JIHAD: Jurnal Ilmu Hukum dan Administrasi
Vol. 7 No. 4 Desember 2025
p-ISSN : 2745-9489, e-ISSNl 2746-3842
DOI: *10.36312/jihad.v7i4.9741/https://ejournal.mandalanursa.org/index.php/JIHAD/issue/archive*

The Role of AI in Facilitating Positive Social Adaptation to Improve Adolescent Mental Well-Being

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Article Info
Article history:
Received: 14 November 2025
Publish: 1 December 2025

Keywords:
Artificial Intelligence;
Sosial Adaptation;
Adolescent Mental Health.

Abstract
Abstract. This study aims to explore the role of artificial intelligence (AI) technology in facilitating social adaptation that positively impacts adolescents' mental well-being. In the digital age, AI has become an integral part of everyday life, especially among adolescents who are in a period of identity search and social exploration. This study used a descriptive quantitative approach with a survey method through a Likert scale-based questionnaire distributed online. Six main aspects were analyzed, namely AI's ability to facilitate social adaptation, generate self-confidence, impact on mental well-being, integration of psychological components, effectiveness in overcoming anxiety, and adolescents' level of trust in AI. Results showed that the AI was moderately effective in providing social and emotional adaptation support, with "positive impact on mental well-being" receiving the highest score (mean 3.83). However, adolescents' level of trust in the AI was low (mean 2.83), indicating the need for further development of a design approach that is more humanistic and sensitive to adolescents' psychosocial needs.

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1. INTRODUCTION

AI technology has now become an integral part of adolescents' lives, significantly impacting education, entertainment, and social interactions. This integration offers both opportunities and challenges, shaping how adolescents learn, engage, and socialize. The role of AI in education is increasingly important, particularly in terms of adaptive learning and personalized educational experiences. However, while AI offers significant benefits in enhancing educational and entertainment experiences, it also poses challenges that require careful attention and consideration. (Lai et al., 2023)

With the rapid development of technology in the digital age, adolescents face diverse social adaptation challenges due to the pervasive influence of AI-powered social media platforms. While these platforms are designed to increase connectivity, they often exacerbate social stress and mental health issues among adolescents. The algorithm-driven nature of social media can lead to increased anxiety, depression, and low self-esteem as adolescents strive to maintain an ideal online persona and navigate the constant influx of notifications and updates. (Ramadhanti et al., 2023) Therefore, in this environment, a nuanced understanding of the social dynamics that play a role in developing strategies to mitigate the stress they face.

The topic of mental well-being is becoming a critical issue due to the increasing prevalence of mental disorders such as anxiety and depression. This trend is linked to several factors, including societal changes, lifestyle changes, and increased exposure to

stressors such as academic pressure and social media. (Wood et al., 2016) Studies show that mental health issues affect a significant proportion of adolescents, with prevalence rates ranging from 10% to 20% globally. The importance of addressing these mental health challenges is underscored by their potential long-term impact on an individual's overall well-being and development.

AI technology has tremendous potential to enhance our social adaptation through applications based on psychological principles, offering tools for mental health support, personalized learning, and social skills development. However, while technological advancements offer many benefits, we must also be aware of the risks involved. One of these is the potential for technology dependence, which can impact our well-being. Furthermore, negative social comparisons arising from social media use can damage self-image and interpersonal relationships.

Research purposes

The purpose of this study is to analyze the extent to which the use of artificial intelligence (AI) technology can facilitate the social adaptation process that has a positive impact on adolescent mental health (Livingstone & Third, 2017). This study also aims to identify the most effective psychological components when integrated into an AI platform to support adolescents' ability to establish healthy social relationships and improve their overall mental well-being. In addition, this study focuses on exploring the interaction between adolescents and AI technology designed with a psychological approach, in order to understand how these dynamics can influence the social adaptation process and its contribution to improving the quality of adolescent mental health in today's digital era.

2. RESEARCH METHODS

This research used a descriptive quantitative approach. This approach was chosen to determine adolescents' perceptions and experiences regarding the role of Artificial Intelligence (AI) in supporting their mental well-being. Descriptive quantitative research allows researchers to quantify the data obtained from the questionnaire with simple statistical analysis.

In this study, researchers developed a 10-question questionnaire designed to measure adolescents' perceptions of the role of Artificial Intelligence (AI) in relation to mental well-being. The questions covered six main aspects:

1. AI's ability to facilitate social adaptation,
2. The role of AI in building confidence,
3. The positive impact of AI on mental well-being,
4. Integration of psychological components, such as emotional support,
5. The effectiveness of AI in helping to overcome anxiety, and
6. Adolescents' level of trust in the influence of AI in the context of mental health.

This questionnaire uses a 5-point **Likert scale**, starting from *strongly disagree* (1) to strongly *agree* (5), to measure the level of respondent agreement with each statement. The instrument was distributed online and anonymized, targeting adolescent respondents in Indonesia.

Data collection yielded a total of **12 responses**, which were then analyzed descriptively and quantitatively. The average score for each aspect was used to interpret respondents' perceptions of the role of AI in facilitating adolescent mental well-being.

3. RESULTS AND DISCOSION

To gain a deeper understanding of adolescents' perceptions of the role of artificial intelligence (AI) technology in supporting mental well-being and social adaptation, this study formulated six key aspects outlined through several questionnaire questions. Each

aspect was evaluated using a Likert scale to capture respondents' attitudinal tendencies and subjective experiences toward AI use.

The results for each aspect are then summarized in a table, which displays the percentage distribution of respondents at each scale level (1 to 5) and the average score as an indicator of the intensity of perception for each dimension. This presentation not only allows for the identification of the most dominant aspects perceived as beneficial but also opens up the opportunity for analysis regarding areas that may require further development in the design of a psychology-based AI platform aimed at adolescents. The following table presents a summary of the quantitative data from these six main aspects.

No	Key Aspects	Scale 1 (%)	Scale 2 (%)	Scale 3 (%)	Scale 4 (%)	Scale 5 (%)	Average Score
1	AI's ability to facilitate social adaptation	16.7%	8.3%	16.7%	41.7%	16.7%	3.33
2	The role of AI in building confidence	8.3%		50%	33.3%	8.3%	3.33
3	The positive impact of AI on mental well-being	8.3%		41.7%		50%	3.83
4	Integration of psychological components, such as emotional support	8.3% 16.7% 16.7%	8.3%	25% 50% 25%	58.3% 50%	 33.3% 8.3%	3.33
5	The effectiveness of AI in helping to overcome anxiety	16.7%		25%	50%	8.3%	3.33
6	Adolescents' level of trust in the influence of AI in the context of mental health.	33.3% 8.3%	41.7% 16.7%	 16.7%	 50%	25% 8.3%	2.83

Discussion

Based on the demographic data of respondents, the majority of research participants are in the age range of **18–21 years** (75%). As many as 8.3% of respondents are under 18 years old, and 16.7% others are over 21 years old. This composition shows that the late teen to early young adult age group is the main user who comes into contact with AI-based technology in their daily lives.

These findings are relevant to the psychosocial developmental characteristics of late adolescence, where identity search, more complex social relationships, and emotional distress begin to increase (Andrew et al., 2023). In this context, AI holds great potential as a social adaptation support tool, especially since this age group tends to be more open to exploring technology and seeking digital-based support. A previous study by Sethi & Jain (2024) also showed that the integration of AI designed with psychological principles that encompass skills such as self-awareness, emotion regulation, and empathy can provide personalized support and real-time feedback tailored to the needs of adolescents. (Baydili et al., 2025)

However, this data also indicates that AI design approaches must consider the unique needs of this age group, such as the need for social validation, identity exploration, and a sense of autonomy. Designs that are insensitive to these aspects risk exacerbating adolescent mental distress rather than helping it.

Based on the data obtained from the table, there are six main aspects assessed by respondents regarding the role of Artificial Intelligence (AI) in supporting adolescent mental well-being. Each aspect was assessed using a 1–5 Likert scale, with a score of 1 indicating strong disagreement and a score of 5 indicating strong agreement. The following is a description of each aspect:

1. **AI's ability to facilitate social adaptation** had an average score of 3.33, indicating that respondents tended to rate AI as having sufficient capacity to help adolescents adapt socially. The highest score was 4 (41.7%), indicating that the majority of respondents rated this aspect positively, although 16.7% still rated it low (1).
2. **The role of AI in building confidence also** obtained an average score of 3.33, with the most frequent score being 3 (50%). This reflects that respondents felt AI's role in building self-confidence was moderate, but still had potential for development.
3. **The positive impact of AI on mental well-being** has the highest score with an average of 3.83, indicating that the majority of respondents see AI as a tool with the potential to positively contribute to adolescent mental well-being. Fifty percent of respondents gave a very high rating (on a scale of 5), indicating considerable confidence in AI's impact in this area.
4. **Integration of psychological components, such as emotional support,** has an average score of 3.3. The assessment was fairly evenly divided, with 50% of respondents rating it at a 3 and 33.3% at a 4. This indicates that AI is considered quite capable of integrating psychological approaches, but is not yet fully optimal in meeting the emotional needs of adolescents.
5. **The effectiveness of AI in helping to overcome anxiety also** got an average score of 3.3, reflecting that AI's role in reducing anxiety is still considered sufficient, but not yet significant. Fifty percent of respondents gave it a score of 4, indicating that AI is starting to appear effective, but not yet optimal.
6. **Adolescents' level of trust in the influence of AI in the context of mental health shows** the lowest value with a score of 2.83. 75% of respondents rated AI on a scale of 1 to 3, with only 25% giving it a high score (4). This indicates that despite AI's immense potential, there is still skepticism or a lack of trust among adolescents in AI's ability to address their mental health issues.

4. CONCLUSION

Based on the research results, it can be concluded that AI technology has great potential in supporting adolescent mental well-being by facilitating social adaptation, providing emotional support, and increasing self-confidence, thereby improving interpersonal relationships and reducing loneliness (Lai et al., 2023). The most prominent aspect is the positive perception of the impact of AI on mental well-being in general, with the highest average score compared to other aspects. However, there is still doubt among adolescents about the effectiveness of AI in the context of mental health, as reflected in the low level of trust in this technology.

This fact indicates that despite the perceived benefits of AI, acceptance by adolescent users still needs to be strengthened. Therefore, future AI technology development needs to consider a more empathetic, personalized approach that aligns with the psychosocial developmental characteristics of adolescents. With a more inclusive and psychology-based design, AI has the potential to become a significant partner in maintaining and improving the mental health of the younger generation (Adesina et al., 2024).

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