



Exploring the Potential Utilization of Artificial Intelligence to Support the Implementation of Guidance and Counseling in Indonesian Schools

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Abstract. This literature review examines the potential use of artificial intelligence (AI) to enhance guidance and counseling services in Indonesian schools. The background highlights the significance of effective counseling in promoting students' well-being and academic success. The research objectives are to explore the benefits of AI in counseling, identify implementation challenges, and propose integration strategies in the Indonesian school context. The methodology involves an extensive literature review from 2010 to 2023, specifically focusing on Indonesian schools. The results indicate that AI technologies, such as chatbots, virtual assistants, and data analytics, hold great potential in providing personalized support, improving accessibility, and offering data-driven insights. However, ethical considerations, privacy concerns, and the need for adequate training and support pose challenges. The study underscores the importance of careful planning, collaboration between AI systems and human counselors, and ongoing evaluation for the responsible and effective use of AI in Indonesian school counseling services.

Keywords: Artificial Intelligence, Guidance and Counseling, Personalized Support, Chatbots, Virtual Assistants, Data Analytics

1 Introduction

In the era of rapid technological development, artificial intelligence (AI) has become a topic that has attracted attention in various fields, including education. One area that has great potential to utilize artificial intelligence is guidance and counseling in schools. Guidance and counseling have an important role in supporting students' personal and academic development, as well as helping them deal with various problems and challenges they face during their schooling. Savitri (2019) stated that the industrial revolution 4.0 brought challenges that could be turned into opportunities in the era of Disruption 4.0. Ririh, Laili, Wicaksono, & Tsurayya (2020) have conducted a comparative study and SWOT analysis of the implementation of artificial intelligence in Indonesia, as a characteristic of a new model of disruption in all areas of life. Zebua, Khairunnisa, Hartatik, Pariyadi, Wahyuningtyas, Thantawi, ... & Kharisma (2023) explain that the

phenomenon of artificial intelligence in the context of education is something completely new, innovative, and surprising. In other fields, especially as stated by Adha (2020) who found industrial digitalization affected employment and work relations in Indonesia.

It is not surprising that Endarto & Martadi (2022) analyze the potential for metaverse implementation in interactive educational media that has a non-generative direction. Indeed, the great benefits of artificial intelligence are very diverse, as Alimuddin, Juntak, Jusnita, Murniawaty, & Wono (2023) explain technology in education to help students adapt to the industrial revolution 4.0. The important thing about artificial intelligence in Indonesia according to Pasaribu & Widjaja (2022) leads to a strategic management perspective of human resources. In the context of implementing guidance and counseling in schools, the use of artificial intelligence can be an innovative and effective solution in providing personalized services and helping students achieve optimal development.

One of the crucial problems faced by Indonesia in implementing guidance and counseling services is the quantity and quality of counselors available in schools (Danim, 2012), causing the quality of guidance and counseling services to be less than optimal. In overcoming these problems, technology can be a solution that can be used. Previous research, such as that conducted by Huang (2022) and Indrasari, Marguin, & Hadianti (2022), has shown the potential for using artificial intelligence (AI) to support the implementation of guidance and counseling in schools. In this research, they analyzed various AI applications that can be used to improve the quality of guidance and counseling services. In addition, Evi's research (2020) highlights the benefits of guidance and counseling for elementary students, which shows the importance of these services at all levels of education. However, as highlighted by Kardina & Azwar (2022), there are still deficiencies in the application of AI in guidance and counseling in schools in Indonesia.

Therefore, this literature review research aims to explore the potential for using AI to support guidance and counseling services in schools in Indonesia. In this literature review research, we will analyze various reports on the use and impact of AI applications that can be used to support guidance and counseling services in schools. It is hoped that the results of this research can make a significant contribution to improving the quality of guidance and counseling services in schools in Indonesia.

2 Methods

This research method is a literature review that is carried out systematically. The steps followed in this study consist of:

1. Identification of research objectives: the purpose of this study was to explore the potential for using artificial intelligence (AI) to support the implementation of guidance and counseling in schools in Indonesia, as well as identify the challenges and limitations associated with its implementation.
2. Data collection: the data in this study were collected through a literature search that is relevant and related to the use of AI in guidance and counseling. A literature search

was conducted across various research databases between 2010 and 2023, with a particular focus on school settings in Indonesia.

3. Data selection and analysis: data obtained from the literature were selected based on predetermined inclusion criteria, such as relevance to the research topic and suitability for the context of schools in Indonesia. The selected data were then analyzed systematically to identify important findings related to the use of AI in guidance and counseling.
4. Development of findings: significant findings from the analysis of the literature are used to develop arguments and recommendations related to the use of AI in guidance and counseling in Indonesian schools.

In conclusion, this research method involves a structured and systematic literature review to explore the potential use of artificial intelligence in supporting the implementation of guidance and counseling in Indonesian schools. Important findings show that AI has great potential to improve guidance and counseling services by providing personalized support, increasing accessibility, and offering data-driven insights for decision-making.

3 Results and Discussion

Artificial Intelligence Opportunities in Guidance and Counseling in Schools

Artificial Intelligence (AI) can be an effective solution in guidance and counseling in schools by providing more personalized and effective services for students. AI can analyze data regarding student behavior, academic performance, and other factors to identify potential problems and provide appropriate interventions (Suryati & Salehudin, 2021). Nonetheless, it is important to note that the role of human counselors cannot be completely replaced by AI, instead AI is used as a tool to support and enhance the work of human counselors.

The role of guidance and counseling has important relevance in the educational context faced in the era of technology and artificial intelligence. Through a digital approach, applications based on artificial intelligence can be used in digital knowledge management at universities to increase system efficiency (Sedyono, Hasibuan, Setyawan, Harahap, & Darmawan, 2022). In addition, artificial intelligence also plays a role in preparing students for future careers with technology-based education (Zakaria, Sukomardojo, Sugiyem, Razali, & Iskandar, 2023). The concept of intelligence-based learning and digital technology management is also an important focus in the current education era (Uno & Umar, 2023; Cahyono, 2023). In the learning context, an intelligent tutor system based on artificial intelligence has been developed to provide learning recommendations to students (Maulana, 2021). In the era of the industrial revolution 4.0, learning strategies must also be adapted to face new challenges (Halimatussa'diyah, 2019).

However, it is important to consider that the use of technology, including artificial intelligence, must be accompanied by good management and upholding educational values. Character education remains relevant in the millennial era, and digital learning

requires proper reflection and adjustment (Suprayitno, 2020; Sanjaya, 2020). To optimize the benefits of artificial intelligence in guidance and counseling in schools, it is important to involve ongoing research and development and pay attention to clear regulations in its use (Suryati & Salehudin, 2021; Sedyono, Hasibuan, Setyawan, Harahap, & Darmawan, 2022; Zakaria, Sukomardojo, Sugiyem, Razali, & Iskandar, 2023).

Paving the Path to the Potential of Artificial Intelligence in Schools

Artificial intelligence (AI) can be applied in guidance and counseling in schools to increase the effectiveness of guidance and counseling services. One example of the application of AI in guidance and counseling is a chatbot, which can help students solve problems and provide suggestions. Chatbots can be integrated with existing guidance and counseling platforms in schools so that students can access these services online (Ayuni, Umaria, & Putri, 2021).

In the context of technology, the paradigm of religious counseling has also changed in facing the challenges of the Industry 4.0 era. An alternative approach is needed to maintain the relevance of religious counseling in Indonesian culture (Wahidin, 2021). In addition, the application of deep learning in the form of artificial intelligence is also a concern in learning, including in guidance and counseling, to increase the efficiency and effectiveness of learning (Raup, Ridwan, Khoeriyah, Supiana, & Zaqiah, 2022).

The use of chatbot-based interactive digital media has also been proven to improve students' science learning outcomes (Hasman, Nadrah, & Tahir, 2023). In another context, the use of neural networks in online news classification is also a relevant research topic (Khamidatullailiyah, 2022).

All of this literature shows that artificial intelligence and the use of chatbots in guidance and counseling have an important role in increasing the effectiveness of services and facing the challenges of the technological era. In addition, AI can also be used to analyze student data, such as academic and behavioral data, to assist counselors in making better decisions in providing guidance and counseling services. By analyzing this data, counselors can identify student problems and provide more appropriate and effective solutions (Hidayah, 2020; Bunu, 2016; Novaliyah, Fernandes, Wahyudiono, Olva, Suganda, Iksan, ... & Panessai, 2021; Septiana, 2019; Sulistiyo, Surarso, & Syafei, 2020).

The application of cognitive-behavioral cybercounseling in the era of the Industrial Revolution 4.0 has also become the focus of attention to assist counseling teachers in providing effective guidance and counseling services (Hidayah, 2020). The multicultural approach is also considered in the implementation of guidance and counseling in schools as a response to the cultural diversity of students (Bunu, 2016).

In addition, the use of expert systems in student guidance and counseling and the identification of problems for high school students using certainty factor methods and rule-based machine learning are also examples of the application of artificial intelligence in guidance and counseling (Novaliyah, Fernandes, Wahyudiono, Olva, Suganda, Iksan, ... & Panessai, 2021; Sulistiyo, Surarso, & Syafei, 2020). All of this research shows that the use of artificial intelligence and technology in guidance and counseling can provide significant benefits in improving service quality and providing better solutions for students.

The use of AI in guidance and counseling also has several challenges, such as privacy and student data security issues. Therefore, there needs to be clear policies and regulations on the use of AI in guidance and counseling in schools (Mansyur, Badrujaman, Imawati, & Fadhillah, 2020). In the context of online counseling, it is important to pay attention to the applicable code of ethics so that guidance and counseling services maintain professionalism and trust (Sari & Marjo, 2022). In addition, in digitizing Islamic education planning in madrasas, aspects of data security must also be considered to protect students' personal information (Ristanti, 2023). With clear policies and regulations, guidance and counseling with the use of AI can be carried out more safely and maintain student privacy,

The implementation of artificial intelligence (AI) in guidance and counseling in schools is faced with several challenges, both in general and in Indonesia. Some of the challenges faced in implementing AI in guidance and counseling in schools are the privacy and security of student data, limited technology, skills and knowledge, and dependence on technology (Daulay, Harahap, & Sinaga, 2022; Pohan, Yani, & Noviardi, 2023).

In facing the challenges of privacy and student data security, it is important to have clear policies and regulations on the use of AI in guidance and counseling in schools (Sari & Marjo, 2022). In addition, training and skills development is needed to ensure counselors and teachers can implement AI technology effectively (Atmarno, 2021). Challenges in the form of technological limitations can be an obstacle for schools that do not have sufficient budget to adopt AI technology in guidance and counseling (Hutfiyah, 2011). In addition, a good understanding of the online counseling code of ethics is required in the use of AI in guidance and counseling (Daulay, Harahap, & Sinaga, 2022; Sari & Marjo, 2022). In facing the challenges of dependence on technology, it is necessary to ensure that social interaction and empathy between students and counselors are maintained (Paramartha, Suranata, & Dharsana, 2022). By paying attention to these challenges, the implementation of artificial intelligence in guidance and counseling in schools can be more effective and beneficial for students.

Use of Artificial Intelligence in Guidance and Counseling in Schools

The use of artificial intelligence (AI) in guidance and counseling in schools can provide significant benefits for both students and counselors. The use of artificial intelligence in guidance and counseling in schools has the potential to increase the efficiency, accessibility, and effectiveness of guidance and counseling services, helping students in personal development, career decision-making, and their mental and emotional health (Widiasanti, Zahra, Sholikha, Waluny, & Najva, 2023; Andriani, Mulyana, Widarnandana, Armunanto, Sumiati, Susanti, ... & Dewi, 2022). Here are some ways to use artificial intelligence in guidance and counseling in schools:

1. Chatbot: one of the most common applications of AI in guidance and counseling is the chatbot. Chatbots can be integrated with existing guidance and counseling platforms in schools and provide access to students. Chatbots can respond quickly to student questions and problems, provide information about guidance and counseling services, and offer suggestions or strategies for dealing with problems faced by students (Iskandar, Parnawi, Sagena, Kurdi, & Fitra, 2023).

2. Student data analysis: AI can be used to analyze student data, both academic and behavioral. By utilizing machine learning techniques, AI can identify patterns or trends in student data that are difficult to detect manually. For example, AI can analyze psychological test data, academic history, or student behavior records to help counselors identify potential problems, discover individual student needs, and provide more personalized and appropriate services (Supadi & Hartati, 2022).
3. Recommendation system: AI can assist in providing recommendations to students regarding career options, study programs, or educational paths that match their interests and abilities. By analyzing data about student interests, academic performance, or other preferences, AI can provide more accurate and personalized recommendations. This helps students make the right decisions about their future and provides more effective guidance in the decision-making process (Syarifuddin & Utari, 2022).
4. Mental health monitoring: AI can be used to assist in monitoring students' mental health. Through sentiment analysis of students' texts or social media posts, AI can identify indications of mental health problems such as depression, anxiety, or bullying. With early warning from AI, counselors can intervene promptly and provide the necessary support to students (Putro, Widyaningsih, Englishtina, Nursanty, & Dema, 2023).
5. Service personalization: by leveraging AI, counselors can provide more personalized services to students. AI can assist in identifying student preferences, learning styles, or individual needs, and thus, allows counselors to design guidance and counseling programs tailored to the needs of each student (Azwar, 2023).

4 Conclusion

Based on this literature review, it can be concluded that the use of artificial intelligence (AI) has great potential to support the implementation of guidance and counseling in schools in Indonesia. In the context of this research, the application of AI in guidance and counseling aims to improve counseling practice, by providing personalized support, increasing accessibility, and providing data-driven insights for decision-making. However, some challenges need to be addressed, including ethical considerations, privacy concerns, and the need for adequate training and support. In addition, from the researchers' findings, there were only 9 (nine) pieces of literature directly related to the topic of artificial intelligence (AI) and guidance and counseling from 2010-2023, namely Ayuni, Umaria, & Putri, 2021; Atmarno, 2021; Daulay, Harahap, & Sinaga, 2022; Hidayah, 2020; Lynn, 2020; Mansyur, Badrujaman, Imawati, & Fadhillah, 2020; Novaliyen, Fernandes, Wahyudiono, Olva, Suganda, Iksan, ... & Panessai, 2021; Ririh, Laili, Wicaksono, & Tsurayya, 2020; Wahidin, 2021, December.

Therefore, important findings from this study emphasize the importance of careful planning, the collaboration between AI systems and human counselors, and continuous evaluation to ensure the effective and responsible use of AI in guidance and counseling services in schools in Indonesia, especially in research. the use of artificial intelligence in the provision of guidance and counseling services in schools. In efforts to

implement AI, there needs to be a continuous effort in evaluating its impact and effectiveness, as well as paying attention to ethical and privacy aspects related to the use of AI technology in the context of guidance and counseling. By paying attention to these matters, it is hoped that AI can become a useful tool in improving guidance and counseling services in schools in Indonesia.

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