



Implementation of ChatGPT Training to Enhance Artificial Intelligence Literacy Among First-Year Dental Students

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Abstract: This community service aims to enhance AI literacy among first-year dental students through a ChatGPT-based training program, resulting in improved understanding of AI concepts, practical skills in using ChatGPT, and critical awareness in assessing its outputs. A total of 58 students participated, with effectiveness measured through a pre-test and post-test Likert-scale questionnaire covering five indicators: understanding of AI and ChatGPT, application in learning, technical skills, critical validation, and academic confidence. Results showed improvements in all indicators, with the highest increase in technical skills (56.08%) and the lowest in critical validation (29.77%). One-way ANOVA confirmed significant differences among indicators ($F = 88.335, p < 0.05$). These findings demonstrate that short training can effectively strengthen students' AI literacy by improving knowledge, technical proficiency, and academic confidence. Nonetheless, the relatively lower gain in critical validation highlights the need for extended guidance in verifying ChatGPT outputs. This program can serve as a practical model for fostering digital literacy in higher education.

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Introduction

Prior to the implementation of this community service program, an initial need identification was conducted through informal academic observation and lecturer discussions at the Faculty of Dentistry, Universitas Kadiri. The results indicated that first-year dental students from the 2025 cohort were still adapting to university-level academic tasks, scientific reading, and the responsible use of digital tools. AI literacy has become an essential competence in higher education because students need to understand, use, and evaluate AI systems appropriately (Lintner, 2024). The ethical dimension of AI literacy is also important because students must be able to respond critically to AI-generated outputs in academic (Ng et al., 2024).. Although some students had begun to recognize ChatGPT as a tool for obtaining quick information, they had not yet received structured guidance on prompt formulation, source validation, and ethical use in academic writing. ChatGPT can support learning and academic writing, but its outputs may contain inaccuracies if they are not critically evaluated (Kasneci et al., 2023). Lecturers also expressed concern that unguided use of ChatGPT could lead to improper citation practices, weak source verification, and potential AI-based academic misconduct. Similar concerns have been reported in higher education because the use of ChatGPT requires clear academic guidance and responsible



implementation (Baig & Yadegaridehkordi, 2024). Therefore, this program was designed to provide early AI literacy training so that students could use ChatGPT ethically, critically, and productively as a learning support tool.

The development of artificial intelligence (AI) technology has advanced rapidly and brought significant influence to higher education (Baig & Yadegaridehkordi, 2024; Mah & Groß, 2024; Rachbauer et al., 2025). One of the most prominent innovations is ChatGPT, a language model based on the Generative Pre-trained Transformer architecture, which is capable of generating text, summarizing information, and assisting academic writing (Kasneci et al., 2023). The presence of ChatGPT creates substantial opportunities to support more interactive and independent learning (Gray & Boling, 2023; Suriano et al., 2025; Y. Wang, 2025), yet it also introduces new challenges (Almahasees et al., 2024; Dwivedi et al., 2023), particularly concerning answer accuracy, reference validity, and academic ethics in its use (Ng et al., 2024).

Various international studies indicate that students primarily utilize ChatGPT for brainstorming, summarizing, and completing simple tasks (Echiverri et al., 2025; Larson et al., 2024). However, its use for more complex academic activities, such as developing research ideas, writing scholarly articles, and validating results, remains relatively limited (Deng et al., 2025; J. Wang & Fan, 2025). This condition highlights a gap in AI literacy, particularly among first-year students (Bewersdorff et al., 2025; Bouzar et al., 2024), who generally possess technical proficiency but lack a comprehensive understanding of the functions, ethical dimensions (Fernández Galeote et al., 2023; Getenet et al., 2024), and strategic use of ChatGPT in academic contexts (Lyu & Salam, 2025; Strzelecki, 2024).

The Faculty of Dentistry at Universitas Kadiri responded to this need by organizing training sessions on the use of ChatGPT for first-year students. This program was designed not only to enhance conceptual understanding of AI but also to develop technical skills in creating relevant prompts, utilizing ChatGPT for summarization and research idea generation, as well as drafting simple academic articles. In addition, the training emphasized the importance of a critical attitude in verifying ChatGPT outputs against valid academic sources. Over a two-hour session, a total of 58 first-year students from the 2025 cohort of the Faculty of Dentistry participated in both theoretical instruction and hands-on practice using the free version of ChatGPT. Each participant was guided to produce a simple draft of a scientific article based on the textbook *Oral and Maxillofacial Surgery for the Clinician* as the final output of the training.

. This community service program aims to enhance AI literacy among first-year dental students through a ChatGPT-based training program, resulting in improved understanding of AI concepts, practical skills in using ChatGPT, and critical awareness in assessing its outputs. The program is expected to provide practical benefits for first-year students at the Faculty of Dentistry, Universitas Kadiri, while also serving as a replicable model of AI literacy training for other faculties.

Method

This community service activity was conducted at the Faculty of Dentistry, Universitas Kadiri. The participants consisted of 58 first-year students from the 2025 cohort, selected purposively. The target group was first-year students, as at the early stage of their studies, they need to be equipped with digital literacy and practical skills in utilizing ChatGPT for academic activities. This selection aligns with previous research findings that



emphasize the importance of fostering AI literacy among students from the outset of their academic journey (Kasneci et al., 2023).

The community service program was implemented through four structured stages: planning, training implementation, hands-on practice, and evaluation. The planning stage included identifying students' needs, preparing training materials, and designing an evaluation instrument. This structured design is relevant because AI literacy requires guided learning to help students understand, use, and evaluate AI appropriately (Lintner, 2024). During the implementation stage, students were introduced to basic AI concepts, the academic functions of ChatGPT, and ethical considerations in using generative AI. Ethical awareness is essential because AI literacy includes cognitive, behavioural, affective, and ethical dimensions (Ng et al., 2024). The activity continued with guided hands-on practice, where students used ChatGPT to summarize learning materials, generate ideas, and prepare simple academic drafts. Guided practice is necessary because ChatGPT can support learning, but its outputs require critical evaluation to ensure accuracy and responsible academic use (Kasneci et al., 2023).

The practical session focused on the guided use of ChatGPT to support simple academic tasks, including summarizing learning materials, generating initial research ideas, and preparing a simple academic draft based on selected materials from *Oral and Maxillofacial Surgery for the Clinician*. Students were also directed to compare ChatGPT-generated responses with credible academic sources to avoid uncritical dependence on AI-generated content. This approach enabled students to gain practical experience in using ChatGPT as a learning support tool rather than as a substitute for academic reasoning. The use of generative AI in academic settings requires ethical awareness and responsible implementation (Ng et al., 2024). Practical AI-based learning activities can help students develop initial operational skills when accompanied by clear academic guidance (Dwivedi et al., 2023).

To assess the effectiveness of the training, a Likert-scale questionnaire was employed using a pre-test and post-test design. The instrument comprised five key indicators: understanding of AI and ChatGPT, application in learning, technical skills, critical evaluation and validation of results, as well as confidence and academic integration. The effectiveness of the training was measured using a Likert-scale questionnaire ranging from 1 to 5, where a score of 1 indicated "not understood at all" and a score of 5 indicated "fully understood." The instrument consisted of ten questions grouped into five main indicators, as illustrated in Figure 1. The evaluation instrument was reviewed through expert judgment to ensure item relevance, clarity, and alignment with the training objectives. Cronbach's Alpha reliability testing was not conducted because the instrument was used as a practical evaluation tool for this community service program.



Figure 1. The evaluation instrument consisted of five main indicators.



The development of this instrument was guided by digital literacy evaluation practices in higher education, which emphasize the clarity of indicators and their alignment with the objectives of the training (Rachbauer et al., 2025). The data were analyzed in two stages. The first stage employed descriptive analysis, consisting of calculating the mean scores of the pre-test and post-test for each indicator, the absolute increase, and the percentage increase. The results were then visualized in the form of tables, bar charts, radar charts, and pie charts of response distributions to illustrate shifts in students' levels of understanding.

The second stage applied inferential analysis using a one-way analysis of variance (One-Way ANOVA). This test was conducted to determine whether there were significant differences in students' levels of understanding across the five measured indicators. The level of significance was set at $\alpha = 0.05$. If the p-value was less than 0.05, it was concluded that the differences in mean scores among the indicators were statistically significant. ANOVA was chosen as it is appropriate for analyzing mean differences across more than two dependent variable groups measured in educational research. (Samngamjan et al., 2024).

Result and Discussion

Understanding of AI and ChatGPT

The implementation of the ChatGPT-based training program began with the delivery of material on the basic concepts of artificial intelligence, the academic functions of ChatGPT, and ethical considerations in using generative AI. This session provided students with initial conceptual understanding before they participated in hands-on practice. Documentation of the material delivery session is presented in Figure 2.



Figure 2. Delivery of ChatGPT training material to first-year dental students.

The activity continued with guided hands-on practice, where students used ChatGPT to summarize learning materials, generate initial academic ideas, and prepare simple academic drafts. This practice session was designed to strengthen students' operational skills while introducing the importance of validating AI-generated outputs. Documentation of the guided practice session is presented in Figure 2.



Figure 3. Guided hands-on practice using ChatGPT for academic learning activities.

The pre-test results showed a mean score of 2.954, which increased to 4.247 in the post-test, reflecting a difference of 1.293 points. The percentage increase was 43.77%. Figure 4a illustrates that the initial distribution was predominantly in the “low understanding” and “moderate understanding” categories, whereas Figure 4b demonstrates a shift toward the “good understanding” and “excellent understanding” categories.

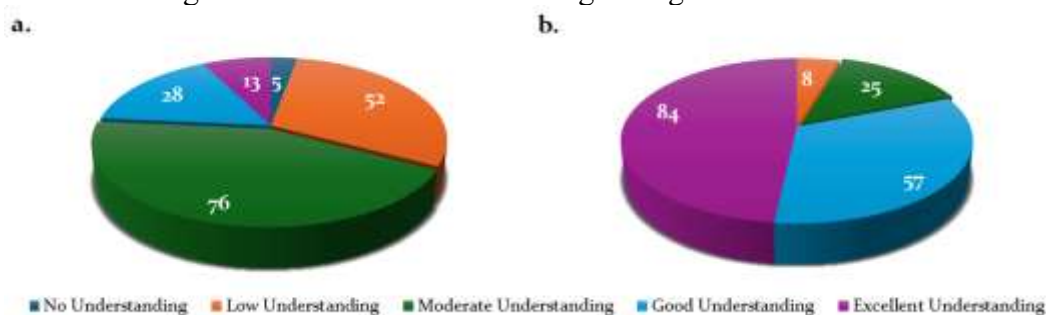


Figure 4. Diagram of Understanding of AI and ChatGPT: (a) Pre-test, (b) Post-test.

The findings indicate a notable improvement in students’ understanding of the fundamental concepts of AI and ChatGPT. The mean pre-test score of 2.954 increased to 4.247 in the post-test, representing a 43.77% increase (Figures 4a–4b; Figures 9–10). The shift in response distribution from the “low understanding” category toward the “good understanding” and “excellent understanding” categories demonstrates that first-year students were able to distinguish AI from conventional digital applications and recognize its roles as well as the ethical considerations of its use. This improvement is consistent with the findings of (Chee et al., 2024), which highlight AI literacy as a crucial foundation for building technology-based academic skills in higher education.

Utilization of ChatGPT for Learning

For this indicator, the mean pre-test score was 3.268, which increased to 4.595 in the post-test, showing a difference of 1.328 points and a percentage increase of 40.63%. Figure 5a illustrates that the pre-test responses were predominantly in the “moderate understanding” category, while Figure 5b shows that most participants shifted to the “excellent understanding” category.”

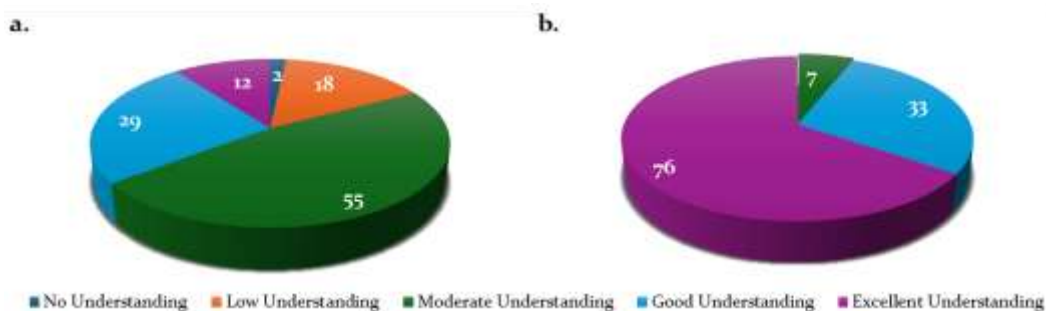


Figure 5. Diagram of ChatGPT Utilization for Learning: (a) Pre-test, (b) Post-test.

The indicator of ChatGPT utilization for learning also demonstrated a significant improvement. The mean score increased from 3.268 to 4.595, with a percentage gain of 40.63% (Figures 5a–5b; Figures 9–10). Most students who were previously in the “moderate understanding” category shifted to the “excellent understanding” category. These results indicate that students not only used ChatGPT as a search assistance tool but were also able to optimize its use for summarizing lecture materials and generating research ideas. This finding is consistent with (Echiverri et al., 2025; Lyu & Salam, 2025), who reported that ChatGPT can support self-directed learning by providing convenient access to information and facilitating the development of academic ideas.

Technical Skills in Using ChatGPT

The mean pre-test score was recorded at 2.891, increasing to 4.512 in the post-test, with a difference of 1.621 points. The percentage increase reached 56.08%, the highest among all indicators. Figure 6a shows that the pre-test responses were largely concentrated in the “moderate understanding” category, whereas Figure 6b demonstrates that the majority shifted to the “excellent understanding” category.

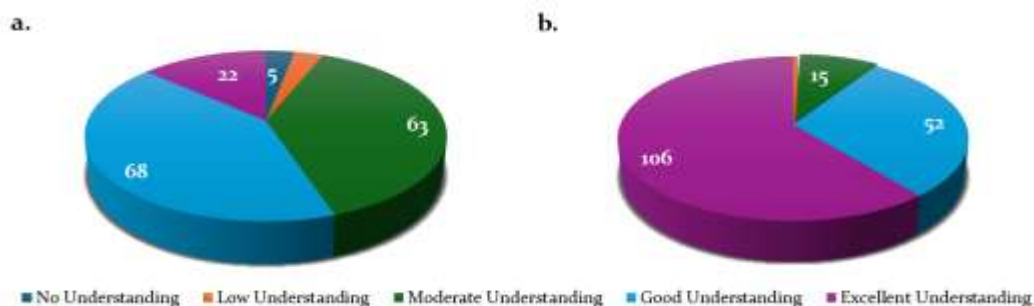


Figure 6. Diagram of Technical Skills in Using ChatGPT: (a) Pre-test, (b) Post-test.

The highest improvement was observed in the technical skills indicator. The mean pre-test score of 2.891 increased to 4.512 in the post-test, representing a 56.08% increase (Figures 6a–6b; Figures 9–10). Most students who were initially in the “moderate understanding” and “low understanding” categories shifted to the “excellent understanding” category. These results suggest that students were able to quickly acquire technical skills, such as formulating effective prompts, drafting simple articles, and using ChatGPT to prepare reports or presentations. (Dwivedi et al., 2023) noted that technical skills in AI usage are more readily attainable because they are applicable in nature and can be directly practiced, in contrast to critical skills that require a longer reflective process.

Improvement in Critical Literacy and Validation of ChatGPT Outputs

This indicator recorded a mean pre-test score of 3.534 and a post-test score of 4.586, reflecting an increase of 1.052 points or 29.77%. Figure 7a shows that the initial distribution

was relatively balanced. In contrast, Figure 7b demonstrates an increase in the number of respondents in the “excellent understanding” category, although not as substantial as in other indicators.

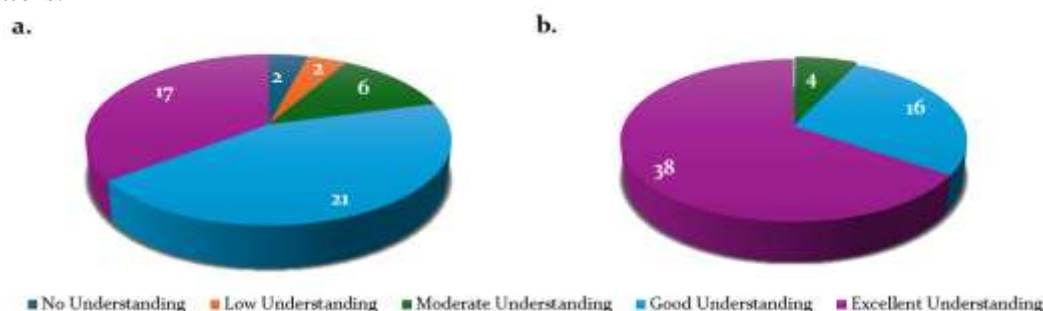


Figure 7. Diagram of Improvement in Critical Literacy and Validation of ChatGPT Outputs: (a) Pre-test, (b) Post-test.

The critical literacy and validation indicator recorded the lowest improvement. The mean pre-test score of 3.534 increased to 4.586 in the post-test, reflecting a 29.77% increase (Figures 7a–7b; Figures 9–10). Although the number of respondents in the “excellent understanding” category increased, its proportion remained lower compared to other indicators. This finding suggests that students still face challenges in verifying ChatGPT outputs against legitimate academic references. These results are consistent with (Baig & Yadegaridehkordi, 2024; Dwivedi et al., 2023), who emphasize that critical literacy requires habituation through more extensive academic experiences, such as article writing, data-driven research, and citation practice.

Confidence and Academic Integration

The mean pre-test score for this indicator was 3.328, which increased to 4.431 in the post-test, showing a difference of 1.103 points and a percentage increase of 33.14%. Figure 8a indicates that the “good understanding” category dominated the pre-test responses, whereas Figure 8b demonstrates a significant increase in the “excellent understanding” category.

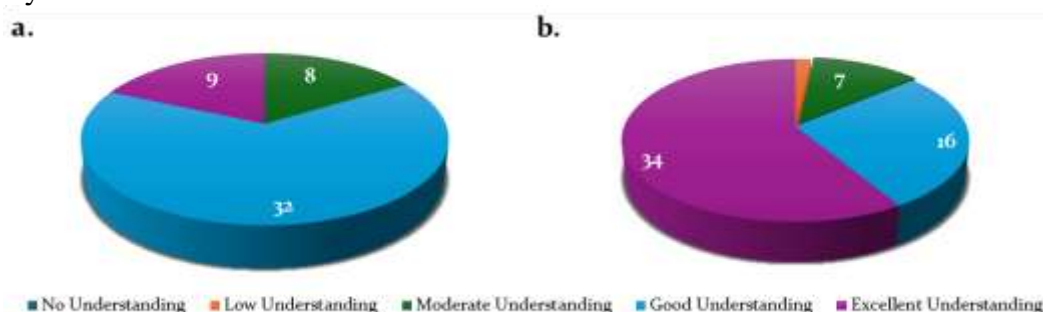


Figure 8. Diagram of Confidence and Academic Integration: (a) Pre-test, (b) Post-test.

Students’ confidence in integrating ChatGPT into academic activities also showed an improvement. The mean pre-test score of 3.328 increased to 4.431 in the post-test, representing a 33.14% increase (Figures 5a–5b; Figures 6–7). The distribution of responses indicated an increase in the “excellent understanding” category, suggesting that students felt more confident in using ChatGPT to support their coursework. (Bandura, 1997; Bećirović et al., 2025; Kurbanoglu et al., 2006). Have demonstrated that direct practical experiences with AI play a crucial role in enhancing students’ self-efficacy within the context of digital learning.



Average Pre-test and Post-test Scores

Figure 9 shows that all indicators experienced improvement. The pre-test scores ranged from 2.891 to 3.534, while the post-test scores increased to the range of 4.247 to 4.595. The differences varied between 1.052 and 1.621 points, with the greatest increase observed in technical skills.

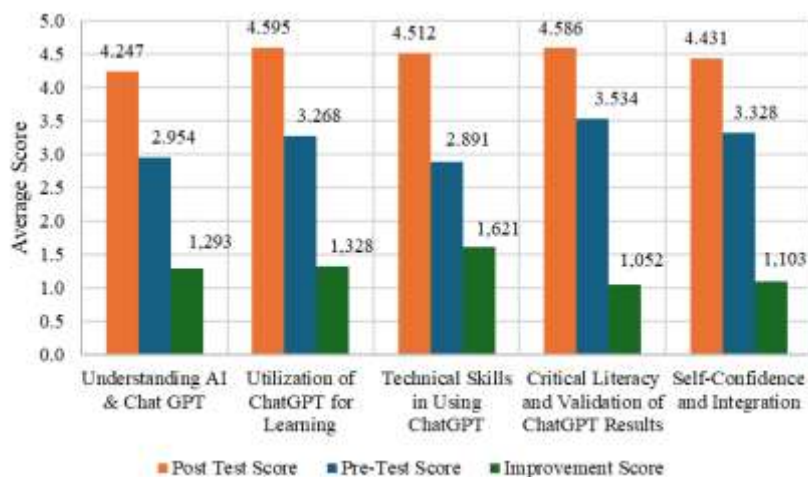


Figure 9. Bar Chart of Average Scores Across All Indicators.

Percentage Increase

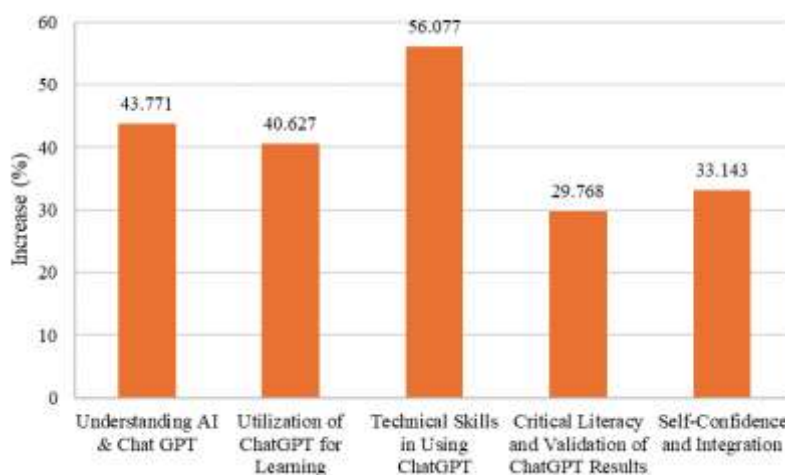


Figure 10. Bar Chart of Percentage Increase Across All Indicators.

Figure 10 presents the percentage increase for each indicator. Technical skills recorded the highest improvement (56.08%), followed by understanding of AI & *ChatGPT* (43.77%), utilization for learning (40.63%), confidence & academic integration (33.14%), and the lowest in critical literacy & validation (29.77%).

ANOVA Analysis

Table 1. Results of One-Way ANOVA Among the Five Indicators.

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	4,092	1,000	4,092	88,335	$1,35 \times 10^{-5}$	5,318
Within Groups	0,371	8,000	0,046			

The One-Way ANOVA result showed an F-value of 88.335 with a p-value of 1.35×10^{-5} , indicating a statistically significant difference in students' AI literacy scores before and after the *ChatGPT* training program. Descriptively, technical skills showed the highest



improvement at 56.08%, while critical literacy and validation showed the lowest improvement at 29.77%. This pattern indicates that the training was more effective in improving operational competence than critical evaluation competence. Technical skills increased sharply because students practiced ChatGPT use through guided, step-by-step, and procedure-oriented activities. This practical approach was consistent with the learning context of dental students, who are generally familiar with structured, demonstrative, and procedure-oriented learning activities. The core implementation session within this structured program was sufficient to introduce the operational use of ChatGPT, including prompt formulation, response generation, and simple academic drafting, but it was not sufficient to fully develop students' critical ability to evaluate AI-generated outputs. In contrast, critical literacy and validation require more complex academic abilities, including source verification, citation assessment, factual checking, and evidence-based reasoning. Critical AI literacy also involves cognitive, behavioural, affective, and ethical dimensions that require continuous academic practice (Ng et al., 2024). ChatGPT can support learning, but its outputs require careful evaluation because generative AI may produce inaccurate, unsupported, or unreliable information (Kasneci et al., 2023). Therefore, students need continuous academic practice in scientific reading, citation exercises, and source validation to strengthen critical AI literacy. Higher education studies also emphasize that ChatGPT implementation requires structured pedagogical guidance to reduce misuse and strengthen responsible academic practice (Baig & Yadegaridehkordi, 2024).

This program provides both theoretical and practical contributions. Theoretically, the findings support the view that AI literacy should include conceptual understanding, technical competence, ethical awareness, and critical validation, not merely the ability to operate AI tools (Ng et al., 2024). The improvement across all indicators also confirms the importance of early AI literacy development in higher education (Lintner, 2024). Practically, the program helped students use ChatGPT to summarize learning materials, generate ideas, and prepare simple academic drafts. However, the low improvement in critical literacy and validation at 29.77% indicates the need for continuous follow-up by the Faculty of Dentistry, Universitas Kadiri. AI literacy should be integrated into structured academic activities, such as information literacy, academic writing, or new student orientation programs. This integration is important because ChatGPT can support learning, but its outputs still require source validation, citation checking, and ethical evaluation (Kasneci et al., 2023). Therefore, continuous institutional guidance is needed to strengthen students' responsible and critical use of AI in academic contexts.

Conclusion

The training on the use of ChatGPT for first-year students at the Faculty of Dentistry, Universitas Kadiri, proved effective in enhancing AI literacy across five key aspects. The pre-test and post-test results indicated improvement in all indicators, with the highest achievement in technical skills (56.08%) and the lowest in critical literacy and validation (29.77%). These findings demonstrate that short training programs combining theory and practice can effectively improve students' basic understanding, technical skills, and confidence in using ChatGPT for academic purposes. However, critical abilities in verifying and validating ChatGPT outputs still require further guidance. Practically, this activity provided students with digital literacy skills aligned with their academic needs. Theoretically, it contributes to the development of AI training models in higher education. Therefore, this



program can serve as a replicable example for other faculties to foster AI literacy that balances technical competence, ethics, and academic validation.

Recommendation

Future programs should formally integrate ChatGPT training into the curriculum, information literacy courses, academic writing activities, or structured orientation programs for new students at the Faculty of Dentistry, Universitas Kadiri. This integration is needed to make AI literacy a continuous academic competence, not a one-time activity, because AI literacy requires cognitive, behavioural, affective, and ethical development (Ng et al., 2024).

Future training should emphasize source validation, citation checking, academic integrity, and ethical use of AI-generated content. Such guidance is important because ChatGPT can support learning, but its outputs still require critical evaluation and responsible academic use (Kasneji et al., 2023). Evaluation should also combine quantitative and qualitative methods, such as questionnaires, interviews, focus group discussions, or reflective assignments, to assess the program more comprehensively.

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