Distribution of Studies

Study ID	Authors (Year)	Title	Publication Type	Region / State	School Type	Sample Size
[Auto-ID]			Journal / Thesis / etc.	e.g., Selangor	Urban / Rural / Mixed	N=123

FIGURE 2. Sample output of extraction form generated

TABLE 1. Key tools in the planning review phase of SLRAI WIZARDS

Tool Name	Function
CASP SLR Appraisal GPT	Evaluates existing SLRs, identifies gaps, and generates Risk of Bias tables (Critical Appraisal Skills Programme, 2024b)
SLR RQ Gen 2.0	Generates research questions using SPIDER, PICO, and PICO frameworks (Cooke et al., 2012)
SLR Search-strategy	Develops database-compatible search strategies and defines screening criteria (McGowan et al., 2016)
PRESS Review Specialist	Reviews and refines search strategies using a 10-step PRESS process (McGowan et al., 2016)
Extract Form-Gen	Creates customizable data extraction templates aligned with SLR objectives (Tranfield et al., 2003)
SLR Protocol	Assists in developing rigorous SLR protocols following PRISMA-P guidelines (Moher et al., 2015)
PRISMA-P Protocol Check	Evaluates protocols to ensure transparency and alignment with PRISMA-P guidelines (Moher et al., 2015)

The Conducting Review phase outlined in Table 2 automates and optimizes critical tasks, aiming to reduce the cognitive burden on researchers. For instance, the Screening Wizard supports title, abstract, and full-text screening, ensuring alignment with predefined criteria while adhering to the PRISMA workflow (Moher et al. 2015; Page et al. 2021). The MMAT GPT applies the Mixed Methods Appraisal Tool to evaluate the quality and risk of bias in mixed-methods studies, generating detailed assessments (Hong et al. 2018), as captured in Figure 3. In this example, user simply provide study documents in PDF format as the input without additional prompts, and this GPT then automatically appraise each study according to MMAT framework and produce summary of the appraisal in colored coding table, showing levels of bias across domains: green dots indicate low risk, while yellow signals areas of concern. Next, the CASP Qualitative Appraisal GPT enhances qualitative study evaluation by using the CASP checklist to ensure validity, credibility, and rigor (Critical Appraisal Skills Programme, 2024a). Meanwhile, the LRM Wizard organizes extracted data into structured matrices, facilitating synthesis and 7th American Psychological Association (APA7) Style writing summaries.

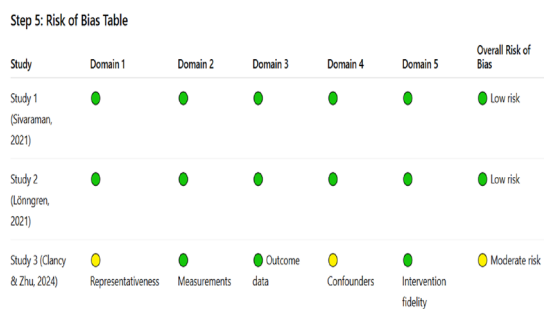


FIGURE 3. Sample output of risk of bias appraisal generated based on given documents

TABLE 2. Key tools in the conducting review phase of SLRAI WIZARDS

Tool Name	Function
Screening Wizard	Facilitates title, abstract, and full-text screening to streamline inclusion and exclusion (Moher et al. 2015)
MMAT GPT	Evaluates methodological quality and risk of bias for mixed methods studies (Hong et al. 2018)
CASP Qualitative Appraisal GPT	Appraises qualitative studies for validity, credibility, and rigor (Critical Appraisal Skills Programme, 2024a)
LRM Wizard	Creates structured Literature Review Matrices and generates APA7-style summaries (Tranfield et al. 2003)

The Reporting Review phase is critical for synthesizing findings and producing high-quality outputs as listed in Table 3. The Synthesizer Wizard assists researchers in synthesizing data, identifying research gaps, and generating structured outputs aligned with research questions (Moher et al. 2015). The WriteSLR Wizard offers templates and guidance for crafting systematic literature review sections, ensuring coherence and rigor (Page et al. 2021). Finally, the PRISMA Checker evaluates the final review against the PRISMA 2020 checklist, providing actionable feedback to enhance compliance and transparency (Alexander, 2020). Together, these tools ensure that researchers produce methodologically sound and impactful reviews.

TABLE 3. Key tools in the reporting review phase of SLRAI WIZARDS

Tool Name	Function
Synthesizer Wizard	Guides synthesis of findings, identification of gaps, and generation of structured outputs (Moher et al. 2015)
WriteSLR Wizard	Provides templates and iterative support for writing systematic literature review sections (Page et al. 2021)
PRISMA Checker	Evaluates reviews against PRISMA 2020 guidelines, ensuring clarity and compliance (Alexander, 2020)

EXPERIMENTAL & PRELIMINARY SETUP

CASE STUDY

Figure 4 presents the planned implementation of SLRAI Wizards through three engagement pathways, reflecting evolving modes of research learning in higher education where digital tools support self-directed, guided, and blended training (Urbina et al. 2021; Levidze 2024).

1. Case 1 (Self-paced): Learners use SLRAI Wizards independently with manuals and video tutorials, emphasizing flexibility and autonomy in line with authentic researcher practices.
2. Case 2 (Guided): Learners join structured online or offline workshops led by trainers, combining tool use with demonstrations and interactive support, particularly valuable for novices.
3. Case 3 (Hybrid): Learners begin independently before joining guided sessions, blending autonomy with reinforcement, a model increasingly common in research training.

The full-scale study will compare these pathways using a mixed-methods design. Quantitative data will track

task times, progression, tool usage, and retention, while qualitative insights will come from surveys, reflections, and observations. Psychological factors such as motivation, cognitive load, and satisfaction will be measured with structured questionnaires. Comparative analysis will reveal how different engagement modes influence outcomes and user experience.

This paper reports the preliminary implementation, focusing solely on Case 2: the guided workshop pathway. Forty-one participants joined a two-hour trainer-led online session using SLRAI Wizards. After the session, they completed a structured survey capturing (i) background information (academic level, SLR exposure, AI familiarity)

and (ii) perceptions of usability, effectiveness, and learning. The instrument included six Likert items and one open-ended prompt. Structured responses were summarized with descriptive statistics, while open-ended comments were thematically coded to identify recurring perceptions and challenges. Because no pre-workshop baseline was collected, findings are descriptive rather than comparative. The evaluation is therefore exploratory and formative, aimed at establishing baseline evidence of feasibility, usability, and user perceptions. All participants gave informed consent, and procedures followed institutional ethics guidelines. These results provide initial insights to guide refinement and future comparative evaluations.

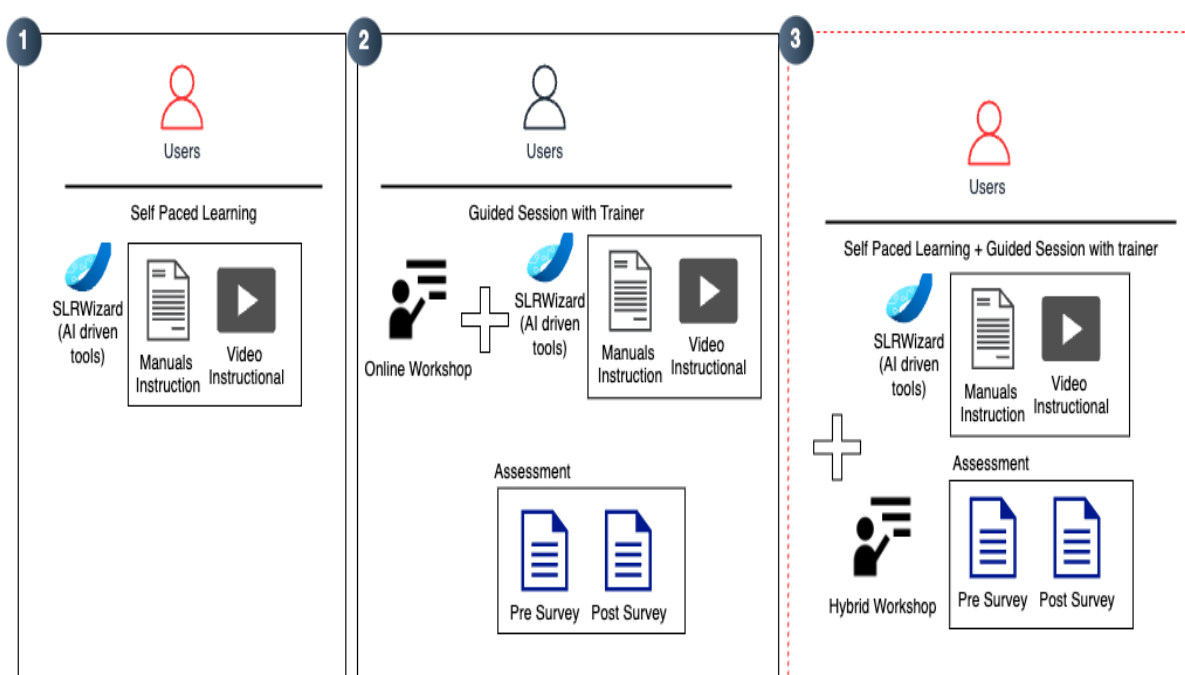


FIGURE 4. Case study

RESULTS

PRELIMINARY STUDY

In this paper, we describe a preliminary study conducted to gather user feedback on the online guided session, focusing on participant experiences and perceptions of the SLRAI Wizards Online Workshop. The online guided session was conducted over approximately two hours, providing participants with a comprehensive overview and hands-on experience with the SLRAI Wizards platform. A total of 41 users participated in the online guided session for the SLRAI Wizards Online Workshop as presented in Table 4. The high representation of PhD/EdD students (66%) indicates that systematic review

methodologies are predominantly sought after by advanced researchers, likely due to their relevance in dissertation work and high-level research. The inclusion of lecturers/educators (7%) suggests the utility of SLR in academic instruction and research supervision, while the participation of master's students (17%) highlights interest among those preparing for research-intensive projects. The low engagement from bachelor's students (2%) implies limited exposure or demand at the undergraduate level. The 'Others' category (7%) indicates some interest from non-traditional academic participants, suggesting broader applications of SLR beyond conventional research pathways.

TABLE 4. Frequency distribution by category

Category	Percentage (%)
PhD/EdD Students	66
Lecturer/Educator	7
Masters Students	17
Bachelors Students	2
Others	7

Note: percentages may not total 100 due to rounding.

SLR EXPOSURE AND CHALLENGES

The analysis of the frequency data reveals varied levels of exposure to systematic literature reviews (SLRs) and critical challenges in navigating the process. While 27% (n=11) of participants reported no prior exposure to SLRs, 46% (n=19) indicated basic exposure, and 27% (n=11) reported high exposure, highlighting a broad spectrum of familiarity among novice researchers. This variability reflects the challenges of mastering SLR methodologies, particularly for those with limited experience, as noted by Mohamed Shaffril et al. (2021). Among the challenges identified, synthesizing discoveries 29% (n=12), was the most frequently reported, underscoring the cognitive demands of integrating diverse findings into cohesive narratives, a complexity emphasized by Alexander (2020). Bias appraisal 20% (n=8) and screening studies 20% (n=8) also emerged as significant barriers, pointing to difficulties in applying inclusion/exclusion criteria and critically evaluating study quality, as highlighted by Hong et al. (2018). Moderate challenges, such as search strategy development 15% (n=6), suggest partial proficiency but also a need for structured guidance to design robust protocols, aligning with Snyder (2019) observations. Lower-frequency challenges like academic writing 10% (n=4) and research question formulation 2% (n=1) indicate either greater confidence or a potential underestimation of these tasks' complexity. Given the foundational role of research questions in systematic reviews, as emphasized by Tranfield et al. (2003), participants may benefit from deeper engagement with this critical step. These findings underscore the importance of targeted training and tools, such as SLRAI Wizards, to address these challenges and support novice researchers in conducting SLRs with greater confidence and rigor.

EXPOSURE TO AI TOOLS

Participants exhibited significant familiarity with AI tools, with 92.7% (n=38) reporting moderate familiarity and 7.3% (n=3) indicating high familiarity. ChatGPT emerged as the most frequently used tool, with 51.2% (n=21) of

participants using it exclusively and 48.8% (n=20) combining it with other AI platforms. This widespread adoption aligns with Noy and Zhang's (2023) observation of AI's growing role in streamlining research processes.

However, the persistent challenges in synthesizing data and bias appraisal suggest that while participants are adept at using AI for basic tasks, there may be a gap in leveraging these tools to address more complex issues. This highlights the need for platforms like SLRAI Wizards, which integrate AI functionalities specifically designed to tackle these challenges, aligning with participants' needs and enhancing their ability to navigate the SLR process. The data also underscores the importance of providing targeted training on AI tools to ensure their effective and ethical application in academic research (Dergaa et al. 2023).

ONLINE LEARNING DELIVERY EXPERIENCE

Table 5 presents the participants' responses from the SLRAI Wizards Online Workshop, reflecting strong positive perceptions and experiences. Participants showed high satisfaction with the workshop overall (M = 4.333, SD = 0.943) and rated the presenter's effectiveness similarly (M = 4.333, SD = 0.850), indicating that the session was well-facilitated and engaging. The SLRAI Wizards tool was particularly well-received, with participants agreeing that it effectively supported their understanding of the SLR process (M = 4.667, SD = 0.624).

Additionally, they reported increased confidence in conducting systematic literature reviews using AI tools after the session (M = 4.417, SD = 0.640), showing that the workshop successfully enhanced their practical readiness. Participants also found the workshop helpful in understanding how to apply SLRAI Wizards to support the SLR process (M = 4.667, SD = 0.471) and in improving their overall understanding of the systematic literature review process (M = 4.583, SD = 0.640).

These findings suggest that the workshop not only introduced an effective digital support tool but also deepened participants' comprehension of the research process itself. In summary, the high and consistent mean scores indicate that the Online Workshop was impactful in both delivery and content. Participants left the session more confident, informed, and prepared to use AI-based tools like SLRAI Wizards in their academic and research activities. This reflects the tool's potential for wider use in supporting research workflows, particularly among students and educators in need of guided, tech-enhanced approaches to literature reviews.

TABLE 5. Summary of mean and standard deviation for items

No	Item	Mean	SD
1	I am satisfied with the overall workshop experience.	4.333	0.943
2	The presenter was effective in delivering the workshop content.	4.333	0.850
3	The SLRAI Wizards effectively supported my understanding of the SLR process.	4.667	0.624
4	I feel more confident to conduct systematic literature reviews (SLR) using AI tools after attending this workshop.	4.417	0.640
5	This workshop helped me understand how to use SLRAI Wizards to support the SLR process.	4.667	0.471
6	This workshop improved my overall understanding of the systematic literature review (SLR) process.	4.583	0.640

PERSPECTIVE OF SLRAI WIZARDS

In the survey, the open-ended question prompted users to share their experiences with SLRAI Wizards. A thematic analysis revealed four main themes and their respective subthemes, each showcasing the tool's impact.

The first theme is *Guidance for Research* comprises two subthemes: facilitating research initiation and clarifying research focus. Users frequently noted that SLRAI Wizards provided a structured starting point, helping them navigate initial challenges and align their focus with relevant literature, enabling them to create coherent reviews.

Secondly, *Efficiency in Research Processes* includes two subthemes: time-saving tools and workflow optimization. Users highlighted the Screening Wizard as a feature that significantly reduced the time required for screening abstracts, with one user noting, “*I used the Screening Wizard, and in just half an hour, I could process 80 abstracts and select the relevant ones.*” This efficiency allowed users to focus on more critical tasks such as synthesis and analysis.

Thirdly, *Research Skills* consists of two subthemes: identifying research gaps and framework development. Users appreciated the tool's ability to guide them in linking their research to existing studies, with one sharing, “*SLRAI Wizards made me realize how my research links to past studies and the gaps that need to be filled, something I couldn't figure out before*”. The tool also facilitated the creation of structured frameworks, helping users adopt a systematic approach to their reviews.

Lastly, *Moral Support and Inspiration* encompasses two subthemes: emotional encouragement and creator's intent. Users expressed that SLRAI Wizards boosted their confidence and provided clarity during challenging stages of the SLR process, with many acknowledging the creator's genuine intent to support researchers, which fostered trust and motivation.

Despite these positive outcomes, some users indicated a need for additional guidance in understanding how to use SLRAI Wizards effectively, especially for beginners. Others mentioned requiring more time to explore its features fully to unlock its potential. These comments suggest an opportunity to enhance user experience by providing more comprehensive tutorials or personalized support.

DISCUSSION

USER EXPERIENCE AND ROADMAP FOR IMPROVEMENT

The preliminary results demonstrate strong acceptance of SLRAI Wizards as a support tool for conducting systematic literature reviews, particularly among doctoral students and early-career researchers. Participants reported increased confidence, clearer understanding of the review process, and appreciation of the structured guidance. These outcomes indicate that the platform is capable of lowering the entry barrier to systematic reviews, a finding consistent with prior observations of the cognitive and procedural difficulties novice researchers face (Chen et al. 2016; Mohamed Shaffril et al. 2021; Snyder 2019).

At the same time, the descriptive findings highlight specific areas for refinement. Participants' struggles with synthesis and bias appraisal reflect known challenges in SLR practice, where integrating diverse outcomes and critically appraising quality can be cognitively demanding (Alexander 2020; Hong et al. 2018; Kraus et al. 2020). The request for additional tutorials and onboarding support echoes concerns raised in the literature that while AI-based tools can streamline repetitive tasks, they often impose a steep learning curve for novices unfamiliar with how to interpret outputs (Souifi et al. 2024; Storey 2023).

Based on this feedback, we outline a roadmap for the ongoing development of SLRAI Wizards. First, the user interface will be refined to simplify navigation and reduce cognitive load during task execution, responding to calls for tools that can streamline workflows without compromising rigor (Tranfield et al. 2003). Second, interactive tutorials and embedded “how-to” prompts will be introduced at each stage of the workflow, directly addressing gaps in scaffolding identified by participants and highlighted in earlier studies on educational AI adoption (Dergaa et al. 2023). Third, a guided onboarding module will be designed to walk first-time users through a complete example review, blending practice with explanations, an approach consistent with training interventions shown to improve uptake of digital research tools (Pinnock et al. 2014). Finally, future comparative evaluations across self-paced, guided, and hybrid pathways will assess the impact of these enhancements on usability and learning outcomes, aligning with broader research on blended and flexible learning models in higher education (Urbina et al. 2021; Levidze 2024).

This formative evaluation contributes to the literature in three ways. First, it provides empirical evidence that AI-driven frameworks can do more than automate mechanical aspects of reviewing; they can also enhance confidence and motivation, domains that are rarely foregrounded in discussions of AI for research. Second, the feedback underscores the importance of pedagogy in tool design. As others have noted, systematic reviews are often overwhelming not only because of methodological rigor but because novices lack scaffolding for the process (Snyder, 2019; Kraus et al. 2020). By embedding tutorials and guidance into the workflow, SLRAI Wizards shows how AI tools can integrate instructional design principles into research technologies. Third, the findings highlight that AI adoption in research education is not a purely technical matter. The “moral support and inspiration” theme suggests that learners perceive value not only in efficiency but in the sense of being guided and supported, extending the conversation beyond performance metrics to include affective and humanistic dimensions.

Taken together, these refinements respond directly to participant feedback and extend prior findings by showing how AI-powered frameworks can move beyond efficiency gains to address motivational and pedagogical needs.

ETHICAL CONSIDERATIONS IN USING AI FOR RESEARCH

Building on these perspectives, it is also necessary to reflect on the ethical dimensions of integrating AI tools into the

research process. While the feedback highlights clear benefits in terms of guidance, efficiency, and motivation, responsible use depends on careful attention to potential risks and limitations.

One concern is over-reliance. Although SLRAI Wizards provides valuable scaffolding for novices, there is evidence that excessive dependence on AI can reduce cognitive effort, weaken independent analytical skills, and diminish confidence in writing and reasoning (Budiyono et al. 2025). This caution resonates with participant calls for more structured tutorials, suggesting that future design should emphasize human judgment alongside automation. Embedding reflective checkpoints may help preserve critical thinking while maintaining the tool’s supportive role.

Another consideration involves authorship and accountability. Editorial policies consistently stress that AI cannot be regarded as a co-author, and that ultimate responsibility for originality and accuracy remains with the researcher (Yoo, 2025). For this reason, transparency about the role of AI is essential. Incorporating disclosure practices directly into SLRAI Wizards and its workshops could help raise awareness among learners about how to acknowledge AI assistance responsibly.

Finally, large language models are known to carry biases from their training data, which can subtly influence screening or synthesis outcomes. Studies have shown that such biases can shape the framing of content and the representation of knowledge (Acerbi & Stubbersfield, 2023). The integration of established frameworks such as PRISMA and CASP within SLRAI Wizards provides a partial safeguard by anchoring outputs to recognized methodological standards, yet more work is needed to enhance transparency and explainability in decision support.

Together, these considerations highlight that the value of AI in supporting systematic reviews depends not only on technical performance but also on the ethical practices that guide its use.

CONCLUSION

This study introduces SLRAI Wizards, an AI-powered tool designed to simplify and enhance the systematic literature review process. By integrating globally recognized frameworks such as PRISMA, PRESS, CASP, and MMAT, SLRAI Wizards provides a comprehensive approach across the planning, conducting, and reporting phases of reviews. Preliminary findings from guided online sessions with 41 participants suggest that SLRAI Wizards improves user engagement and learning outcomes, offering significant

potential in addressing challenges faced by researchers and students. While the tool has demonstrated its utility, feedback from users highlights areas for refinement, particularly in usability and feature integration. These insights will guide future iterations of SLRAI Wizards to better meet the diverse needs of its users. Overall, SLRAI Wizards contributes to the growing landscape of AI-powered research tools, promoting efficiency and accessibility in academic work. As research processes continue to evolve, tools like SLRAI Wizards have the potential to bridge gaps in knowledge and skills, empowering researchers at all levels. Continued development and broader implementation of SLRAI Wizards will further enhance its effectiveness, supporting its adoption within academic and research communities globally. Future iterations will focus on implementing a structured roadmap for usability improvements, including interface refinements, expanded tutorials, and adaptive guidance to meet diverse user needs.

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DECLARATION OF COMPETING INTEREST

None.

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