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Ethics and Competence Analysis of AI Usage Among Higher Education Students in Bandung Indonesia

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Abstract. This research aims to conduct a comprehensive assessment of students' AI competency levels in Bandung, using the AI Competency Framework for Students from UNESCO as its primary foundation. Employing a quantitative approach with a descriptive survey method, the research instrument was distributed to students from various universities in Bandung. The findings indicate that while students possess a strong ethical foundation (Ethics of AI mean score 3.12), there are significant weaknesses in the Human Centered Mindset (2.94) and AI Techniques & Applications (2.98) dimensions. The AI System Design dimension shows an adequate score (3.01), yet has not reached its maximum potential. The analysis also identified differing AI usage patterns among student demographic groups. This study found that students' ethical awareness aligns with national (UU PDP) and global (GDPR) regulations, but a critical implementation gap exists. This gap suggests that students do not yet fully possess the practical skills and systematic understanding necessary to meet the demands for accountability and human oversight emphasized by advanced regulations such as the Circular Letter of the Minister of Communication and Informatics and the EU AI Act. Thus, this research provides an empirical basis for policy recommendations aimed at developing a more holistic and balanced curriculum, in order to prepare students to be not only technically competent but also ethically responsible users of artificial intelligence.

Keywords: AI Ethics, AI Competency, AI Education, Policy Recommendations

1. Introduction

Rapid development of artificial intelligence (AI) has transform various sector, include higher education where is increasing integrate in to learn, research and academic practice (Ahmed et al., 2024; Eairheart & Azimzadeh, 2025). Tool such ChatGPT offer significant potential enhance learn experience through personalization and creativity. However also raise concern relate critical thinking overreliance and academic integrity (Lin & Chen, 2024; Schaeffer et al., 2024; Chavez et al., 2024). These dynamic highlight need balance technologic advancement with ethic aware and social responsibility in AI adoption (Flores-Viva & García-Peñalvo, 2023).

Previous study have begun examine AI adoption in education though find reveal notable challenge. Ayem et al. (2024) report that student Yogyakarta despite demonstrate aware AI, express skepticism toward institutional regulation signal gap between policy and implementation. Kesuma & Fransen (2025) evaluate AI literacy among computer science

student using Meta AI Literacy Scale (MAILS) and found insufficient technic competence, particular AI relate development. Other research emphasize both opportunity and risk AI in education, include potential improve creativity, personalization and efficien while simultaneous posing risk misuse and ethical dilemma (Lin & Chen, 2024; Chavez et al., 2024; Flores-Viva & García-Peñalvo, 2023). Despite these contribution few study have provide comprehensive measurement AI ethics and competence among student particular in Bandung as one of Indonesia major higher education center. This represent significant gap in exist research.

Response this challenge both national and international regulation have develope promote responsible AI use. Domestical policy such Law No. 27 of 2022 on Personal Data Protection (UU PDP) and Circular Letter of the Minister of Communication and Informatics No. 9 of 2023 emphasize accountability, transparence and ethical safeguard in AI adoption (Sherill & Wiraguna, 2025; Wendur, 2024). Similar the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) has issue guideline on use of generative AI higher education, highlight the importance fostering AI literacy. Global framework as General Data Protection Regulation (GDPR) and the EU AI Act underscore the urgence of aligning AI practice with ethical and human centered principle (Mienye & Swart, 2025; Temper et al., 2025). These initiative underline the press need for empirical research to evaluate actual competency of student ensure that policy are effectively translate into practice.

Give this background purpose of this study is conduct a comprehensive assessment of ethics and competence of AI usage among higher education student in Bandung. This research employ a quantitative approach using UNESCO AI Competency Framework for Students as it foundation. Specific this study seek answer following research questions: (1) How is the distribution of AI competency levels among university students in Bandung based on the UNESCO AI Competency Framework for Students? (2) What is the profile of AI usage (frequency and purpose) among different user groups? (3) How do the findings compare with national and international regulations?. The finding expected provide valuable insight for higher education institution and policy maker in design curriculum and policy prepare student not only to master AI technology but also apply it responsibly and ethically.

2. Literature Review

2.1 AI Competency Concepts and Frameworks

Challenge and opportunity presente AI have prompt a significant shift in definition of competency in digital age. AI literacy and AI competency now understood as move further from just technic skill and knowledge to incorporate way in AI interface with the social world. Chiu, et al. (2024) make distinction between the two, where literacy is knowledge and skills what skill and competency is the ability to apply that knowledge ethically, responsibly, and with confidence how well. Supporting perspective is research from Flores-Viva & García-Peñalvo (2023) which that AI must serve to augment human ability not replace them. AI Competency Framework for Students developed by UNESCO, also serve as reference in the book Guidelines for the Use of Generative AI in Higher Education Learning publish by Indonesian Ministry of Education, is grounded on this approach. UNESCO framework address four critical component, Human centered Mindset, Ethics of AI, AI Techniques & Applications, and AI System Design. Framework is further reinforce by reseach conduct by Okada, et al. (2025) with CARE-KNOW-DO model of pedagogy in which AI competency is view as multifaceted blend action (DO) understanding (CARE) and application (KNOW). Other research Lin, et al. (2025) and Kesuma & Fransen (2025) explicit use this framework or derivative analyze student competency, demonstrating it validity and relevance in empirical research. UNESCO framework provide a ideal tool for comprehensive evaluating student AI competency.

2.2 Review of Research on AI Use in Educational Environments

The application of AI technology in education environment has been ongoing topic study with it pros and cons being clear articulate. On the upside, Meiriza, et al. (2024) highlight AI application significant improves interest and motivation in Generation Z learners. Ridwan, et al. (2024) also demonstrate the effective of participatory training in raising student digital competence with use of AI tool. These advantage also corroborate by Eairheart & Azimzadeh (2025) who found AI increases academic performance, and Jia & Tu (2024) who note AI enhances self efficacy in learners, which has indirect positive correlation with critical thinking. On flip side, there is no shortage fundamental issues need attention. Chavez, et al. (2024) and Ahmed, et al. (2024) study issues of reliance AI tool, plagiarism academic dishonesty, and academic integrity from the faculty perspective. Other studies describe AI technology as doubleedg sword highlight ethical concern as algorithm bias privacy issues and lack of transparency (Schaeffer, et al. 2024). There also a gap in competency which student possess in term of technical skill but lack in ethical skill (Lin, et al. 2025). Similarly Kesuma & Fransen (2025) found that while student have a good conceptual understanding they still have significant weakness in technical ability to develop AI. This gap is visible demographical with research by Balabdaoui, et al. (2024) and Hornberger, et al. (2023) finding that AI competency varies across discipline and technical background. Finally, research by Romaniuk & Łukasiewicz-Wieleba (2024) and Ayem, et al. (2024) show perception gap between lecturer and student well as student doubt about clear institutional regulation.

2.3 Review of Relevant AI Regulations

Because AI used so much and raise so many ethical question, many government and international organization have come with rules for how use it. Law No. 27 of 2022 on Personal Data Protection (UU PDP) is main law in Indonesia that protect people personal data. According to study by Sherill & Wiraguna (2025), this law exist to protect rights of data subjects and make the law clear. However also found a reverse privacy paradox, where student data protection practices are higher than their formal understanding of the rules. and affirm that implementation of AI must comply with the principles of Intellectual Property Rights protection as stipulate by current legislation (Wendur, 2024). General Data Protection Regulation known as GDPR and EU AI Act are two important set rule that apply around world. GDPR is now global standard stress need clear approval, information anonymous and ability data subject ask for their infrmation delete (Mienye & Swart, 2025). The studie conduct by Dotan et al. (2024) and Schaeffer et al. (2024) emphasize that compliance with regulation must be regard as dynamic process for risk management instead merely a checklist. EU AI Act on the other hand, use a riskbased approach put AI use into risk categori such unacceptable, high, limited, and minimal risk and regulating it according. This framework stress how important is for AI system be open responsible and overseen by people (Temper et al., 2025). However, research indicate that practical enforcement these restriction might be difficult due to uncertainti in wording exemplified by description of manipulative techniques (Zhong, et al., 2024).

2.4 Research Gap

Even though application of AI education has garnere international attention there is a sizable research deficit as the literature analysis above make clear. The vast majority current research either measure particular facet of AI competency, like technical understanding (Kesuma & Fransen, 2025; Lin, et al., 2025), or concentrate on broad examination of AI potential and problem (Ahmed et al., 2024; Lin, et al., 2024). There also research highlight the need for clear regulation and ethis (Ayem, et al., 2024; Mienye & Swart, 2025). However Ayem, et al. (2024) and Romaniuk & Łukasiewicz-Wieleba (2024) found that a gap between student awareness

and availability of clear guidance at institutional level. Empirical data that specifical measure the entire dimension of student AI competency holistical including ethic, technical skill, and a humancentric mindset and direct compare them with principle contained in national (UU PDP SE Kominfo) as well international regulation (GDPR EU AI Act) is very limited. This study aim to fill gap by providing valid and comprehensive data from student in higher education institution in Bandung. The finding expected to provide a strong basis for education institution to develop relevant and measura policy in facing AI era thereby bridging gap between conceptual understanding and practical implementation.

3. Method

3.1 Reasearch Design

This study employed a quantitative descriptive survey design to evaluate the ethical awareness and competence of AI usage among higher education students in Bandung. The survey approach was selected because it enables the systematic collection of numerical data that represent patterns, trends, and variations in AI competency across demographic factors such as gender, academic level, and field of study. This methodology align with other research endeavors that seek to assess AI proficiency within certain demographic (Lin et al., 2025; Kesuma & Fransen, 2025). This design align with research objective, which focus measuring distribution of competencies and usage profile base on UNESCO AI Competency Framework for Students. Research process include three key stages, instrument development, data collection, and analysis. Structure questionnaire was adapte from UNESCO framework to capture student selfassess AI capability across four dimensions is Human-Centered Mindset, Ethics of AI, AI Techniques & Applications, and AI System Design. Data were collected through an online survey distributed across universities in Bandung, ensuring broader reach and efficiency. The responses were analyzed using descriptive statistics to summarize competency levels and usage patterns, while also allowing comparisons between demographic subgroups. This approach provides empirical insights that are useful for both academic discussion and policy formulation in higher education.

3.2 Reasearch Instrument

Questionnaire design to assess student AI proficiency base on UNESCO AI Competency Framework for Students serve research tool. This framework offer comprehensive foundation for assess AI capability in number of area and line with Indonesia national education requirement (Okada et al., 2025). Tool which three primary aspect created gather data in methodical manner. Initial, university, education level, grade level, and gender are among demographic information gathere first portion. The respondent AI usage profile, particularly the frequency and intent of AI use in their academic pursuit, is subject of second section, Design of AI System. This core competency area include 13 items with Likert scale ranging from strongly disagree to strongly agree. The instrument was test for validity reliability in to guarantee the quality and rigor of data. Hornberger et al. (2023) also stress the importance this step in their own instrument validation process. A Cronbachs Alpha test was use to establish reliability and Pearson correlation test was use to show validity demonstrating the instrumens appropriateness consistency for this investigation.

3.3 Sample and Sampling

Fifty student from ten different university in Bandung City, West Java, Indonesia, participate in survey as respondent. Undergraduate and graduate student made up sample which was select offer varied demographic profile for examining difference in AI proficiency and application. Numerous research reveal notable variation AI perception application and proficiency across various academic background level support strategy (Balabdaoui et al.,

2024; Wang & Song, 2024; Adam et al., 2024). Convenience sampling and purposive sampling techniq were employe. Convenience sampling was chosen because it allow researcher efficiently access respondent who were read available and will participate with given timeframe and resource. Meanwhile purposive sampling was apply to ensure only participant who met specific criteria name being undergraduate or graduate students enroll in higher education institution in Bandung were include in study. Combination of these techniq ensure both practicality and relevance in obtain data that directly align with research objective.

3.4 Data Collection

An online survey strategy was use to collect data for investigation. The Google Forms platform was use to distribute the survey making simple for respondent to access from variety of device. The survey distributed via a variety digital communication channel such as student social media group, online academic forum, and instant messaging platform in order reach targeted sample of student from many university in Bandung. By using strategy the researcher were able to effective gather data and connect with respondent who spread out over the Bandung region. A defined time frame from late July to early August was use for data collection process. Respondent had sign a consent statement at start of questionnaire before they could begin answer it. This ethical approach which places a high priority the confidentiality anonymity of respondent personal data, is a important step that in line with both national law like Indonesia UU PDP (Sherill & Wiraguna, 2025) and international data protection principle like those stated in GDPR (Mienye & Swart, 2025). This protect participant right while maintaining integrity of the reserch process.

3.5 Data Analysis

Following the collection and initial cleaning of all questionnaire data, data analysis was conducted in two stages: instrument validation and descriptive analysis. First, pilot testing was performed on respondents to ensure the validity and reliability of the questionnaire adapted from the UNESCO AI Competency Framework. Reliability of instrument was measure using Cronbach's Alpha, with result exceed the recommend threshold of 0.70 indicating internal consistency. Validity was examine through Pearson's correlation test between each item and correspond dimension, which confirm that all item were statistical significant and suitable for further use. This process ensure instrument was both robust and appropriate for largerscale survey. Second descriptive statistic were employe as main method of data analysis. Frequency and percentage use to describe demographic characteristic of respondent, include gender, academic level, and field of study. Mean scores of four competency dimension Human Centered Mindset, Ethics of AI, AI Techniques & Applications, and AI System Design calculate to establish overall AI competency levels. Finding were presente use radar chart for clarity. Group comparison, such as undergraduate versus graduate students and male versus female student, were conducte to examine difference in competency levels. Similar approach been employe in previous studies AI competency to identify demographic variation and usage trend (Lin et al., 2025; Ayem et al., 2024). Study main conclusion drawn base on these analys, support table and visualization that illustrate pattern and trend in AI competency and usage profile.

4. Results and Discussion

4.1 Validity and Reliability Test

To ensure that every statement in the questionnaire appropriately measured the intended construct, the validity of the research instrument was examined. All 13 questionnaire items were found to be valid based on the results of the Pearson correlation test, with each item showing a p-value of less than 0.05. This high level of statistical significance indicates that the

items accurately represent the aspects of AI competency under investigation. Furthermore, the positive correlations confirm that the instrument captured students' self-perceived abilities and understanding in a coherent manner. These findings are consistent with Hornberger et al. (2023), who also demonstrated the importance of rigorous validity testing in the development of AI literacy measurement tools.

Reliability of instrument was then assess verify internal consistency. Using Cronbach's Alpha, all four competency dimension produce value range from 0.744 to 0.885, surpassin common accept threshold of 0.70. Result demonstrate that questionnaire provide stable and consistent measurement under similar condition. Comparable finding reporte by Lin et al. (2025), who apply UNESCO AI Competency Framework in a largescale survey and confirm it strong reliability across different student group. Conclusion both validity and reliability test affirm that instrument use this study meet psychometric standard thereby provide solid scientific foundation for sub sequent analys and interpretation.

4.2 AI Competency Results

The analysis of selfperceived AI competency reveals a varied but generally positive landscape among students (Figure 1). The dimension of Ethics of AI shows the highest level of competency, with a mean score of 3.12. This score, while above the 3.0 benchmark, still indicates that there is significant room for growth to reach the maximum possible score of 4.0. It suggests that students have a foundation of ethical awareness regarding issues such as data privacy and academic integrity, but this understanding is not yet fully ingrained. Similar findings were reported by Schaeffer et al. (2024), who emphasized that although students recognize the ethical risks of AI, they often lack deep comprehension of accountability mechanisms.

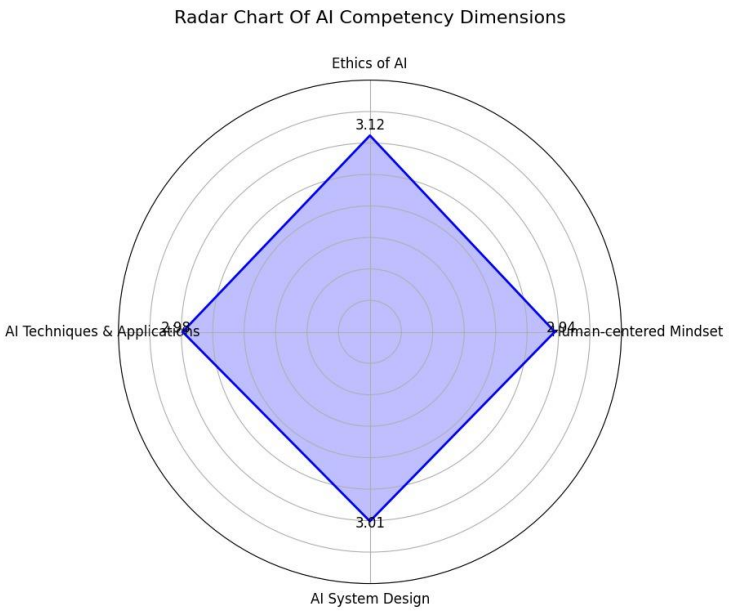

Figure 1. Radar Chart of AI Competency Dimensions

Conversely, the dimensions of Human-Centered Mindset and AI Techniques & Applications show scores that are below the 3.0 benchmark, at 2.94 and 2.98, respectively. These results point to specific areas requiring improvement. The lower score in Human-Centered Mindset suggests that students have not fully internalized their crucial role as the central agents in a human AI collaboration. Likewise, the score for AI Techniques & Applications indicates that students' practical knowledge and ability to effectively use AI tools

for specific tasks could be further strengthened. This pattern is consistent with the study by Kesuma & Fransen (2025), who found that while Indonesian students possess a fair conceptual understanding of AI, their technical proficiency remains underdeveloped.

The final dimension, AI System Design, meets the 3.0 benchmark with a mean score of 3.01, but this score, like the others, shows a considerable gap from the full potential of 4.0. Although this suggests a basic understanding of how AI systems function, students have yet to demonstrate a robust ability to integrate accountability and transparency into system design. Lin et al. (2025) similarly highlighted that students in Asian contexts often struggle to translate theoretical knowledge into systematic design practices. In conclusion, while students demonstrate a relatively strong ethical foundation, the findings indicate a consistent need to enhance all aspects of their AI competency especially the human-centric and technical dimensions to achieve a more comprehensive and balanced skill set

4.3 Group Differences Analysis

Table 1. AI Usage Education Level Differences

AI Usage Category	Undergraduate Students	Postgraduate Students
Usage Frequency		
Often (Several Times a Week)	50.0%	62.5%
Very Often (Every Day)	26.5%	25.0%
Rarely (Several Times a Month)	23.5%	12.5%
Usage Purpose		
Searching for Information / References	40.8%	41.7%
Assisting Brainstorming / Assignments	22.5%	27.8%
Summarizing Text / Articles	23.9%	16.7%
Assisting Writing / Drafting	12.7%	13.9%

The analysis of AI usage profiles reveals a notable difference between undergraduate and postgraduate students (Table 1). In terms of frequency, postgraduate students tend to integrate AI more consistently into their academic activities, with a majority (62.5%) using it "Often" (Several Times a Week). In contrast undergraduate students show more even distribution of usage frequency, although a slightly higher percentage (26.5%) report using AI "Very Often" (Every Day). This pattern suggest that postgraduate students may more structure or consistent need for AI to support their advance study. Although the primary use of AI by both groups is Searching for Information/References, there are subtle variations in other uses. For Assisting Brainstorming/Assignments, postgraduate students use AI more frequently, which likely reflects the more intricate and conceptual nature of their coursework. Undergraduate students, on the other hand, use AI more often for Summarizing Text/Articles, which may relate to necessity for efficiency when processing large volumes of reading materials. These differences provide important insight into how academic level influences AI adoption, which is consistent with Balabdaoui et al. (2024), who found that postgraduate students tend to apply AI in more specialized and task focus way compare to undergraduate.

Table 2. AI Usage Grade Differences

AI Usage Category	Freshman	Sophomore	Junior	Senior
Usage Frequency				
Often (Several Times a Week)	25.0%	44.4%	62.5%	50.0%
Very Often (Every Day)	15.0%	44.4%	25.0%	35.7%
Rarely (Several Times a Month)	60.0%	11.1%	12.5%	14.3%
Usage Purpose				

AI Usage Category	Freshman	Sophomore	Junior	Senior
Searching for Information / References	37.5%	40.0%	45.5%	33.3%
Assisting Brainstorming / Assignments	12.5%	10.0%	27.3%	29.5%
Summarizing Text / Articles	16.7%	20.0%	13.6%	20.5%
Assisting Writing / Drafting	12.5%	20.0%	9.1%	16.7%

Analysis of AI usage frequency across academic years also reveals a clear developmental pattern (Table 2). A majority of freshman students (60.0%) use AI "Rarely," indicating they are still in an adjustment phase. This pattern reverses for sophomores, where the use of AI "Often" and "Very Often" increases dramatically. The peak usage of "Very Often" is recorded among sophomore (44.4%) and senior (35.7%) students, suggesting that AI becomes more integrated into academic routines as coursework demands grow more complex. Meanwhile, junior students show the highest usage in the "Often" category (62.5%), demonstrating consistent but slightly less intense use compared to other groups. In terms of usage purpose, students across all academic years most frequently use AI for Searching for Information/References. However, a shift in focus is evident over time: freshman and sophomore students more often use AI for basic tasks such as Summarizing Text/Articles, while junior and senior students increasingly adopt AI for strategic purposes, including Assisting Brainstorming/Assignments and Assisting Writing/Drafting. This developmental trajectory mirrors findings by Wang & Song (2024), who observed that higher-year students demonstrate more advanced and purposeful AI usage as their academic demands increase.

Table 3. AI Usage Gender Differences

AI Usage Category	Male	Female
Usage Frequency		
Often (Several Times a Week)	54.8%	42.1%
Very Often (Every Day)	22.6%	31.6%
Rarely (Several Times a Month)	22.6%	26.3%
Usage Purpose		
Searching for Information / References	37.7%	35.5%
Assisting Brainstorming / Assignments	22.6%	19.4%
Summarizing Text / Articles	19.8%	29.0%
Assisting Writing / Drafting	19.8%	16.1%

The analysis of AI usage frequency by gender indicates that both male and female students have a high level of AI integration in their studies (Table 3). A majority of male students use AI "Often" (Several Times a Week) at 54.8%, while female students show a higher percentage in the "Very Often" (Every Day) category at 31.6%, though the difference is not substantial. This suggests that AI has become a common tool for both genders, with only minor differences in intensity of use. In terms of purpose, both genders report similar usage patterns, with Searching for Information/References being the most frequent application. However, some nuances exist: female students more frequently use AI for Summarizing Text/Articles, possibly reflecting a preference for efficiency in handling reading materials, while male students show slightly higher percentages for Assisting Brainstorming/Assignments and Assisting Writing/Drafting. These differences align with prior studies (Romaniuk & Łukasiewicz-Wieleba, 2024), which indicate that gender-based learning styles can influence the way AI tools are integrated into academic activities.

4.4 Comparison with Regulations

The analysis of student data shows a conceptual alignment between students' ethical understanding and the principles of Law Number 27 of 2022 on Personal Data Protection (UU PDP). This finding is reflected in the Ethics of AI dimension, which has the highest mean score of 3.12. This score indicates an adequate understanding of the importance of caution when handling personal data, which is in line with the various data subject rights outlined in Articles 5-13 of the UU PDP. However, it should be noted that this score is still a considerable distance from the maximum score of 4.0, suggesting that this understanding still needs to be deepened.

The research finding also demonstrate connection to ethical norms delineate in Minister of Communication and Information Technologys Circular Letter Number 9 of 2023 on Artificial Intelligence. The circular letter highlight artificial intelligence (AI) is tool to support human activity and its application must follow standard of accountability credibility. With score of 3.01 on the AI System Design dimension student demonstrate a respectable grasp of how AI may be useful tool. However there a problem a indicated by Humancentered Mindset (2.94) and AI Techniques & Applications (2.98) rating, which fall short of the 3.0 standard. This implies that although student understand idea, they still lack technical knowhow and human centered perspective necessary to use AI responsibly accordance with circular letter recommendation.

According to research finding, pupils ethical comprehension in line with General Data Protection Regulation (GDPR) tenets. Article 4 of this legislation provide a comprehensive definition personal data and highlight the need data protection. The Ethics of AI dimension high mean score of 3.12 indicates that student appreciate significance of exercising caution while entering personal data into AI, which consistent with the GDPR ethos. This alignment demonstrate that student already have foundation in ethics that align with international norm such the GDPR but more development is necessary reach a higher level of proficiency.

The study conclusion also demonstrate it applicability to important idea in EU AI Act. Significance of human monitoring (Article 14) and transparency (Article 13) in AI systems emphasize in law. Nonetheless a crucial gap is shown by the Human centered Mindset (2.94) and AI Techniques & Applications (2.98) dimension rating which fall short of the 3.0 benchmark. This discrepancy implies that students dont possess proper attitude and realworld abilities need to supervise and operate AI. Although foundational understanding of AI operation is indicated by AI System Design score of 3.01 this understanding is still insufficiently strong to satisfy the requirements for accountability transparency set forth by international standard.

4.5 Policy Recommendations

This thorough investigation demonstrate that although student possess solid ethical framework their practical and humancentric understanding AI is severely lacking. A robust base is provid by sound ethical framework, especially in Ethics of AI dimension. The lower score on the Humancentered Mindset and AI Techniques & Applications aspect, however suggest that use of this ethical understanding has not yet been well balance with it. Therefore by taking a more comprehensive approach these policy ideas seek close this gap.

University and other stakeholder need start educating how to use AI responsibly rather than just what is right and incorrect. AI competency module that concentrate on building practical abilities like teaching student how critically assess AI generated information choose best resource for academic work and understand limitation this technology, should incorporate into curriculam. By strengthening AI Techniques & Applications and AI System Design components this method will guarantee that student possess the necessary technologi knowhow to back up their ethical comprehension.

Additional developing a human centered perspective is essential. Student should be encourage by policies see AI as tool rather than substitute. This can be accomplish by mandating that student explain their own essential contribution and clearly describe the way

in AI was employe their assignment. The Humancentered Mindset factor will immediately reinforce by such regulation teaching student to constantly put their own creativity, critical thinking and personal accountability first. Additional this strategy in line with Human Oversight principle that is required by international law.

Last because different student group use AI differently for example undergraduate and graduate student is critical that universiy create adaptable regulation. To enable the best possible use of AI throughout academic community, the recommendations should customize to meet unique requirement of every educational level rather than taking a one size fits all approach. This will enable universities to nurture a generation of students who are not only ethical but also competent and ready to face the challenges of the AI era.

5. Conclusion

This research assessed the self-perceived AI competency of university students in Bandung using the UNESCO AI Competency Framework for Students, providing an empirical foundation in a largely underexplored area. The findings reveal a varied but imbalanced competency profile: students demonstrate relatively strong ethical awareness, with the highest mean score recorded in the Ethics of AI dimension (3.12), yet they show significant weaknesses in practical and holistic aspects of AI, particularly in the Human-Centered Mindset (2.94) and AI Techniques & Applications (2.98) dimensions. Although the AI System Design dimension (3.01) meets the benchmark, it still indicates only a foundational understanding of how AI systems function. Group differences further contextualize these results, showing that AI usage frequency and purpose vary notably across educational levels, years of study, and gender, reflecting that AI integration is not uniform throughout students' academic journeys. While students' ethical awareness aligns conceptually with national and international regulations such as the UU PDP, GDPR, and EU AI Act, the gap in practical competencies highlights their limited readiness to fully meet demands for accountability, transparency, and human oversight. These findings suggest that universities need to adopt comprehensive educational strategies that integrate human-centered perspectives and technical skills into curricula, enabling students to translate ethical knowledge into real-world practice. For future research, it is recommended to expand the sample size beyond Bandung to capture broader regional or national perspectives, apply mixed-method approaches to gain deeper qualitative insights into students' ethical reasoning and practical challenges, and conduct longitudinal studies to track how AI competencies evolve as regulations and technologies advance. Such directions would provide stronger evidence for shaping adaptive curricula and policies that prepare students to become both proficient and responsible AI users in the rapidly changing digital ecosystem.

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