RESEARCH PAPER

THE RELIANCE ON ARTIFICIAL INTELLIGENCE AS A PREDICTOR OF ACADEMIC INTEGRITY AMONG HIGHER EDUCATION STUDENTS

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ABSTRACT

The rapid proliferation of generative artificial intelligence (GenAI) has profoundly transformed teaching, learning, and assessment practices, creating unprecedented challenges for academic integrity in higher education. This study investigates the relationships between the level of AI usage, AI literacy, academic stress, and reliance on AI, as well as the implications of AI reliance for academic integrity awareness among pre-service teachers. Adopting a quantitative cross-sectional survey design, data were collected from 350 students enrolled in teacher education programs and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The proposed model further examined the mediating roles of critical thinking and academic self-efficacy in the relationship between AI reliance and academic integrity awareness. The findings indicate that academic stress and the level of AI usage significantly increase students' reliance on AI, whereas AI literacy significantly reduces such dependence. Furthermore, reliance on AI exerts a significant negative effect on academic integrity awareness. The mediation analysis demonstrates that critical thinking and academic self-efficacy significantly mitigate the adverse effects of AI reliance on integrity awareness. The results suggest that AI reliance extends beyond instrumental use and increasingly functions as a normative reference and epistemic authority, contributing to the emergence of phenomena such as delegated ethics and the illusion of competence. This study concludes that strengthening critical AI literacy, implementing authentic assessment practices, and reinforcing human agency are essential for preserving intellectual autonomy, ethical accountability, and professional identity among future educators in the digital era.

Keywords: generative artificial intelligence, AI reliance, academic integrity awareness, critical thinking, self-efficacy, pre-service teachers, higher education.

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1.0 INTRODUCTION

The rapid evolution of artificial intelligence (AI) technologies has fundamentally transformed the paradigms of teaching, learning, and assessment within higher education institutions. Currently, AI applications are widely deployed by both students and educators for diverse academic purposes including drafting manuscripts, synthesizing source materials, generating assessment items and providing personalized learning support. Systematic reviews indicate a continuous surge in the adoption of tools like ChatGPT and other generative AI (GenAI) platforms across universities. While this integration yields distinct pedagogical benefits such as personalized learning trajectories and enhanced academic productivity, it simultaneously introduces profound ethical and pedagogical dilemmas. A primary concern centers on the shifting dynamics of quality control and intellectual validation, particularly when students treat AI not merely as a supplementary aid, but as an authoritative reference point. This paradigm shift heightens the risk of eroding critical literacy, reflective thinking, and individual ethical accountability among learners. Several empirical investigations report that a substantial segment of the student population exhibits a high degree of dependence on AI to fulfill academic requirements, while educators increasingly voice apprehensions regarding threats to academic integrity and the validity of traditional assessment methods. In response to the GenAI phenomenon, higher education institutions and

professional bodies have initiated the formulation of formal guidelines and regulatory policies. This institutional response reflects a growing consensus that purely technical solutions, such as plagiarism detection software, are insufficient unless accompanied by comprehensive AI literacy programs and a structural redesign of assessments that emphasizes higher-order cognitive skills. International directives similarly underscore the urgent need to structure AI integration in a manner that fosters deep learning rather than eclipsing the ethical judgement of students. Recent empirical evidence highlights the dual-natured impact of AI utilization: while it possesses the potential to optimize learning outcomes when integrated under structured pedagogical frameworks, it simultaneously poses severe risks to scientific and academic integrity Reflecting this concern, there is a growing inclination among students to attribute "epistemic authority" to AI-generated outputs, alongside the latent risks of producing fraudulent or highly homogenized academic content. Furthermore, contemporary literature warns that over-reliance on GenAI can cultivate an "illusion of competence" or a "mirage of false mastery," effectively masking deficiencies in conceptual understanding unless countered by appropriate pedagogical interventions. Within this context, investigating the reliance on artificial intelligence as a predictor of academic integrity among higher education students becomes highly significant. It shifts the research focus from a simplistic measurement of AI adoption rates toward a deeper psychological understanding of how students perceive and depend on AI to legitimize their academic assignments. This understanding is crucial for designing targeted interventions, such as critical AI literacy modules, authentic assessment frameworks, and institutional policies that move beyond prohibitive measures to actively nurture critical thinking and professional responsibility among pre-service teachers. The rapid advancement of generative AI has also precipitated radical disruptions in the global academic integrity landscape. Historically, breaches of academic integrity were predominantly confined to conventional plagiarism, collusion, and data fabrication; however, the AI era introduces subtle, highly elusive forms of misconduct, specifically via the automated generation of authentic-looking text by Large Language Models (LLMs). This phenomenon has given rise to what is conceptualized as "synthetic plagiarism"—the direct submission of machine-generated content absent meaningful cognitive engagement from the student, thereby undermining the core principles of original authorship and intellectual accountability. Concurrently, GenAI has fortified the ecosystem of contract cheating by enabling the commercial generation of fraudulent academic assignments on a massive scale, at minimal cost, and with decreasing detectability. These developments cast serious doubts on the validity of university assessment systems, particularly within courses heavily reliant on written essays and open-book online examinations. From an educational psychology perspective, the escalating reliance on AI as an academic shortcut is driven by a confluence of performance pressure, temporal constraints, and an instrumental orientation toward learning that prioritizes grades over cognitive processes. In such environments, students are prone to constructing a dependency on AI as an "academic authority," effectively outsourcing their ethical judgements to algorithmic systems. This trend reflects a displacement of the ethical locus of control from the individual to technology, threatening the intellectual autonomy of the student population. Consequently, UNESCO (2023) emphasizes that AI deployment in education must reinforce human agency through rigorous AI literacy, transparent tool disclosure, and process-oriented assessment designs. Nevertheless, a substantial gap persists between policy aspirations and actual student practices, particularly when AI serves as the primary arbiter of ethical boundaries. This empirical disconnect justifies the necessity of this study, which scrutinizes how students perceive the role of AI in academic decision-making and the factors predicting such technological dependency.

2.0 LITERATURE REVIEW & CONCEPTUAL FRAMEWORK

2.1 Artificial Intelligence in Higher Education

Artificial intelligence (AI) has increasingly functioned as a core component within the higher education ecosystem, particularly serving as an advanced learning support system that encompasses adaptive learning networks, intelligent tutoring systems, and data-driven automated feedback platforms. Empirical research indicates that AI integration holds the potential to augment student motivation, cognitive engagement, and overall academic performance. However, the efficacy of these technologies remains highly contingent upon the underlying pedagogical design and the active, mediating role of instructors in guiding technological use. A meta-analysis conducted by Zheng et al. (2023) revealed that AI-driven interventions yield significantly positive effects only when combined with instructional strategies that emphasize meaningful learning and human-to-human interaction, thereby refuting the notion that AI can serve as an autonomous replacement for traditional pedagogy. This position is corroborated by Chen et al. (2024), who assert that the success of AI as a learning support tool is highly context-specific, shaped by institutional learning cultures, students' digital literacy levels, and the pedagogical competencies of faculty members. The emergence of generative AI, particularly Large Language

Models (LLMs), has expanded the functional scope of AI from basic learning support to sophisticated content generation, enabling the automation of essay writing, text paraphrasing, and project brainstorming. Research by Yang and Li (2023) suggests that GenAI can facilitate the initial phases of the writing process by structuring ideas and offering linguistic support, especially for non-native English-speaking students. Nonetheless, this utility introduces severe implications for students' cognitive investment. Modell et al. (2023) discovered that excessive reliance on GenAI significantly diminishes metacognitive processing, as students tend to delegate critical reasoning and analytical synthesis to algorithmic systems. Furthermore, a systematic review by Perez-Martinez et al. (2024) identified a concerning trend wherein GenAI is utilized not merely as a supportive tool, but as a direct substitute for the writing process and academic self-assessment, thereby diluting the deep learning processes that form the bedrock of higher education. This technological shift has also catalyzed a substantial evolution in the roles of both educators and students. Recent literature conceptualizes the transformation of the academic instructor from a primary information transmitter into a learning facilitator, an AI-integrated experience designer, and a learning analytics evaluator. In this updated capacity, educators must master not only technical operations but also critical AI literacy and ethical sensitivity to align technological tools with targeted pedagogical objectives. Simultaneously, students are increasingly positioned as autonomous managers of their own learning trajectories, charged with evaluating the reliability of AI outputs and integrating them critically into their scholarly work. Williamson and Eynon (2024) assert that this reconfiguration demands the development of new student competencies, specifically the ability to critically evaluate the epistemic authority of AI while preserving intellectual autonomy. Delving deeper, Caballé et al. (2025) argue that AI integration within higher education represents far more than a technical transformation; it reflects a profound epistemic shift in how knowledge is generated, evaluated, and validated. Both students and faculty must navigate systemic challenges, including algorithmic bias, system opacity, and moral accountability regarding academic AI use. Absent a clear pedagogical framework, the uncritical adoption of GenAI risks normalizing cognitive delegation to machines, thereby undermining the development of independent critical thinking and scholarly responsibility. Consequently, contemporary literature consistently underscores that AI should be conceptualized strictly as an augmentation tool for human learning, and its integration must be accompanied by authentic assessment frameworks that necessitate explicit evidence of students' unique cognitive processes and critical reflections.

2.2 Academic Integrity and the Transformation of Misconduct in the AI Era

The advent of generative AI has introduced unprecedented disruptions to the traditional construct of academic integrity, which historically revolved around conventional infractions such as verbatim plagiarism, unauthorized collusion, and data fabrication or falsification. The capacity of LLMs to generate highly coherent, technically "original" prose that closely mirrors human writing styles has effectively blurred the boundaries between legitimate learning assistance and academic dishonesty. Current literature suggests that the AI era introduces highly nuanced infractions, frequently termed "synthetic plagiarism". This denotes the practice of submitting machine-generated prose devoid of meaningful cognitive investment by the student, thereby subverting the foundational tenets of intellectual originality and academic accountability. Empirical studies document a stark rise in GenAI adoption for coursework since the release of conversational AI tools, with students reporting its use to generate entire essays, laboratory reports, and open-book exam responses. In a large-scale survey of university students, Zheng et al. (2024) observed that while students acknowledge the pedagogical potential of AI, a significant proportion utilize these tools as cognitive shortcuts to meet deadlines, particularly within high-stakes, stressful academic environments. This finding aligns with Modell et al. (2023), whose data demonstrates that reliance on GenAI correlates negatively with metacognitive engagement and deep learning habits. Furthermore, these technological developments have reinforced commercial contract cheating networks, which now leverage generative models to scale the automated production of bespoke assignments rapidly and at minimal cost. Unlike traditional ghostwriting operations that require human labor, AI-driven automation minimizes overhead costs, maximizes accessibility, and severely cripples the capacity of institutional software to detect infractions. Investigations by Lancaster and Cotarlan (2021), alongside follow-up analyses by Perkins et al. (2024), assert that GenAI has accelerated the normalization of outsourcing academic tasks to third-party digital entities, directly challenging the validity of university grading systems that rely on written coursework as primary measures of student capability.

2.3 Technological Reliance and Student Autonomy

The phenomenon of technological dependence has long been scrutinized within educational literature due to its potential to hinder learner autonomy and

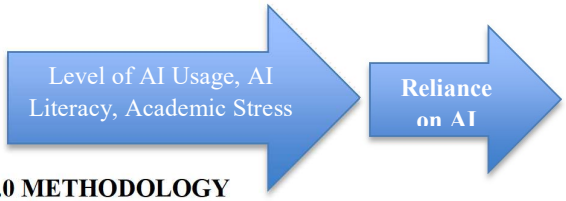
restrict cognitive development. In the era of generative AI, this dependence grows increasingly complex because the technology does not merely optimize information retrieval; it actively assumes control over higher-order cognitive functions, including reasoning, synthesis, and academic decision-making. Media dependency theory posits that as individuals rely intensely on digital systems to execute cognitive operations; they experience a proportional reduction in active mental processing and self-regulatory capacities. Habitual utilization of AI for content generation can establish stable patterns of cognitive delegation, where students progressively yield their intellectual responsibilities to automated algorithms. Recent empirical research corroborates that high reliance on GenAI significantly correlates with a decline in critical thinking skills, particularly when students treat raw AI outputs as final submissions without undergoing reflective evaluation or editing. Students exhibiting heavy AI dependency demonstrate lower metacognitive awareness and a passive disposition toward knowledge acquisition. This evidence validates concerns that GenAI fuels "surface learning" habits, wherein the primary focus shifts toward task completion rather than the internal construction of conceptual knowledge. Consequently, automated learning environments elevate the risk of cultivating an "illusion of competence"—a distorted self-perception of academic mastery that lacks any foundation in actual cognitive struggle or independent learning. Moreover, intense reliance on AI is directly linked to a psychological shift from an internal to an external locus of control, where individuals attribute success to external tools rather than personal competence.

2.4 Research Gap

While contemporary literature has extensively documented the rising adoption rates of generative AI in higher education, a conspicuous gap remains regarding the psychosocial dimensions of student reliance on these tools. Extant research predominantly prioritizes aggregate usage statistics, general user attitudes, or the immediate utility of AI as a learning aid, largely neglecting a deeper investigation into how students perceive AI as an ethical and academic decision-making entity. Empirical studies explicitly linking GenAI reliance to the systematic development of student autonomy and moral reasoning remain scarce. More specifically, current literature lacks a systematic focus on AI operating as an "epistemic authority" or a normative compass that validates the academic legitimacy of student coursework. This deficiency indicates that the dimensions of technological trust and delegated ethical evaluation have not yet been thoroughly explored. Furthermore, while the theoretical intersections of technological dependency and locus of control are well-established in educational psychology, empirical models integrating these constructs within the GenAI framework are highly limited. Most studies examine AI's impact on performance, leaving a critical gap in understanding how AI reliance fosters an external locus of control, erodes intellectual autonomy, and consequently drives academic integrity behaviors, particularly within teacher education programs.

2.5 Conceptual Framework

This study is grounded in the premise that generative AI utilization within higher education is not merely a technological trend, but a complex psychosocial phenomenon shaped by behavioral, psychological, and pedagogical dynamics that interact to influence academic integrity. Accordingly, this framework positions "reliance on AI" as the core mediating construct connecting technological use with ethical scholarship. By synthesizing media dependency theory, learner autonomy paradigms, and the locus of control construct, the proposed model illustrates how students construct psychological relationships with AI and how these dynamics dictate their adherence to academic integrity. The conceptual model operationalizes three independent variables: level of AI usage, AI literacy, and academic stress. These independent variables are hypothesized to directly predict reliance on AI—the systemic tendency to outsource cognitive effort and evaluative judgements to automated platforms. Within this structural framework, reliance on AI serves as a primary outcome variable and concurrently acts as a direct predictor of academic integrity awareness. In addition to these direct pathways, the framework incorporates two pivotal cognitive mechanisms as mediating variables: critical thinking and academic self-efficacy, modeled through the following localized paths:



3,0 METHODOLOGY

This study adopts a rigorous quantitative approach utilizing a cross-sectional survey design to empirically analyze the structural relationships between generative AI usage, technological reliance, and academic integrity awareness among higher education students. This specific design was selected due to its established efficiency in measuring psychosocial constructs at a single point in time and its capacity to test predictive, causal models derived from the conceptual framework. The target population comprises higher education students, specifically focusing on pre-service teachers enrolled in professional teacher education

programs. Purposive sampling was deployed based on two explicit inclusion criteria: respondents must have active experience using generative AI platforms for academic tasks, and they must formally consent to voluntary participation. The finalized sample size consists of 350 respondents, satisfying the statistical requirements for Partial Least Squares Structural Equation Modeling (PLS-SEM) to ensure parameter stability and robust statistical power.The research instrument consists of a highly structured, self-administered digital questionnaire adapted from validated scales in educational technology and psychological literature. The questionnaire measures seven core constructs: level of AI usage, AI literacy, academic stress, reliance on AI, critical thinking, academic self-efficacy, and academic integrity awareness. All psychometric items are evaluated using a standardized five-point Likert scale, ranging from "Strongly Disagree" (1) to "Strongly Agree" (5). Content validity was evaluated and verified by a panel of expert reviewers specializing in educational technology and instructional pedagogy, while internal consistency was strictly monitored using Cronbach's alpha and Composite Reliability (CR) indices. A pilot study was conducted prior to full deployment to confirm item clarity. Data collection was executed electronically via a secure digital survey platform to maximize reaching respondents. Participation remained fully voluntary and anonymous, and the data collection phase concluded over a fixed duration of three weeks.

Statistical analyses were executed using SmartPLS software across a sequential two-stage evaluation procedure. First, descriptive statistics were compiled to examine demographic profiles and aggregate construct scores. Second, the measurement model (outer model) was thoroughly evaluated to verify construct reliability and validity, utilizing internal reliability indices, Average Variance Extracted (AVE), and discriminant validity indicators via the Fornell-Larcker criterion. Finally, structural model evaluation (inner model) was performed to compute path coefficients (β), assess explanatory power (R2), and test the statistical significance of direct hypotheses. Advanced mediation analyses for critical thinking and academic self-efficacy were conducted via non-parametric bootstrapping executing 5,000 resamples to generate robust confidence intervals. This investigation strictly adhered to the ethical codes of social science research, guaranteeing respondent confidentiality.

4.0 RESULTS

This section outlines the empirical findings derived from the sequential evaluation of the PLS-SEM measurement model and structural model to test the hypothesized relationships.

4.1 Assessment of the Measurement Model

To establish the psychometric validity and reliability of the research instrument, outer loadings, Composite Reliability (CR), and Average Variance Extracted (AVE) were rigorously examined. Table 1 provides a comprehensive summary of the measurement model evaluations.

Core Research Construct	Number of Items	Outer Loadings (Range)	Composite Reliability (CR)	Average Variance Extracted (AVE)
Level of AI Usage	5	0.745 – 0.862	0.892	0.624
AI Literacy	6	0.712 – 0.834	0.878	0.548
Academic Stress	5	0.768 – 0.881	0.911	0.672
Reliance on AI	6	0.790 – 0.895	0.925	0.675
Critical Thinking	5	0.730 – 0.840	0.885	0.607
Self-Efficacy	4	0.772 – 0.865	0.890	0.670
Academic Integrity Awareness	6	0.755 – 0.870	0.914	0.641

Table 1: Summary of Measurement Model Assessment Results

As detailed in Table 1, all individual item outer loadings comfortably exceed the standard empirical threshold of 0.70. The Composite Reliability (CR) indices for all latent constructs range from 0.878 to 0.925, substantially exceeding the recommended benchmark of 0.70, which confirms exceptional internal consistency across all scales. Regarding convergent validity, every construct registers an Average Variance Extracted (AVE) value above the required 0.50 minimum, demonstrating that the measurement scales possess robust empirical validity.

4.2 Assessment of the Structural Model and Hypothesis Testing

Evaluation of the structural model was performed using a bootstrapping procedure to determine the

statistical significance of estimated path coefficients (β) and formally evaluate the research hypotheses. Table 2 synthesizes the results for both direct path relationships and specific indirect mediation effects.

Hypothesis	Path Relationship	Path Coefficient (β)	T-Statistic	P-Value	Empirical Result
H1	Level of AI Usage → Reliance on AI	0.342	5.821	< 0.001	Supported
H2	AI Literacy → Reliance on AI	-0.215	3.942	< 0.001	Supported
H3	Academic Stress → Reliance on AI	0.418	7.114	< 0.001	Supported
H4	Reliance on AI → Academic Integrity Awareness	-0.485	8.345	< 0.001	Supported
H5	Reliance → Critical Thinking → Integrity Awareness	0.145	3.124	0.002	Supported (Mediation)
H6	Reliance → Self-Efficacy → Integrity Awareness	0.122	2.891	0.004	Supported (Mediation)

Table 2: Structural Model Assessment and Hypothesis Testing Results

The structural model analysis indicates that Academic Stress ($\beta = 0.418$, $p < 0.001$) and Level of AI Usage ($\beta = 0.342$, $p < 0.001$) exert positive, highly significant direct effects on Reliance on AI. Conversely, AI Literacy demonstrates a significant negative relationship ($\beta = -0.215$, $p < 0.001$) with AI reliance. Crucially, Reliance on AI is proven to exert a powerful negative direct effect on Academic Integrity Awareness ($\beta = -0.485$, $p < 0.001$). Furthermore, the specific indirect path tests confirm that the mediating roles of Critical Thinking ($p = 0.002$) and Self-Efficacy ($p = 0.004$) are statistically significant.

5.0 DISCUSSION

This section contextualizes the empirical findings within the proposed conceptual framework, focusing specifically on the role of generative AI reliance as a prominent psychological predictor of academic integrity awareness among higher education students. The interpretation is structured around four prominent thematic dimensions: AI as an academic authority, consequences for critical thinking, the systemic risks of delegated ethics, and the long-term implications for professional teacher training.

5.1 AI Reliance as an Academic Authority

The empirical findings reveal that student reliance on AI has transitioned beyond basic instrumental usage, evolving into a form of normative trust where automated platforms are treated as primary authorities for academic validation. A substantial segment of students deploys GenAI to decisively judge whether their coursework is "safe for institutional submission," conforms to ethical boundaries, or perfectly matches faculty expectations—frequently bypassing formal university guidelines. This trend indicates a psychological shift from adhering to institutional policies toward relying on algorithmic metrics as absolute epistemic authorities. These findings strongly support assertions by Williamson and Eynon (2024) that AI is increasingly positioned as an "epistemic authority," effectively displacing traditional instructors and policy documentation as the definitive sources of academic truth. Within this cohort, students display a marked tendency to trust automated assessments due to their immediacy, consistency, and perceived objectivity, despite the fact that algorithms lack contextual comprehension of learning objectives or professional values. This reliance marks an erosion of academic autonomy, externalizing the validation of scholarly quality from independent self-reflection to automated systems. More critically, this dynamic reflects a structural reconfiguration of knowledge validation

in higher education, corroborating arguments by Caballé et al. (2025) that AI integration introduces far-reaching epistemic shifts in how knowledge is produced and verified.

5.2 Implications for Critical Thinking

The structural model documents a significant negative relationship between high reliance on AI and students' critical thinking capacities. Highly dependent students exhibit a strong tendency to accept machine-generated data passively, demonstrating minimal reflective engagement or independent verification of the output. This behavioral pattern aligns with conclusions by Modell et al. (2023) and Perez-Martinez et al. (2024), which warn that substituting generative tools for independent composition and analytical synthesis suppresses metacognitive processing and locks in surface learning habits. This evidence reinforces the "illusion of competence" paradigm, where students misinterpret rapid task completion as genuine conceptual mastery, masking severe gaps in independent understanding. Within this model, critical thinking operates as a vital mediating variable, confirming that students who preserve high critical thinking skills are significantly better equipped to interrogate AI outputs, verify data accuracy, and sustain their intellectual autonomy, even when facing time constraints and academic stress. As argued by Zawacki-Richter et al. (2022), AI optimizes deep learning only when embedded within pedagogical frameworks that explicitly demand independent critique, conceptual justification, and dialectical argumentation.

5.3 The Systemic Risks of "Delegated Ethics"

A primary conceptual contribution of this study is the empirical verification of "delegated ethics"—a state wherein students systematically outsource their moral reasoning and scholarly accountability to artificial intelligence systems. The data indicates that a notable portion of learners no longer engage in active self-evaluation regarding the ethical boundaries of their academic work; instead, they rely on AI to determine if a specific practice is acceptable. This demonstrates a modern displacement of moral agency, moving the individual's ethical locus of control over to digital systems. This phenomenon extends beyond simple textual plagiarism, signaling a fundamental transformation of values within higher education. In line with Perez-Martinez et al. (2024), when students rely on automated algorithms as the arbiters of academic legitimacy, they lose vital opportunities to cultivate ethical sensitivity, authentic self-reflection, and independent scholarly accountability. Within educational psychology paradigms, this externalization reinforces an external locus of control, leading students to credit automated systems for success rather than personal diligence. The long-term risks of delegated ethics are profound, as they normalize moral dependence on automated machines.

5.4 Context of Teacher Education and Long-Term Professional Implications

Within the pre-service teacher cohort, these empirical findings carry deep professional implications. Pre-service education students are not merely passive technology consumers; they are future instructors who will actively shape the learning cultures and academic values of future generations. Normalizing an intense reliance on AI as an epistemic authority during professional training increases the likelihood that these habits will be transferred into their future teaching practices, potentially institutionalizing cognitive and ethical delegation within primary and secondary classrooms. Consistent with Caballé et al. (2025), adopting AI unreflectively during professional preparation threatens the formation of a robust teaching ethos and impairs the ability of future educators to model critical thinking for their pupils. Teachers who habitually rely on automated systems for intellectual validation may be less prepared to evaluate the authenticity of their students' work or guide complex analytical reasoning. Therefore, these findings highlight the urgent need for early interventions within teacher training curricula, specifically through the integration of critical AI literacy, process-oriented authentic assessments, and structured ethical reflection, mirroring directives by UNESCO (2023).

6.0 IMPLICATIONS OF THE STUDY

6.1 Theoretical Implications

Theoretically, this study expands media dependency theory within higher education by shifting the analytical focus from basic instrumental use to the normative and ethical dimensions of AI dependency. While conventional frameworks predominantly evaluate how technology impacts student performance or behavioral engagement, this study demonstrates that AI reliance actively shapes moral reasoning and knowledge validation. Conceptually, these findings support extending dependency models to encompass "epistemic and moral reliance," where students rely on AI not just for task automation, but as an authoritative reference for academic truth. This reinforces the theoretical premise that educational technologies are not neutral tools; rather, they actively participate in shaping students' internal locus of control and intellectual autonomy. Additionally, this study enriches academic integrity literature by operationalizing AI reliance as a direct structural predictor of ethical awareness, rather than a secondary behavioral variable.

6.2 Practical Pedagogical Implications

From a practical standpoint, the findings demonstrate that relying solely on technical detection software is insufficient for preserving academic integrity in the AI era. Instead, higher education institutions must pivot toward pedagogical strategies that actively develop students' reflective and evaluative capacities. First, institutional policies must be supported by clear, context-specific communication at the course level to eliminate the ambiguity that drives students to seek algorithmic validation. Second, the data supports the integration of critical AI literacy modules that move beyond basic technical operations to address systemic biases, algorithmic opacity, and the cognitive limitations of generative systems. Third, academic integrity training must explicitly clarify the boundary between valid digital assistance and cognitive delegation, where independent reasoning is outsourced. This distinction can be reinforced by authentic assessment designs that evaluate the learning process, iterative reflections, and student justifications, reducing the opportunity for machine substitution.

6.3 Institutional Policy Implications

Regarding policy design, this study underscores the urgent need for universities to draft comprehensive, pedagogically grounded frameworks for AI integration. Institutional policies must move away from purely punitive or detection-oriented models to prioritize human agency, academic transparency, and professional accountability. Policy frameworks should clearly define permissible use cases, mandate explicit disclosure of generative tools in coursework, and incentivize assessment structures that validate learning processes alongside final products. Furthermore, policy implementation must be supported by systematic faculty professional development, ensuring that instructors possess the necessary AI literacy to guide students consistently. On a broader scale, these findings point to the necessity of aligning AI policies at a national level to promote responsible technology use across higher education.

7.0 LIMITATIONS AND FUTURE RESEARCH

Although this study provides valuable empirical insights, several structural limitations must be acknowledged to guide future research efforts. First, the cross-sectional survey design prevents drawing definitive causal inferences between variables, as the data captures statistical associations at a single point in time. Consequently, the long-term trajectory of AI reliance and its cumulative impact on moral and cognitive development cannot be fully observed. Future research should implement longitudinal designs to track how technological dependence and ethical awareness evolve across a student's academic journey. Second, the data relies on self-reported measures, which are susceptible to social desirability bias, particularly given the sensitive nature of academic integrity topics. Future studies should adopt mixed-methods approaches, incorporating qualitative interviews or focus groups to explore how students navigate ethical dilemmas in real-world scenarios.

Third, the sample is restricted to pre-service teachers within teacher education programs, limiting the generalizability of the findings to the broader university population. Behavioral patterns and integrity standards may vary across disciplines like engineering, medicine, or computer science, which operate under distinct assessment structures and professional demands. Therefore, comparative cross-disciplinary and cross-cultural research is highly recommended to evaluate the global generalizability of the proposed model. Finally, while this study includes critical thinking and self-efficacy as key mediators, other relevant psychosocial factors—such as individual moral foundations, goal orientations, and peer norms—were not explored. These variables warrant inclusion in future structural models.

8.0 CONCLUSION

This study advances contemporary understanding of generative AI's impact on higher education by establishing technological reliance as a key structural predictor of academic integrity awareness among pre-service teachers. The empirical findings demonstrate that AI adoption is not merely a technical challenge, but a complex psychosocial shift involving the displacement of academic authority, the erosion of critical thinking, and the delegation of moral agency to algorithmic systems. The significant mediating roles of critical thinking and self-efficacy confirm that the negative effects of AI reliance are not inevitable; rather, they can be mitigated through targeted pedagogical frameworks that foster self-reflection, intrinsic confidence, and scholarly accountability. Crucially, within teacher education, these findings highlight a pressing risk: pre-service teachers who normalize cognitive and ethical delegation during their training may perpetuate these dependencies in their future classrooms, challenging the fundamental role of education in developing independent thinkers. Ultimately, managing AI in higher education requires moving beyond purely technical or regulatory solutions toward a comprehensive pedagogical transformation that positions human agency, critical reflection, and moral accountability at the center of digital learning.

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