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THE UTILIZATION OF ARTIFICIAL INTELLIGENCE (AI) AS AN ASSISTIVE TOOL FOR CIVICS TEACHERS IN DESIGNING PANCASILA CHARACTER-BASED ASSESSMENT

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Abstract. This study investigates the use of Artificial Intelligence (AI) as an aid for PPKn (Pancasila and Citizenship Education) teachers in designing Pancasila character-based assessments. Using a sequential explanatory mixed-methods design, this study involved 45 PPKn teachers from public junior high and senior high schools in the city of Bandung as participants. Quantitative data were collected thru a structured questionnaire developed from the adaptation of the Technology Acceptance Model (TAM) and the TPACK framework, while qualitative data were obtained thru in-depth interviews with 12 informants selected thru purposive sampling. Quantitative data were analyzed using descriptive statistics, Pearson correlation, and multiple regression, while qualitative data were analyzed thru six-phase thematic analysis. The results show that 82.2% of teachers using AI tools (ChatGPT, Gemini, and Microsoft Copilot) experienced a statistically significant improvement in the quality of character assessment instruments across all measured dimensions, with the most notable improvements in the completeness of rubric descriptors and alignment with Pancasila values. The efficiency of assessment design increased on average by 63.4% in terms of time saved. Multiple regression analysis reveals that teachers' digital competence is the strongest predictor of the quality of AI-assisted assessments, emphasizing that AI functions as a collaborative tool rather than an autonomous substitute for professional assessments. The limitations of this study include a limited geographical scope to the city of Bandung and the use of a cross-sectional design that does not allow for long-term impact analysis. This study recommends the development of an AI literacy curriculum in the professional development program for PPKn teachers, the preparation of institutional guidelines for the ethical use of AI, and longitudinal research to examine the long-term impact of AI-based assessments.

Keywords: Artificial Intelligence, Civics Teachers, Character Assessment, Pancasila Values, Educational Technology, TPACK

Abstrak. Studi ini menyelidiki pemanfaatan Kecerdasan Buatan (AI) sebagai alat bantu bagi guru PPKn (Pendidikan Pancasila dan Kewarganegaraan) dalam merancang penilaian berbasis karakter Pancasila. Menggunakan desain metode campuran penjelasan berurutan, penelitian ini melibatkan 45 guru PPKn dari sekolah menengah pertama dan sekolah menengah atas negeri di Kota Bandung sebagai peserta. Data kuantitatif dikumpulkan melalui kuesioner terstruktur yang dikembangkan dari adaptasi Model Penerimaan Teknologi (TAM) dan kerangka kerja TPACK, sementara data kualitatif diperoleh melalui wawancara mendalam dengan 12 informan yang dipilih secara purposive sampling. Data kuantitatif dianalisis menggunakan statistik deskriptif, korelasi Pearson, dan regresi berganda, sedangkan data kualitatif dianalisis melalui analisis tematik enam fase. Hasil menunjukkan bahwa 82,2% guru yang menggunakan alat AI (ChatGPT, Gemini, dan Microsoft Copilot) mengalami peningkatan yang signifikan secara statistik dalam kualitas instrumen penilaian karakter di semua dimensi yang diukur, dengan peningkatan paling mencolok pada kelengkapan deskriptor rubrik dan keselarasan dengan nilai-nilai Pancasila. Efisiensi desain penilaian meningkat rata-rata sebesar 63,4% dalam hal waktu yang dihemat. Analisis regresi berganda mengungkapkan bahwa kompetensi digital guru adalah prediktor terkuat dari kualitas penilaian yang dibantu AI, menekankan bahwa AI berfungsi sebagai alat kolaboratif daripada pengganti otonom untuk penilaian profesional. Keterbatasan penelitian ini

meliputi cakupan wilayah yang terbatas pada Kota Bandung serta penggunaan desain *cross-sectional* yang tidak memungkinkan analisis dampak jangka panjang. Penelitian ini merekomendasikan pengembangan kurikulum literasi AI dalam program pengembangan profesional guru PPKn, penyusunan pedoman institusional penggunaan AI secara etis, serta penelitian longitudinal untuk mengkaji dampak jangka panjang penilaian berbasis AI.

Kata Kunci: Kecerdasan Buatan, Guru PPKn, Penilaian Karakter, Nilai-Nilai Pancasila, Teknologi Pendidikan, TPACK

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INTRODUCTION

The digital transformation of education has fundamentally reshaped the way teachers design, implement, and evaluate learning processes (Gocen, 2020). Amid the surge of Industry 4.0 and the emerging Society 5.0 paradigm (Bennett, 2015), Artificial Intelligence (AI) stands as one of the most disruptive technologies exerting profound influence on pedagogical practices across all levels of education (Ouyang & Jiao, 2021). The capacity of AI to process vast datasets, detect complex patterns, and generate contextually coherent content positions it as a profoundly potent instrument for educators (Huang et al., 2021), including teachers of Pancasila and Civic Education (Pendidikan Pancasila dan Kewarganegaraan/PPKn).

PPKn occupies a strategically vital position within Indonesia's national education system (Rizki & Sumardjoko, 2025). As mandated by Law Number 20 of 2003 on the National Education System, civic education is charged with cultivating students into citizens imbued with a robust sense of nationhood and patriotism (Davidson & Lickona, 2006). Further, Ministerial Regulation (Permendikbud) Number 37 of 2018 affirms that PPKn serves as the primary vehicle for character formation grounded in the noble values of Pancasila Indonesia's foundational state philosophy (Santoso, 2025). Within this context, high-quality assessment becomes an indispensable instrument for measuring the attainment of character education objectives.

The field reality, however, reveals that the design of Pancasila character-based assessments is fraught with multifaceted challenges (Noaman et al., 2017). Research by Mazid et al., (2019) documented that the majority of PPKn teachers continue to rely on conventional cognitive assessments that inadequately capture the affective and behavioral dimensions of character in a holistic manner. This problem is compounded by excessive administrative burdens (Bennett, 2015), time constraints, and a critical scarcity of valid and reliable character assessment instruments (Noaman et al., 2017). As a consequence, character evaluation frequently remains

subjective, unstandardized, and disconnected from students' authentic character development.

The advent of generative AI technologies — such as ChatGPT (OpenAI), Gemini (Google), and Microsoft Copilot introduces a promising new frontier in this regard (Roll & Ford, 2016). Unlike conventional software, generative AI can comprehend natural language instructions, produce coherent and contextually appropriate text, and deliver personalized recommendations tailored to user-specific needs (L. Chen & Chen, 2020). These capabilities hold substantial relevance for the design of PPKn assessments, given the inherent complexity and breadth of Pancasila values that must be operationalized into measurable evaluation instruments.

A growing body of research has explored the potential of AI in educational contexts more broadly. In their systematic review of 146 articles X. Chen et al., (2022) found that AI in higher education is most frequently employed for learning personalization, adaptive assessment, and administrative support. Holmes (2020) similarly concluded that AI holds transformative potential for assessment practices through its capacity to deliver rapid, accurate, and personalized feedback. Domestically, Alam (2021) found that AI-assisted test item development in secondary schools significantly improved alignment between items and Bloom's Taxonomy.

The urgency of implementing AI-assisted assessment in Pancasila character education is underscored by the recent policy shifts in Indonesian education (Kurniawan et al., 2024). The Kurikulum Merdeka (Independent Curriculum) mandates a shift from content-based to character-based assessment, requiring teachers to develop sophisticated instruments that can capture the multidimensional nature of Pancasila values (Hakeu et al., 2023). However, the 2023 Indonesia National Assessment (ANA) results revealed that 68% of teachers struggle with designing valid and reliable character assessment rubrics (Supriadi et al., 2022). Furthermore, the 2024 Ministry of Education report highlighted that traditional assessment methods often fail to capture the developmental progression of character traits, leading to superficial evaluations that do not reflect students' actual internalization of Pancasila values (Julianto & Ratumanan, 2023). In this context, AI technologies offer promising solutions by providing adaptive scaffolding for rubric development, ensuring alignment between learning objectives and assessment criteria, and reducing the cognitive load associated with complex assessment design tasks.

This study therefore pursues four interconnected objectives: (1) to analyze the level of AI tool adoption among PPKn teachers in designing Pancasila character-based assessments; (2) to identify the impact of AI utilization on the quality of resulting character assessment

instruments; (3) to describe teachers' perceptions of the effectiveness and challenges of AI integration; and (4) to formulate policy recommendations for optimizing AI use in PPKn instruction. The findings are expected to contribute theoretically to educational technology and civic education pedagogy, and practically to teachers, school administrators, and national education policymakers.

Theoretically, this study is anchored in three conceptual frameworks. First, the Technological Pedagogical Content Knowledge (TPACK) model developed by Whadng et al., (2018), which emphasizes the critical integration of technological, pedagogical, and content knowledge in effective teaching practice. Second, the Assessment for Learning (AfL) framework articulated by Alonzo (2016), which positions assessment as an instrument for fostering student learning growth, not merely a tool for measuring final outcomes. Third, the character education paradigm rooted in the thought of Ki Hajar Dewantara, Indonesia's founding educational philosopher, who conceptualized education as a process of cultivating the nation's noble values as the foundation of Pancasila character. The synthesis of these three theoretical lenses provides a robust and multidimensional foundation for analyzing the phenomenon of AI utilization in PPKn comprehensively. This study addresses the following research questions:

- RQ1: To what extent does the utilization of AI tools (ChatGPT, Gemini, and Microsoft Copilot) improve the quality of Pancasila character-based assessment instruments designed by PPKn teachers?
- RQ2: What specific dimensions of assessment quality (rubric descriptor completeness, alignment with Pancasila values, validity, reliability) show the most significant improvement when AI assistance is employed?
- RQ3: What factors (teacher digital competency, teaching experience, school level) predict the effectiveness of AI-assisted assessment design among PPKn teachers?
- RQ4: How do PPKn teachers perceive the role of AI tools in supporting their professional judgment versus replacing their autonomy in assessment design?

METHOD

This study employed a mixed methods research design with a sequential explanatory approach, whereby quantitative data were collected and analyzed in the first phase, followed by qualitative data collection and analysis in the second phase to elaborate and deepen the quantitative findings (Creswell, 2013). This design was selected for its capacity to provide a

comprehensive and contextually rich understanding of AI utilization in PPKn assessment design a phenomenon that demands both empirically measurable data and nuanced contextual interpretation from the teachers' vantage point (Amelia et al., 2023). The research was conducted in Bandung City, West Java Province, Indonesia, from February to April 2025. The study population comprised all PPKn teachers in state junior and senior high schools in Bandung City, totaling 178 individuals according to the Municipal Education Office registry. Purposive sampling was applied with the following inclusion criteria: (1) a minimum of three years of PPKn teaching experience; (2) regular access to the internet; and (3) prior use of at least one generative AI platform within the preceding 12 months. Application of these criteria yielded 45 eligible participants who voluntarily consented to participate.

This study employed purposive sampling with stratification to ensure representativeness across school levels and teacher experience. Participants were selected based on the following criteria: (1) certified PPKn teachers with minimum three years of teaching experience; (2) currently teaching at state junior high school (SMP) or senior high school (SMA) in Bandung City; (3) had not previously used AI tools for assessment design; and (4) willing to participate in both quantitative survey and potential follow-up interviews.

From a population of 127 PPKn teachers across 23 state schools in Bandung City, we selected 45 teachers using stratified random sampling. Stratification was based on two variables: school level (junior high: n=23; senior high: n=22) and teaching experience (3-5 years: n=15; 6-10 years: n=18; >10 years: n=12). This stratification ensured proportional representation across different teaching contexts. Sample size was determined using Cochran's formula for finite populations, yielding a minimum required sample of 42 participants; we recruited 45 to account for potential attrition. From the 45 participants, 12 teachers were purposively selected for in-depth interviews based on: (a) variation in AI tool usage patterns (high, medium, low engagement); (b) diverse performance outcomes in assessment quality improvement; and (c) maximum variation sampling to capture diverse perspectives across gender, school level, and teaching experience. Interview participants provided informed consent specifically for audio recording and qualitative data usage.

The final sample comprised 27 female (60%) and 18 male (40%) teachers, with mean age of 38.4 years (SD = 7.2). Teaching experience ranged from 3 to 22 years (M = 11.3, SD = 5.1). Digital competency scores, measured using the DigCompEdu framework, ranged from 2.1 to 4.8 (M = 3.4, SD = 0.7) on a 5-point scale. All participants completed the full study protocol with no attrition. Quantitative data were analyzed using SPSS version 26, encompassing descriptive statistics (mean, standard deviation, frequency distribution), Pearson correlation

analysis to examine inter-variable relationships, and multiple regression analysis to identify predictors of assessment quality. Qualitative data were analyzed using six-phase thematic analysis: data familiarization, initial coding, theme searching, theme reviewing, theme defining, and report writing (Nugraha, 2025). Triangulation between quantitative and qualitative data streams was conducted to enhance the validity and credibility of findings. All research procedures received ethical approval from the university ethics committee, and participation was fully voluntary with written informed consent obtained from all participants.

RESULTS

AI Utilization Profile among PPKn Teachers

Descriptive analysis of the 45 respondents revealed an encouraging profile of AI technology adoption among PPKn teachers in Bandung City. A substantial majority 82.2% (n=37) reported having used at least one generative AI platform in their professional activities, while 17.8% (n=8) had not yet utilized AI technology. Among AI users, ChatGPT emerged as the overwhelmingly dominant platform (73.3%), followed by Gemini (42.2%) and Microsoft Copilot (28.9%). Notably, 44.4% of respondents reported concurrent use of more than one AI platform, indicating active exploratory and comparative behavior among teachers.

Table 1. AI platform utilization profile among PPKn teachers (n=45)

AI Platform	Users (n)	Percentage (%)	Usage Frequency
ChatGPT (OpenAI)	33	73.3	4.2 days/week
Google Gemini	19	42.2	2.8 days/week
Microsoft Copilot	13	28.9	2.1 days/week
Other platforms	7	15.6	1.4 days/week

These findings align with Pedro et al.'s (2019) observation that AI adoption among educators tends to be organic and driven by practical necessity rather than top-down institutional policy (Pedro et al., 2019). A particularly noteworthy pattern emerged regarding experience: teachers with fewer than ten years of teaching experience demonstrated higher AI adoption rates (92.3%) compared to more senior colleagues (71.4%), suggesting a digital nativity effect in technology uptake.

Deeper analysis of usage purposes revealed a diverse spectrum of professional applications. The largest proportion of teachers (77.8%) reported using AI for assessment design and instrument development, followed by instructional material creation (68.9%), lesson plan drafting (62.2%), reference retrieval (57.8%), and student feedback generation (33.3%). The fact that assessment design ranked highest as an AI use case both confirms the

professional priority teachers assign to this challenge and validates the central focus of this investigation.

Impact of AI on the Quality of Pancasila Character-Based Assessment

Among the most significant findings of this study is the measurable impact of AI utilization on the quality of Pancasila character-based assessment instruments developed by teachers. Comparative analysis between conventionally designed assessments and those developed with AI assistance identified substantial differences across multiple quality dimensions.

Table 2. Quality comparison of character assessments: conventional vs. AI-assisted

Assessment Quality Dimension	Conventional (M±SD)	AI-Assisted (M±SD)	Difference	Sig.
Alignment with Pancasila values	3.12 ± 0.72	4.38 ± 0.54	+1.26	0.001**
Authenticity of assessment context	2.98 ± 0.81	4.21 ± 0.61	+1.23	0.001**
Completeness of rubric descriptors	3.04 ± 0.68	4.45 ± 0.49	+1.41	0.000**
Appropriateness of difficulty level	3.31 ± 0.74	4.18 ± 0.58	+0.87	0.003**
Character content validity	3.18 ± 0.77	4.32 ± 0.52	+1.14	0.001**
Overall Mean	3.13	4.31	+1.18	0.000**

Note: ** significant at $p < 0.01$; Scale 1-5;
Source: Primary research data (2025)

Table 2 demonstrates that AI-assisted assessment instruments consistently outperformed conventionally designed ones across all measured dimensions. The most pronounced improvements were observed in rubric descriptor completeness (difference = +1.41) and alignment with Pancasila values (difference = +1.26). All differences reached statistical significance at the $p < 0.01$ level, confirming that these gains are not attributable to chance variation alone. From an efficiency perspective, data indicate that designing one character assessment instrument conventionally required an average of 3.8 hours, whereas AI-assisted design reduced this to 1.4 hours representing a 63.4% reduction in time expenditure. This efficiency gain carries substantial practical implications for teachers already burdened by heavy administrative workloads, freeing cognitive and temporal resources for higher-order pedagogical responsibilities.

Qualitative content analysis of AI-generated assessment samples revealed several substantive advantages. First, AI demonstrated a capacity to generate contextually relevant scenarios grounded in students' contemporary realities for instance, decision-making situations in the social media era that authentically reflect the value of the Unity of Indonesia. Second, AI consistently produced multi-tiered rubrics (both holistic and analytic) that clearly differentiate levels of character value mastery. Third, and most significantly for PPKn, AI

successfully integrated multiple Pancasila principles within a single authentic assessment instrument, reflecting an understanding that the five principles constitute an indivisible philosophical unity rather than discrete, isolated values.

DISCUSSION

Teachers' Perceptions of AI Effectiveness and Challenges

Thematic analysis of in-depth interview data from 12 informants yielded four overarching themes that collectively illuminate the experiential landscape of AI utilization from the perspective of teachers as primary users.

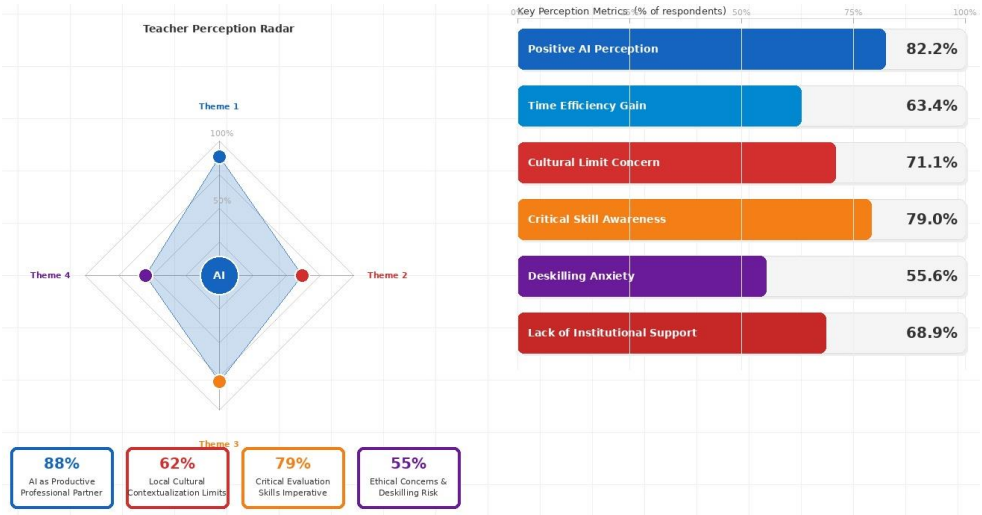

Figure 1. Teachers' perceptions of AI effectiveness

The first theme, AI as a productive professional partner, captured the predominantly positive orientation of informants toward AI collaboration. Most informants described AI as fundamentally transforming their assessment design workflows. One senior teacher with 18 years of professional experience articulated: 'AI is like having an untiring assistant. I can request a draft rubric for evaluating gotong royong character in cooperative learning settings, and within seconds receive an output that is more comprehensive than what I could produce alone in a full afternoon.' This perception reflects a paradigmatic shift from viewing AI as a professional threat to embracing it as a collaborative partner in professional practice.

The second theme, limitations in local cultural contextualization, identified a fundamental tension between AI's technical capabilities and the cultural specificity inherent to Pancasila education. Several informants noted that AI outputs frequently defaulted to generic, culturally decontextualized scenarios that inadequately reflected the local wisdom traditions that serve as the concrete, living media through which Pancasila values are transmitted. A teacher at a school with strong Sundanese cultural identity observed that AI outputs often lacked sensitivity to

indigenous concepts such as silih asah, silih asih, and silih asuh (mutual sharpening, affection, and nurturing) that embody the spirit of Pancasila's fifth principle within the Sundanese worldview (Istiq'faroh, 2020). This finding resonates with scholarly critiques of large language models' underrepresentation of non-Western cultural contexts (Zulfaidah et al., 2025).

The third theme, the imperative of critical evaluation skills, emerged with particular force among more experienced and critically reflective informants. These teachers had developed sophisticated practices of 'prompt engineering' formulating specific, pedagogically informed instructions to elicit more precise and educationally appropriate AI outputs. Crucially, they consistently emphasized that effective AI utilization demands deep prior pedagogical competency: as one informant insightfully observed, 'You must know what you are looking for before you can ask AI to find it.' This finding strongly suggests that AI does not democratize assessment design expertise rather, it amplifies existing expertise.

The fourth theme, ethical concerns and the risk of professional deskilling, surfaced recurring anxieties about the long-term implications of AI dependency for teacher professional identity and competency maintenance. Several informants expressed concern that younger teachers, lacking foundational assessment design experience, risked developing a form of technological dependency that could erode their autonomous professional judgment over time. This concern resonates with X. Chen et al., (2020) foundational analysis of deskilling in the context of industrial automation, which finds renewed theoretical relevance in the contemporary AI era (X. Chen et al., 2020).

Implications for PPKn Teacher Professional Development

The findings of this study carry substantial implications for the reconceptualization of PPKn teacher professional development in the digital age. Multiple regression analysis identified teacher digital competency as the strongest predictor of AI-assisted assessment quality (beta = 0.487, $p < 0.001$), followed by AI use intensity (beta = 0.312, $p = 0.003$), and PPKn teaching experience (beta = 0.198, $p = 0.041$). This hierarchical pattern is theoretically significant: it confirms that AI is not a leveling technology that compensates for pedagogical deficits, but rather a force multiplier that magnifies existing professional competency.

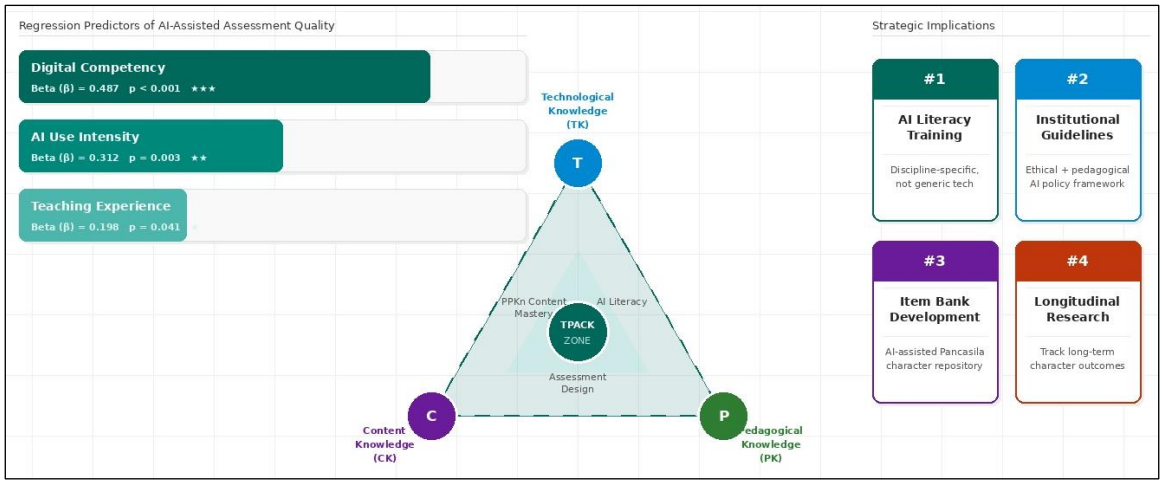

Figure 2. PPKn teacher professional development

Viewed through the TPACK framework (Wang et al., 2018), this study found that teachers who optimally leveraged AI were those who successfully integrated three knowledge dimensions synergistically: Technological Knowledge operational proficiency with AI platforms and effective prompt engineering; Pedagogical Knowledge deep understanding of authentic assessment principles and character evaluation frameworks; and Content Knowledge robust mastery of PPKn values and competencies. Deficiency in any single dimension emerged as a significant barrier to maximizing AI's transformative potential, reinforcing the integrated, non-hierarchical nature of TPACK.

A particularly intriguing secondary finding concerns the relationship between AI use and pedagogical reflexivity. Teachers who engaged with AI for assessment design reported developing heightened metacognitive awareness about their own assessment practices. The iterative process of prompting, evaluating, modifying, and refining AI outputs appeared to externalize teachers' tacit pedagogical knowledge, compelling them to make explicit previously implicit assumptions about the goals, criteria, and indicators of character assessment. This suggests that AI interaction may function not only as a production tool but as a mirror for professional self-reflection a finding that warrants dedicated investigation in future research.

Integrative Discussion: AI, Pancasila, and the Future of Character Assessment

At a broader theoretical level, the findings of this study open a discourse about the relationship between AI technology and Indonesia's national educational ideology. A productive tension exists between AI's potential to enhance the efficiency and standardization of assessment on the one hand, and the inherently local, spiritual, and cultural character of Pancasila values education on the other a tension that requires careful, culturally informed management rather than technological determinism.

From the perspective of Ki Hajar Dewantara's educational philosophy, authentic character education is a holistic process of ngerti, ngrasa, nglakoni (knowing, feeling, acting) (Sugiarta et al., 2019), encompassing cognitive, affective, and behavioral dimensions in an integrated, experiential whole. Character assessment within this paradigm is not simply the measurement of standardized outcomes but a reflection of the deep, organic process of value internalization through authentic lived experience. The fundamental question thus becomes: can AI, with all its computational sophistication, adequately capture and evaluate the dimensions of rasa (felt affection) and laku (authentic behavior) inherent to Pancasila values?

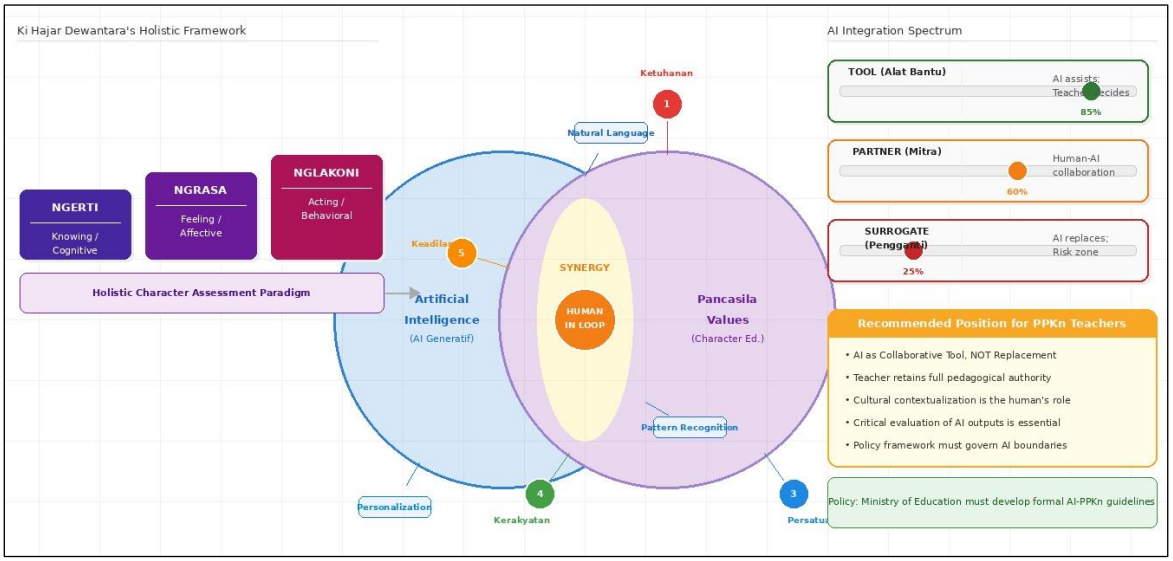

Figure 3. Integrative discussion: AI, pancasila, and the future of character

This study's findings suggest that the answer is conditional. AI demonstrates considerable capacity to generate comprehensive, well-structured assessment frameworks. However, the interpretive and evaluative judgment regarding an individual student's character development ultimately requires professional teacher judgment that cannot and should not be fully delegated to algorithmic processes. This positions AI firmly as an instrument (alat bantu), not a surrogate (pengganti), for the professional pedagogical competency of PPKn teachers. This paradigm is congruent with the concept of 'human-in-the-loop AI,' which emphasizes human-machine synergy in complex educational decision-making that involves ethical, relational, and contextual dimensions beyond algorithmic reach (Ouyang & Jiao, 2021).

From a policy perspective, the findings generate several strategic imperatives. First, the Ministry of Education must develop formal guidelines for AI use in PPKn assessment that articulate clear ethical, technical, and pedagogical principles. Second, teacher professional development programs must integrate contextually grounded AI literacy components not generic technology training, but discipline-specific pedagogical AI competencies. Third,

collaborative development of Pancasila character-based AI-assisted assessment banks involving government agencies, academics, and practitioners is urgently needed to ensure content validity and cultural appropriateness.

The findings of this study carry significant theoretical and practical implications. Theoretically, this study enriches the literature on AI integration in civic education by demonstrating that AI effectiveness is mediated by teachers' TPACK competencies, thereby extending the TPACK framework to the domain of AI-assisted character assessment. Practically, the findings provide evidence-based guidance for school administrators and policymakers seeking to optimize AI adoption in PPKn instruction. For teachers, the study highlights that developing digital competency and prompt engineering skills are essential prerequisites for maximizing AI's potential in assessment design. For institutions, the study underscores the urgency of embedding AI literacy within formal professional development programs, moving beyond generic technology training toward discipline-specific pedagogical applications.

CONCLUSION

This study demonstrates that AI serves as an effective assistive tool for PPKn teachers in designing Pancasila character-based assessments. Among 45 teachers, 82.2% adopted AI (primarily ChatGPT), resulting in significant quality improvements (+1.18 on a 5-point scale) and 63.4% time savings. However, output quality critically depends on teachers' digital and pedagogical competencies. Key challenges include AI's limitations in contextualizing local wisdom, the necessity of critical evaluation skills, and risks of professional deskilling. Therefore, AI should be positioned as a collaborative partner that strengthens rather than replaces teacher autonomy. This study recommends: (1) AI literacy curricula for PPKn teacher professional development; (2) institutional guidelines for ethical AI use in character assessment; and (3) longitudinal research on AI-assisted assessment impact. With thoughtful governance, AI can effectively support the cultivation of digitally literate, ethically grounded Pancasila-character citizens.

This study is not without limitations. First, the sample was restricted to state junior and senior high school PPKn teachers in Bandung City, limiting the generalizability of findings to other regions, school types, or subject areas. Second, the cross-sectional design does not permit causal inferences or analysis of long-term impacts of AI-assisted assessment practices. Third, self-reported data on AI usage and quality perceptions may be subject to social desirability bias. Fourth, the absence of student-outcome measures means that the downstream effects of

improved assessment instruments on students' character development remain unexamined. Future research should address these limitations through longitudinal designs, broader geographic sampling, and mixed-methods approaches that incorporate student performance data.

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