

Implementing Artificial Intelligence to Enhance Academic Information Retrieval for Final Project Fulfillment: Case Study in Library and Information Science Diponegoro University Students

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ABSTRAK

Kecerdasan buatan sering kali mendapatkan pertanyaan dan kritik terkait keaslian informasi dan potensi plagiarisme. Mahasiswa Ilmu Perpustakaan dan Informasi, sebagai calon profesional, memiliki tanggung jawab yang besar dalam memahami dan menggunakan AI secara bijaksana. Penelitian ini bertujuan untuk menyelidiki secara mendalam fungsi AI dalam memenuhi kebutuhan informasi mahasiswa untuk tugas akhir mereka. Penelitian ini menggunakan metode penelitian kualitatif, dengan pendekatan studi kasus deskriptif, wawancara semi-terstruktur, pengamatan, dan analisis dokumen. Para peneliti menggunakan kerangka analitis Miles et al., yang mencakup reduksi data, presentasi, dan formulasi kesimpulan. Hasil penelitian ini menunjukkan bahwa terdapat dua peran, yaitu: peran pertama adalah AI membantu mahasiswa dalam *brainstorming* dan menentukan topik penelitian serta teori yang terkait dengan topik tersebut, dan peran kedua adalah memperoleh referensi dan penelitian sebelumnya sebagai bahan pertimbangan dalam melakukan penelitian. Mahasiswa terutama khawatir tentang potensi ketidakakuratan informasi yang dihasilkan AI, yang dapat menyebabkan plagiarisme dalam karya akhir mereka.

Keywords: tugas akhir; kebutuhan informasi; mahasiswa ilmu perpustakaan; peran AI

ABSTRACT

Artificial intelligence poses problems about the authenticity of information and the potential for plagiarism. Students of Library and Information Science, as prospective professionals, hold a significant responsibility in comprehending and employing AI judiciously. This study intends to thoroughly investigate the function of AI in fulfilling students' information needs for their final assignments. This study employed a qualitative research method, utilizing a descriptive case study methodology alongside semi-structured interviews, observations, and document analysis. Researchers employed the Miles et al.

analytical framework, which encompasses data reduction, presentation, and conclusion formulation. The results of this study indicate that there are two roles, which include: the first role is that AI assists students in brainstorming and determining research topics and theories related to those topics, and the second role is to obtain references and previous research as material for consideration in conducting research. Students primarily concern themselves with the potential inaccuracy of AI-generated information, which may result in plagiarism in their final work.

Keywords: *final project; information needs; library and information science students; role of AI*

INTRODUCTION

The swift advancement of artificial intelligence (AI) has emerged as a prevailing phenomena that is fundamentally transforming numerous facets of human existence, particularly within the domain of higher education. In an academic context, AI has become more instrumental, with accessibility through mobile phones and computers, alongside intuitive interfaces, rendering these apps exceedingly popular. Harmilawati et al. (2024) emphasizes AI's capability to deliver tailored feedback and to develop adaptive learning systems. Moreover, Putri et al. (2023) it underscores AI's role in the efficient management of students' time and its capacity to analyze extensive datasets to discern patterns and trends that elude human perception, positioning AI as a leader in delivering pertinent and precise information.

Yani (2024) stated that although AI has become an indispensable part of various academic tasks, including final projects in this 5.0 era, the ease and speed of finding information raise critical questions, such as how students should sort accurate and credible information, how to cite correctly according to scientific standards, and how to ensure the credibility of sources obtained from AI. The effective and efficient fulfillment of information needs is essential for academic success, the quality of learning, and the overall development of students. Therefore, an in-depth study on the role of AI in fulfilling students' information needs is highly relevant.

Numerous prior research exhibit analogous trends within the domain of information demands, but with varying emphases and approaches. The initial research was done by Wardani et al. (2024) comparable study examined the potential and challenges of artificial intelligence as a learning helper for FKIP students in fulfilling academic obligations. The employed methodology was qualitative, revealing that the majority of FKIP students engaged AI not alone for assignment completion but also to enhance their learning outcomes.

The second study by Setyawan et al. (2024) focused on enhancing students' abilities in writing scientific articles through the use of artificial intelligence (AI). This study utilized a quantitative methodology with a

participative framework to impart practical knowledge and training regarding the capabilities of AI, notably the ChatGPT application, in scientific writing. This study revealed a 25.8% enhancement in pupils' comprehension.

The third study was conducted by Hilal et al. (2024) on artificial intelligence as a source of motivation based on students' perspectives in completing their final projects. This study used a qualitative method with interviews to explore the role of AI as a source of motivation for students in completing their theses. The results of this study indicate that students who use AI feel more organized, have easier access to information, and receive constructive feedback.

Based on the three previous studies, it is known that research related to AI in the student domain has been conducted several times, but there has been no research focusing on the role of AI as a support for information needs. Effective and efficient fulfillment of information needs has a significant impact on student academic success, learning quality, and overall self-development. When students have simple and quick access to relevant and accurate information, they can learn more deeply, produce quality scientific work, and be better prepared to face future challenges. Writing final projects requires quick and simple access to information sources.

The researchers conducted preliminary interviews with students, almost all of whom were interested in using AI to support their academic activities. Andrade-Hidalgo et al. (2024) specifically highlighted the potential problem of plagiarism, which occurs when AI collects data from various sources without clearly citing those sources, thereby threatening academic integrity. This issue emphasizes the need for a deep understanding of how AI acts as an information provider and how to manage the risks of data misuse. In this context, the Library and Information Science Program at Diponegoro University focuses on information literacy and produces graduates who master the basic competencies of library science, information, and information technology, with a commitment to plagiarism-free scientific work (Miyseil & Wasisto, 2020). The topic makes students of this program

responsible for understanding the ethical and responsible use of AI as future professionals in the field of information.

This issue is in line with the objective of this study, which is to determine how AI can play a role in supporting library and information science students in completing their final projects. This study aims to comprehensively explore how AI contributes to supporting students' information needs, identify potential benefits and challenges that arise, and formulate recommendations for the effective and responsible use of AI in a student environment.

METHODS

This study adopts a qualitative method, which seeks to analyze and understand the meaning of a phenomenon holistically and deeply (Moleong, 2019). From various types of qualitative methods, this study chooses a descriptive case study. Case studies allow researchers to observe an activity closely, in this case, how final-year students utilize AI for their final assignment information needs. A descriptive approach was chosen to describe the role of AI in a real-life context.

The data sources used in this study are primary and secondary data. Primary data was obtained directly from informants through observation (direct observation of AI use) and interviews to gain in-depth insights. Secondary data was obtained indirectly, in the form of browsing history (*history browser*), proven by *screenshots* of the use of AI applications by informants.

The researcher used the purposive sampling technique to determine informants based on specific criteria relevant to the research objectives. The criteria selected were four library and information science students at Diponegoro University from the 2018-2021 cohort who used AI to assist in writing their thesis. The recruitment process began with social contact via WhatsApp to find potential informants and explain the research, which also served as initial observation. Data collection methods included covert observation, semi-structured interviews, and document study.

Data analysis methods were based on a three-step data analysis model, Miles et al. (2014) including: (1) data reduction, (2) data presentation, and (3) conclusion drawing. To ensure the reliability and validity of the research results, the researcher applied four quality criteria according to (1) Credibility: The researcher used data source triangulation by comparing the results of observations and interviews and member checking, validating the data collection results from the data sources. (2) Transferability: the researcher presented the findings in a clear and systematic manner with detailed and reliable descriptions. (3) Dependability: the researcher used peer review techniques to conduct an overall evaluation. (4) Confirmability, which is done by ensuring that all findings based on observational data and interview results are factual.

RESULTS

Analysis of AI Application for Students Artificial intelligence (AI) is a novel technology developed by humans to facilitate human needs and daily tasks. Likewise, for students, AI serves as a tool that can aid in many aspects of academic pursuits and daily living. According to multiple informants,

"In my view, AI should be utilized judiciously, for instance, to locate references that aid in assignments or theses. It is crucial to refrain from misusing it for unethical goals, such as cheating in examinations." (U)

"My perspective on AI is roughly aligned with these. In my view, AI is highly beneficial for students, particularly when they encounter difficulties with assignments or theses." (B)

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"My perspective on AI is intimately connected to them. In my view, AI is highly beneficial for students, particularly when they encounter difficulties with assignments or theses." (B)

Z's statement implies that a library and information science student should be attentive to the information provided by AI. The data obtained using AI is unverified and can be classified as raw data. Students of Library and Information Science at Diponegoro University possess experience in utilizing AI. All four informants indicated that they had utilized AI and comprehended it from their individual viewpoints. The accounts provided by the four informants are as follows:

“Indeed, I have. Artificial Intelligence is a computational technology that emulates human capabilities, including cognition, learning, decision-making, and problem-solving.” (U)

“Indeed, I have. To my knowledge, it is an artificial intelligence developed to assist us.” (Y)

“Indeed, frequently. In my view, AI is a technology that empowers machines to reason and aids humans in their tasks; for instance, ChatGPT may assist with information retrieval, writing composition, idea generation, and beyond.” (B)

“I possess. Artificial Intelligence is a technology developed to facilitate user interaction and deliver information that is clear and comprehensible in human language through advanced methodologies.” (Z)

The four statements provided by the informants indicate that students of Library and Information Science at Diponegoro University possess experience in utilizing AI and are capable of independently comprehending it. The four informants possess a unified perspective on AI, perceiving it as a technology designed to aid humans in their daily tasks in accordance with specific digital requirements. Artificial intelligence was developed to execute activities associated with human abilities, including cognition, learning, problem-solving, discourse, and interaction through digital applications.

Presently, technology has advanced swiftly and is readily available to pupils. Likewise, students can utilize AI by possessing a mobile device or computer with internet connectivity. This technology is accessible at any time and from any location, provided there is an internet connection. Students possess multiple methods to access AI, as elucidated by several informants as follows:

"I employ AI via online platforms such as Google Scholar, Mendeley, and ChatGPT for reference searches and writing assistance, in addition to utilizing AI functionalities on devices like Google Lens and Grammarly. I engage in campus-led training and undertake independent online research to comprehend the application of AI in library science. In my view, AI is really beneficial for learning and information management, provided it is utilized judiciously and not entirely depended upon." (U)

"It is, in fact, readily accessible. Artificial intelligence is ubiquitous, with several forms available, necessitating merely a device such as a cell phone or laptop." (Y)

"I typically utilize it on my phone or laptop, contingent with my requirements." (B)

"I visit the desired AI website and pose inquiries in colloquial language, akin to how I would address an individual. Subsequently, the AI comprehends my objective and dilemma." (Z)

These remarks indicate that students of Library and Information Science at Diponegoro University can utilize AI through mobile devices, such as smartphones or laptops with internet connectivity. The informants characterize 'access' as the means by which they acquire authorization to utilize AI apps. Presently, numerous AI applications are available for student use. Zahi elucidates several examples of utilized applications as follows:

"Typically ChatGPT, Bing AI, and Gemini." (Z)

These comments exemplify the applications of AI technology utilized by students, including ChatGPT, Bing AI, Gemini, Google Lens, and Grammarly. Students utilize ChatGPT, Bing AI, and Gemini for reference searches and assistance in composing final assignments, whereas Google Lens is employed

to gather information by capturing images of objects and subsequently retrieving relevant search results. The subsequent application is Grammarly, utilized by students to enhance the quality of their writing, especially in English. Students can employ various AI technology solutions to aid in their academic pursuits and personal tasks. A multitude of AI developers design applications customized to meet users' requirements and objectives. Students pursuing information science at Diponegoro University exhibit an interest in various forms of artificial intelligence. Their interest derives from the characteristics of the specified AI kinds and their roles pertinent to academic endeavors. Several informants noted students' interest in utilizing AI as follows:

"In my view, AI facilitates operations like reference searching, rendering them more efficient and time-saving. I must ensure that the responses align with the information I require." (U)

"This will assist me with duties such as information retrieval." (Y)

"It is quite functional, assisting me in swiftly locating material and structuring my thoughts, particularly while composing my thesis. I genuinely perceive the advantages." (B)

"It offers clarity; for instance, when I encounter ambiguous material, I consult AI for elucidation." (Z)

Several informants indicate that students are inclined to utilize AI for tasks such as expediting knowledge retrieval, enhancing comprehension, and validating acquired data. In summary, the researcher determined that students' interest in utilizing AI stems from their necessity for knowledge to locate references for their assignments or theses, as indicated by the interview responses. Students are drawn to AI not only for its accessibility and information retrieval capabilities but also for its user-friendly interface, which

is simple to master. One informant indicated that AI is user-friendly in the subsequent interview response:

“Indeed, AI is classified as a user-friendly application.” (Y)

This remark suggests that the AI applications utilized by students feature an intuitive user interface and a streamlined workflow, enabling users to optimize their engagement with AI. The intuitive nature mentioned here relates to students' capacity to comprehend from direct observation without much contemplation or reasoning. The study found in the subsection on students' employment of AI that its high accessibility, via mobile phones or computers connected to the internet, allows users to fully realize the intended benefits of AI. The users in this context are library and information science students at Diponegoro University who utilize AI as an information retrieval tool to fulfill their information requirements for assignments or theses. This discourse characterizes AI not alone as an information retrieval instrument but as an intuitive, commonly utilized, and favored resource among students. This trend signifies a substantial transformation in how pupils acquire knowledge, with AI emerging as the principal instrument for information retrieval.

DISCUSSION

The Function of AI in Ideation and Identifying Research Subjects

Previous statements from informants indicate their high proficiency in utilizing AI. Their adeptness with modern technology stems from their affiliation with Generation Z, individuals born and reared in a digital environment (McDonald et al., 2023). The researcher observed that all four interviewees utilize AI to assist with their daily duties and to locate necessary information. Students necessitate extensive knowledge from literature or research journals as reference materials for the primary objective of this course, which is the production of final projects or theses. Nevertheless, certain informants conveyed discontent with the outcomes of AI searches. The informants' comments suggest that AI does not entirely function as an

effective information retrieval tool for consumers. The knowledge sources, references, and opinions generated by AI are currently invalid, corroborating research findings that indicate AI outputs frequently demonstrate hallucinations (Oladokun et al., 2025).

Despite one informant indicating that AI was suboptimal for acquiring information, including unverifiable sources and perspectives, the informants continued to express interest in utilizing AI. The interest in employing AI stemmed from the necessity to satisfy informational requirements, since AI can offer several alternative perspectives pertinent to the research subject. AI assists in defining a problem pertinent to the research topic. This perspective aligns with Srivastava & Shetye (2024) assertion that AI tools can assist researchers in formulating precise hypotheses. Informants indicate that AI contributes to a comprehensive grasp of the research to be undertaken. The generative powers of AI offer researchers the advantage of obtaining an overview of trends and gaps in the research undertaken by their peers (Schryen et al., 2025).

Every student possesses a unique approach to utilizing AI. The initial phase involves identifying and analyzing the information sought by students, subsequently generating keywords derived from that information. The third stage involves organizing the information obtained from the search results. Artificial intelligence is employed to generate vocabulary and phrases for a thesis, in addition to identifying the title and subject of the research. Several informants indicated that the procedure for utilizing AI involves explicitly inputting the desired information based on their own needs, such as formulating a prompt. It is essential to highlight that not all pupils can differentiate between a prompt and a keyword. In this context, informants utilize AI to satisfy their informational requirements comprehensively and exhaustively. Upon acquiring the requisite information, it must be filtered or organized to ascertain which data can fulfill the informational demands of each informant.

The informants verify that the information acquired using AI aligns with their requirements. They assert that they verify the data's authenticity, juxtapose it with other literature, and modify it to align with their thesis topic. Informants employ essential research methodologies to evaluate the pertinence and veracity of information prior to utilizing it as a reference in their thesis composition. The information acquired is deemed suitable if the issues or inquiries posed by the informants have been addressed. The procedures to guarantee that the acquired information satisfies the informational requirements encompass revisiting the data, conducting more searches in reputable sources, and juxtaposing it with prior data to attain optimal outcomes. Certain informants review the information acquired from AI post-summarization due to the results being presented as bullet points. If the acquired information fails to satisfy the informational requirements, the search process is reiterated, and the inquiries are reformulated to enhance specificity.

Based on the responses of the four informants, one aspect of the theory of information needs, as posited by Afzal (2017) is the necessity to validate information for accuracy. This subchapter discusses the necessity of validating information to ensure its accuracy, as well as the application of AI-generated search results in the execution of final projects. All informants acquired results from information searches utilizing AI, and this data could assist in their thesis development. The outcomes of employing AI for information retrieval manifested as concepts for final projects and support in thesis composition.

The significance of AI in the exploration of prior theories and research was substantial

The informants utilized AI to conduct searches for literature reviews on prior theories or studies. Informants indicated that AI was employed to locate journals or papers pertinent to their research subjects. Researchers frequently utilize AI for the rapid execution of theoretical and prior study

searches (Agrawal et al., 2024). This is a continuation of the initial job, when AI was employed for brainstorming and identifying research subjects.

The knowledge acquired from AI is essential in constructing the thesis framework, identifying terminology for writing, and refining arguments in the final assignment in progress. Informants observed that the material retrieved by AI is not utilized in its original form; rather, it is reinterpreted and modified to align with the stylistic and formatting standards of their particular universities. Another informant indicated that the information acquired was lucid and comprehensible. Despite the utilization of AI, the informant corroborated the knowledge by additional study and direct citations from books and journals. Verification of information acquired from AI is essential because to the potential for bias in the data or prompts utilized for its training (Chang et al., 2024).

Following the acquisition and utilization of the data for the thesis, it was noteworthy that the informants corroborated the AI-generated information by engaging their supervisors. This was executed to authenticate the information and prevent plagiarism. Despite AI being regarded as the most sophisticated technology currently, the engagement of experts (humans) remains strongly advised, as human cognitive capabilities are still more nuanced and precise (Cohen et al., 2023). Measures to prevent plagiarism were implemented by rephrasing sentences based on the acquired information. AI indirectly aids in scientific writing. The function of AI in assisting students with their information requirements for final projects is evidenced by observations of search results and interviews concerning the utilization of AI in meeting these needs. AI programs can assist informants in composing their theses.

CONCLUSION

Research indicates that AI applications significantly assist library and information science students at Diponegoro University in their final projects, particularly in identifying keywords, enhancing sentence structure, selecting topics/themes, developing outlines, and sourcing theories and references. Artificial intelligence significantly aids students in their academic pursuits

and daily tasks, facilitated by accessibility via personal devices and a simple user interface, with applications such as ChatGPT, Bing AI, Gemini, and Grammarly being the foremost selections. It was discovered that pupils occasionally struggle to differentiate between keywords and prompts, adversely affecting the quality of information acquired. Consequently, students must authenticate knowledge obtained from AI by cross-referencing it with alternative sources to avert plagiarism and ensure its pertinence, thereafter confirming it through discourse or consultation with their academic advisors. In light of these findings, it is advisable for students to exercise greater caution in utilizing AI and to comprehend the distinction between keywords and prompts, which is essential for optimizing the efficacy of the information obtained. Future research should aim to broaden the field of inquiry into AI and information requirements.

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