

Liberal Journal of Language & Literature Review

Print ISSN: 3006-5887

Online ISSN: 3006-5895

<https://llrjournal.com/index.php/11>

**Generative AI and Learning Analytics for Personalized Education:
Predicting Student Performance, Dropout Risk, Learning Gaps, and
Adaptive Learning Needs in Pakistani Universities**



**Kinza Afraz^{*1}, Abdul Hameed Abbasi²,
Sadam Hussain Alias Ali Dino³**

*^{*1}Pir Mehr Ali Shah Arid Agriculture University, Rawalpindi*

*²MS ELM Scholar, Shaheed Zulfikar Ali Bhutto Institute of
Science and Technology University Larkana*

*³MS ELM Scholar, Shaheed Zulfikar Ali Bhutto Institute of
Science and Technology University Larkana*

*^{*1} kinzaafraz11@gmail.com , ²hameedlrk@gmail.com ,
³sadamalidino@gmail.com*

Abstract

The rapid integration of Generative Artificial Intelligence (GenAI) into higher education has precipitated a paradigm shift in academic production, assessment practices, and pedagogical engagement worldwide. This study provides a comprehensive analysis of the multifaceted impact of GenAI on academic integrity and assessment practices within Pakistani Higher Education Institutions (HEIs). Employing a systematic synthesis of empirical evidence, policy documents, and theoretical frameworks, the paper examines the dual-vector paradox wherein GenAI simultaneously functions as a pedagogical productivity tool while inducing cognitive atrophy and threatening academic integrity through unmonitored usage. Empirical data from Pakistani university contexts reveal widespread student adoption of tools like ChatGPT, with a statistically significant moderate positive correlation ($r = 0.453$, $p < 0.05$) between GenAI utilization and continuous skill enhancement, yet a significant negative relationship with critical thinking ($\beta = -0.32$) and academic integrity adherence ($\beta = -0.28$). The paper critically evaluates the regulatory framework established by the Higher Education Commission (HEC), including the mandatory AI curriculum directive effective Fall 2026 and institutional governance mechanisms through Departmental Standing Committees. It identifies systemic vulnerabilities, highlighted by a national implementation index of only 0.61 out of 1.00, and proposes the Pakistan AI Education Translation Framework—a six-stage operational pathway addressing access readiness, safety governance, teacher preparedness, curriculum localization, assessment integrity, and evidence-based scaling. The paper concludes that preserving academic integrity in the GenAI era necessitates a fundamental pedagogical transformation from vulnerable summative assessments toward authentic, process-oriented evaluation modalities that prioritize critical thinking, localized problem-solving, and verifiable personal insight, while ensuring equitable access across Pakistan's socio-economically stratified higher education landscape.

Keywords: *Generative Artificial Intelligence, Academic Integrity, Assessment Practices, Higher Education, Pakistan, ChatGPT, HEC Policy Framework, Digital Divide, Authentic Assessment, AI Literacy*

1. Introduction

The rapid evolution and widespread adoption of Generative Artificial Intelligence (GenAI) driven by Large Language Models (LLMs) such as ChatGPT, DeepSeek, and advanced neural architecture frameworks have introduced a profound paradigm shift in global higher education (Miao & Holmes, 2023). These systems, capable of generating contextually coherent text, synthesizing complex domain literature, executing computer code, and producing novel creative outputs, have fundamentally altered the mechanics of academic production and pedagogical engagement (Ashraf et al., 2025). In non-Western and developing academic ecosystems, such as Pakistan, the emergence of GenAI presents a complex intersection of educational opportunity and structural disruption (Buriro et al., 2024).

Pakistani Higher Education Institutions (HEIs) operate within an environment characterized by acute resource constraints, elevated student-to-faculty ratios, uneven technological infrastructure, and an enduring reliance on traditional summative assessment frameworks. Within this landscape, GenAI technology acts as a double-edged sword. On one side, it offers low-cost adaptive learning support, mitigates language competency barriers for non-native English speakers, and provides personalized tutoring capabilities that partially alleviate institutional resource

deficits (Ogunleye et al., 2025). Conversely, the unguided integration of GenAI threatens academic integrity, risks inducing cognitive atrophy through the reliance on technological shortcuts, and exposes deep policy-to-practice execution gaps across the national higher education sector (Shahid et al., 2025).

This review article provides an exhaustive analysis of the impact of Generative AI on academic integrity and assessment practices within Pakistani HEIs. It synthesizes empirical data, evaluates the regulatory initiatives led by the Higher Education Commission (HEC) of Pakistan, explores the socio-technological dynamics shaping AI adoption across diverse institutional tiers, and presents a structural framework for transitioning from legacy evaluation models toward resilient, authentic assessment practices (Ogunleye et al., 2024).

2. Theoretical Framework and Ethical Landscape

2.1 The Dual-Vector Paradox: Pedagogical Productivity vs. Cognitive Atrophy

The integration of GenAI into higher education operates through a dual-vector mechanism, exerting simultaneous positive and negative pressures on student learning outcomes and cognitive development (Abbasi, 2026). As a pedagogical productivity tool, GenAI functions as a digital assistant capable of streamlining literature reviews, refining syntactical structures, facilitating conceptual brainstorming, and providing instantaneous feedback beyond standard university operational hours. Empirical evidence demonstrates a statistically significant moderate positive correlation ($r = 0.453, p < 0.05$) between GenAI utilization and continuous self-directed upskilling among university students in Pakistan (Holmes & Miao, 2023). Furthermore, by establishing uniform linguistic benchmarks, GenAI tools equalize learning opportunities for non-native English-speaking scholars, allowing domain knowledge to take precedence over syntactical fluency (Yvan et al., 2026).

However, an unmonitored over-reliance on LLMs introduces severe cognitive risks. When students deploy GenAI as an absolute substitute for personal intellectual effort, the technology impairs higher-order cognitive processing, analytical synthesis, and independent problem-solving abilities (Aladsani et al., 2026). Empirical investigations into Pakistani university classrooms indicate a statistically significant negative relationship between high-frequency ChatGPT usage and both critical thinking skills ($\beta = -0.32$) and academic integrity adherence ($\beta = -0.28$). This cognitive offloading fosters a superficial learning culture where scholars passively consume generated outputs without engaging in the intellectual friction required for deep learning (Fields, 2024).

2.2 Socio-Technological Capital and the Digital Divide

Analyzing GenAI strictly through the lens of pedagogical efficiency overlooks the socio-technological stratification inherent in Pakistan's higher education system. Applying Bourdieu's theoretical framework of capital, advanced GenAI capabilities function as a form of "Digital Capital" that reproduces and amplifies existing social inequalities (Mackenzie et al., 2025). Access to premium AI models, high-speed broadband, paid API integrations, and institutional digital literacy training is unequally distributed across urban-rural divides, provincial jurisdictions, and institutional types (Kuang & Gao, 2026).

Empirical data reveals a distinct divergence in user perception across institutional domains: students enrolled in private universities perceive significantly higher learning benefits and utility from GenAI tools than those in public or semi-government institutions. This disparity is driven by differences in campus infrastructure, faculty digital readiness, and access to hardware (Al Yakin et al., 2026). Consequently, without deliberate policy interventions, the unguided adoption of GenAI threatens to exacerbate educational disparities, granting privileged cohorts enhanced academic velocity while socio-economically disadvantaged students remain constrained by basic digital infrastructure and limited institutional support (Messina & Panciroli, 2025).

3. Empirical Realities in Pakistani Higher Education

Recent empirical scholarship provides quantitative and qualitative insights into how students, faculty, and institutions across Pakistan interact with Generative AI tools. These studies highlight a clear tension: while student adoption of tools like ChatGPT is widespread and rapidly expanding, institutional preparedness and faculty readiness lag significantly behind (Zheng et al., 2025).

In a comprehensive quantitative survey of 400 undergraduate and postgraduate students across diverse Pakistani universities, researchers observed widespread usage of ChatGPT for assignment drafting, conceptual comprehension, and automated text summary. While demographics such as gender showed no statistically significant variation

regarding perceived benefits or ethical concerns, institutional context emerged as a key differentiating variable. Students in private universities reported higher satisfaction and lower friction when integrating AI into their daily academic workflows than their public sector peers (Muzaffar & Fatima, 2026).

Simultaneously, institutional readiness remains fragmented. A nationwide assessment evaluating AI policy execution across 100 HEC-recognized universities yielded a mean awareness and implementation index of only 0.61 out of 1.00. This metric underscores systemic vulnerabilities: despite national policy directives, the majority of HEIs lack active compliance monitoring, standardized faculty training programs, and operational academic integrity protocols tailored to generative technologies (Muzaffar & Fatima, 2026).

Table 1 synthesizes key empirical studies conducted within the Pakistani higher education context, detailing their methodological frameworks, target populations, and core analytical findings.

Table 1: Empirical Landscape of Generative AI Integration in Pakistani Universities

Study / Source	Methodology & Sample Size	Primary Focus Area	Key Findings & Statistical Measures
PIDE Research (2026)	Two-tier qualitative (FGDs) & descriptive quantitative triangulation across academics and students	Knowledge users' perspectives, ethical threats, and cognitive impact	Highlights a dual narrative: AI serves as a productivity partner but induces cognitive crippling and AI-assisted cheating when unmonitored; calls for capacity-building.
Emerald Study (2025)	Correlational quantitative survey ($N = 475$ students across Sindh HEIs; SPSS v27)	Influence of GenAI on continuous learning and upskilling	Moderate positive correlation ($r = 0.453$) between GenAI usage and continuous skill enhancement, rejecting the null hypothesis.
Social Science Review (2026)	Quantitative survey ($N = 250$ undergraduate & postgraduate students; SPSS & R)	Impact of ChatGPT on critical thinking and academic integrity	Significant negative regression paths identified for critical thinking ($\beta = -0.32$) and academic integrity ($\beta = -0.28$).
MDPI Study (2025)	Structured quantitative survey ($N = 400$ students across public/private HEIs)	Perceptions of benefits, challenges, and demographic variances	High perceived benefit overall; no gender-based differences, but private HEI students perceive significantly higher benefits than public HEI students.
IRJEI Study (2024)	Mixed-methods (Quantitative surveys & qualitative faculty/student interviews)	Learning outcomes, faculty readiness, and assessment impact	Highlights high student adoption contrasted against low faculty readiness and acute institutional policy voids.
JCPSP Study (2025)	Policy execution analysis across 100 HEC-recognized institutions	Institutional awareness, policy communication, and compliance	Reveals a mean national implementation score of 0.61, signaling fragmented compliance and heightened risk of academic misconduct.

4. Policy Governance and the HEC Regulatory Framework

4.1 Statutory Authority and the HEC Draft Framework

Recognizing the risks posed by unguided AI deployment, the Higher Education Commission (HEC) of Pakistan derived its regulatory mandate from Section 10(a) of the Higher Education Commission Ordinance of 2002. This statutory clause empowers the Commission to formulate national policies, guiding principles, and priorities to safeguard quality and promote ethical research standards across all degree-awarding institutions (Rafiq-uz-Zaman, 2025).

In response to the surge of LLM access, the HEC established an Experts Committee on July 6, 2023, tasked with creating a national framework for the fair and ethical usage of Generative AI in HEIs. The resulting regulatory framework establishes clear institutional boundaries, requiring universities to implement Departmental Standing Committees (DSCs) to enforce compliance, conduct algorithm audits, and protect academic integrity (Atta et al., 2026).

4.2 Mandatory AI Curriculum Directive (Fall 2026)

To complement its ethical guidelines, the HEC executed a structural policy reform during its 47th Commission meeting, chaired by Chairman Dr. Niaz Ahmad Akhtar. The Commission approved a policy mandating a compulsory three-credit-hour Artificial Intelligence course across every undergraduate and postgraduate degree program nationwide (Ehtsham et al., 2025).

Effective starting the Fall 2026 academic intake, this mandate applies universally across all public and private universities, encompassing both computing and non-computing disciplines, professional tracks, and general humanities programs. The strategic objective is to build foundational AI literacy, algorithmic awareness, and ethical competencies across the entire national graduate workforce, aligning domestic standards with global market expectations (Tahira et al., 2025).

Parallel alignment with the National Artificial Intelligence Policy 2025 formulated by the Ministry of Information Technology and Telecommunication (MoITT) further reinforces this academic mandate. The national policy establishes targeted human capital pipelines, including 3,000 annual postgraduate and doctoral AI scholarships co-managed by the HEC, interest-free educational financing schemes, and dedicated research quotas allocated through Centers of Excellence in AI (CoE-AI) (Naqvi, 2024).

4.3 Key Directives of the HEC Policy Framework

The HEC framework establishes operational rules for faculty, researchers, and students. It explicitly delineates acceptable learning aids from dishonest practices, codifying clear authorship boundaries and mandatory disclosure standards (Speight, 2016).

Table 2 outlines the core structural components of the HEC Generative AI Policy Framework and its associated institutional directives.

Table 2: HEC Policy Directives and Operational Guidelines for Generative AI in HEIs

Governance Dimension	Core Policy Requirement	Operational Implementation Mechanism
Authorship Boundaries	GenAI tools strictly prohibited from being listed as authors or co-authors.	AI must only be cited as a technical support tool; legal and moral responsibility rests entirely on human authors.
Mandatory AI Declaration	Mandatory placement of an explicit AI usage declaration before the manuscript reference section.	Authors must detail the specific tool used, purpose of use, and confirm manual verification of all outputs.
Prohibited Data Gathering	Unverified reliance on GenAI for empirical data collection or literature citations is forbidden.	Direct prohibition against using LLM outputs as primary sources due to risks of hallucinated citations.
DSC Ethical Audits	Departmental Standing Committees must audit institutional GenAI software applications.	Regular screening for algorithmic bias, data privacy breaches, and tracking anonymization of student data.
Universal Literacy Mandate	Compulsory 3-credit-hour AI course across all higher education degree programs starting Fall 2026.	Approved at the 47th HEC meeting; requires public/private curriculum revisions across all disciplines.
Scholarship & Research Linkage	Integration with National AI Policy 2025 for advanced talent development.	Allocation of 3,000 annual AI scholarships and interest-free education financing via HEC-MoITT funding.

5. Spectrum of Misconduct and Assessment Redesign

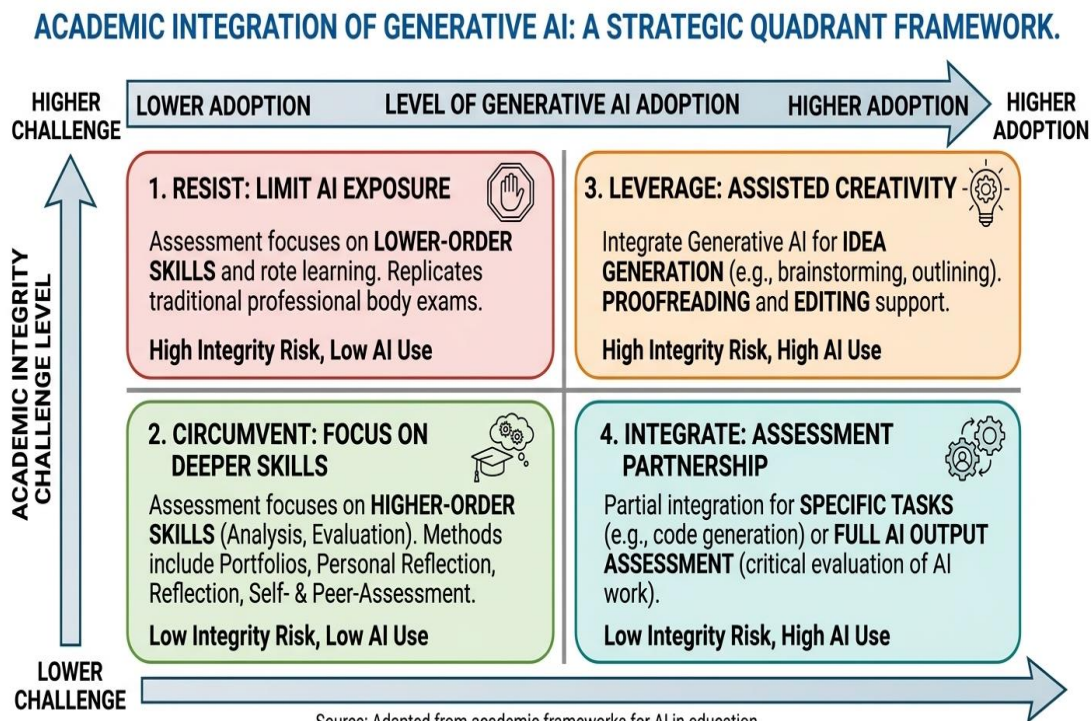
5.1 Misconduct Vectors in LLM-Assisted Environments

The availability of LLMs has expanded the tactics used for academic dishonesty beyond traditional cut-and-paste plagiarism. Higher education institutions in Pakistan face complex forms of digital misconduct that bypass traditional anti-plagiarism detection systems (Cotton et al., 2024).

A primary violation manifests as AI ghostwriting, wherein students generate entire essays, programming codes, or research proposals using prompt sequences and present the output as original intellectual work. A related practice involves automated paraphrasing, where plagiarized text or AI-generated material is passed through automated rewriting software to artificially reduce similarity metrics on detection platforms such as Turnitin. Furthermore, students increasingly risk submitting hallucinated citations, synthetic empirical datasets, and fabricated research findings produced by LLMs (Bender et al., 2021). In digital assessment environments, instances of prompt engineering designed to manipulate automated grading systems and digital impersonation such as generating fake administrative communications or academic endorsements pose additional threats to institutional governance (Perkins et al., 2024).

Relying exclusively on automated AI detection software to combat these behaviors is technically flawed. These detectors present high rates of false positives frequently misidentifying authentic text written by non-native English speakers as AI-generated while failing to flag text processed through advanced paraphrasing pipelines. Consequently, institutional focus must shift from automated detection to fundamental pedagogical redesign (Laidlaw, 2026).

Figure 1: Strategic Quadrant Framework Matrix Mapping Generative AI Adoption Levels Against Academic Integrity Challenge Risks.



5.2 Transitioning to Authentic Assessment Modalities

Preserving academic integrity requires replacing unmonitored take-home writing assignments with authentic, process-oriented assessment models. Traditional summative assessments, such as standard term papers, are

vulnerable to automation by basic LLMs. Authentic assessment strategies, by contrast, evaluate the learning process itself, demanding real-world contextual application, critical analysis, and verifiable personal insight (Perkins et al., 2024).

To operationalize authentic assessment, institutions must restructure course evaluation frameworks around continuous, multi-stage workflows. Faculty members should mandate staged submissions, requiring students to present initial ideation maps, annotated bibliographies, rough outlines, and iterative drafts prior to final submission. Tracking this developmental process renders full AI ghostwriting visible and difficult to execute. Additionally, embedding interactive oral defenses (viva voce) into major assignments allows instructors to evaluate student comprehension directly (Cotton et al., 2024).

Pedagogical frameworks must also incorporate localized problem-solving tasks centered on real-world Pakistani socio-economic, legal, or industrial challenges. Because LLMs are trained predominantly on Western datasets, highly localized assignments force students to engage in primary research and contextual reasoning. Finally, educators can turn AI into a teaching tool by assigning tasks that require critical audits of LLM outputs. In these exercises, students generate an AI response on a complex domain topic, fact-check its assertions, identify underlying biases or hallucinations, and submit an annotated critical commentary (Chan & Hu, 2024).

6. Systemic Governance: The Pakistan AI Education Translation Framework

To bridge the policy-to-practice gap highlighted by national institutional audits where the mean implementation score stands at 0.61 higher education governance must adopt a structured translation strategy. The *Pakistan AI Education Translation Framework* offers a six-stage operational pathway designed specifically for the administrative, structural, and socio-economic realities of Pakistani HEIs (Weber-Wulff et al., 2023).

The framework begins with Access Readiness, requiring institutions to conduct thorough connectivity and device audits to establish equitable baselines before enforcing technology-dependent policies. The second stage, Safety and Governance, focuses on enforcing data privacy mandates, establishing consent protocols, and operationalizing Departmental Standing Committees to handle AI misconduct transparently. The third stage addresses Teacher Readiness, equipping faculty with pedagogical prompt engineering skills and ethical literacy to shift their role from passive surveillance to active mentorship ((Liang et al., 2023).

The fourth stage, Curriculum Localization, integrates Urdu and regional context into AI training to align content with national development priorities. The fifth stage centers on Assessment Integrity, replacing vulnerable take-home examinations with staged portfolios, viva voce defenses, and mandatory AI usage declarations. Finally, the sixth stage emphasizes Evidence-Based Scaling, establishing longitudinal monitoring systems to audit policy compliance and academic integrity metrics across public and private universities (Muzaffar & Fatima, 2026).

Figure 2: Comprehensive Multi-Tier Framework for Strategic AI Integration and Institutional Development in Higher Education.



Table 3: The Six-Stage Translation Framework for Governance and Assessment Transformation

Framework Stage	Core Strategic Objective	Integrity & Assessment Mechanism	Infrastructure & Policy Requirement
1. Access Readiness	Map and resolve disparities in digital connectivity, device access, and language resources across public/private HEIs.	Establish equitable baselines so assessment policies do not penalize socio-economically disadvantaged cohorts.	National digital infrastructure audits; campus broadband expansion; subsidized device access.
2. Safety & Governance	Operationalize data privacy, consent mechanisms, and human oversight protocols.	Institutionalize Departmental Standing Committees (DSCs) to adjudicate AI misconduct transparently.	Enforcement of data anonymization rules; alignment with national privacy mandates.

3. Teacher Readiness	Upskill academic faculty in pedagogical prompt engineering, ethics, and AI literacy.	Shift faculty role from passive surveillance to active mentorship and authentic assessment design.	Mandatory professional development workshops; allocation of faculty training funds.
4. Localized Curriculum	Contextualize learning materials within national socio-economic realities and regional languages (Urdu, etc.).	Reduce reliance on generic Western AI training data by demanding localized context in assignments.	Notification of model syllabi customized for non-computing disciplines by HEC Secretariat.
5. Assessment Integrity	Shift from vulnerable summative exams to process-oriented authentic evaluations.	Mandate viva voce, staged draft tracking, portfolios, and mandatory AI usage declarations.	Redesign of university examination rubrics; elimination of unmonitored essays.
6. Evidence-Based Scaling	Monitor execution metrics, audit compliance across public/private sectors, and scale successful models.	Longitudinal tracking of academic integrity trends and learning outcome benchmarks.	Biannual national compliance reporting overseen by the Higher Education Commission

Conclusion

The emergence and widespread adoption of Generative Artificial Intelligence represent a watershed moment for higher education in Pakistan, presenting both unprecedented opportunities and formidable challenges. This review has systematically demonstrated that GenAI tools, particularly Large Language Models, fundamentally alter the landscape of academic production, pedagogical engagement, and institutional governance. While these technologies offer significant potential to mitigate resource constraints, enhance learning accessibility for non-native English speakers, and provide adaptive support in under-resourced institutional contexts, their unguided integration poses serious threats to academic integrity and cognitive development. The empirical evidence synthesized in this review reveals a troubling disconnect between rapid student adoption of GenAI tools and institutional preparedness. With a national policy implementation index of only 0.61, Pakistani HEIs exhibit fragmented compliance, inadequate faculty training, and persistent policy-to-practice gaps. The HEC's regulatory framework, including the mandatory AI curriculum directive and departmental governance mechanisms, represents a commendable first step, yet its effectiveness hinges on robust enforcement, continuous faculty development, and equitable infrastructure investment. Critically, this review establishes that reliance on automated detection technologies is technically flawed and pedagogically insufficient. Instead, preserving academic integrity requires fundamental assessment redesign—transitioning from vulnerable summative examinations to authentic, process-oriented evaluation models that incorporate staged submissions, interactive oral defenses, localized problem-solving tasks, and critical AI literacy exercises. The proposed Pakistan AI Education Translation Framework offers a structured pathway for this transformation, addressing the socio-technological stratification inherent in Pakistan's higher education system and ensuring that policy directives translate into meaningful institutional practice. Ultimately, the future of Pakistani higher education in the GenAI era depends on deliberate, evidence-based policy interventions that harness technological potential while safeguarding intellectual rigor, equity, and academic integrity.

References

- Abbasi, R. N. (2026). *From Hashtags to Regime Change: How AI-Driven Social Media Algorithms Fueled Youth Protests Against Authoritarianism in Bangladesh but Stalled in Pakistan (2020–2025)* (Master's thesis, Coastal Carolina University).
- Al Yakin, A., Cardoso, L., Al Matari, A. S., Muthmainnah, & Obaid, A. J. (2024, June). Enabling sustainable learning through virtual robotics machine mediation of social interactions between teachers, students, and machines

- based on sociology lens. In *International Conference on Explainable Artificial Intelligence in the Digital Sustainability* (pp. 55-76). Cham: Springer Nature Switzerland.
- Aladsani, H. K., Al-Dokhny, A. A., & Drwish, A. M. (2026). Practices and evaluation of generative AI in English-language publication: Insights from Saudi non-native English-speaking researchers. *Sage Open*, 16(1), 21582440261420858.
- Ashraf, M. A., Alam, J., & Kalim, U. (2025). Effects of ChatGPT on students' academic performance in Pakistan higher education classrooms. *Scientific Reports*, 15, Article 16434. <https://doi.org/10.1038/s41598-025-92625-1>
- Atta, S. H., Mughal, M. U., Yousaf, M., & Ahmed, B. (2026). IMPACT OF CHATGPT USAGE ON CRITICAL THINKING AND ACADEMIC PERFORMANCE OF UNIVERSITY STUDENTS IN PAKISTAN. *Liberal Journal of Language & Literature Review*, 4(1), 3434-3458.
- Bender, E. M., Gebru, T., McMillan-Major, A., & Shmitchell, S. (2021). On the dangers of stochastic parrots: Can language models be too big? *Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency*, 610–623. <https://doi.org/10.1145/3442188.3445922>
- Buriro, M., Sethar, W. A., & Parhyar, A. (2024). The future of learning: Integrating ChatGPT in Pakistan's higher education. *Annals of Human and Social Sciences*, 5(2), 699–705. [https://doi.org/10.35484/ahss.2024\(5-II\)64](https://doi.org/10.35484/ahss.2024(5-II)64)
- Chan, C. K. Y., & Hu, W. (2024). Students' voices on generative AI: Perceptions, benefits, and challenges in higher education. *Education Sciences*, 14(6), 569.
- Cotton, D. R. E., Cotton, P. A., & Shipway, J. R. (2024). Chatting and cheating: Ensuring academic integrity in the era of ChatGPT. *Innovations in Education and Teaching International*, 61(2), 228–239.
- Ehtsham, M., Imran, F., Channa, K. F., & Ashfaq, M. S. (2025). Investigating the impact of artificial intelligence on quality assurance in higher education: A systematic review. *Social Science Review Archives*, 3(4), 914-927.
- Fields, A. N. (2024). AI-Assisted College Composition for Non-Native Speakers of English-A Course Design.
- Holmes, W., & Miao, F. (2023). *Guidance for generative AI in education and research*. Unesco Publishing.
- Kuang, W., & Gao, X. (2026). Multidimensional responses to generative AI in higher education: an integrative framework linking institutional governance, teaching practice, and student psychological adaptation. *Frontiers in Psychology*, 17, 1789506.
- Laidlaw, P. (2026). Supporting assessment redesign in the age of AI: A critical practice-based framework for equitable change. *Teaching in Higher Education*. <https://doi.org/10.1080/13562517.2026.2670362>
- Liang, W., Yuksekgonul, M., Mao, Y., Wu, E., & Zou, J. (2023). GPT detectors are biased against non-native English writers. *Patterns*, 4(7), 100779. <https://doi.org/10.1016/j.patter.2023.100779>
- Mackenzie, T., McNair, L. D., Khan, R., Paul, A., & Bhaduri, S. (2025, June). WIP: Gen AI in Engineering Education and the Da Vinci Cube. In *2025 ASEE Annual Conference & Exposition*.
- Messina, S., & Panciroli, C. (2025). Rethinking teaching with GenAI: Theoretical models and operational tools. *Journal of Inclusive Methodology and Technology in Learning and Teaching*, 5(1).
- Miao, F., & Holmes, W. (2023). *Guidance for generative AI in education and research*. UNESCO.
- Muzaffar, E., & Fatima, M. (2026). Exploring generative AI in social sciences: A case study of selected universities in Karachi, Pakistan. *Social Sciences Spectrum*, 5(1), 207-223.
- Muzaffar, E., & Fatima, M. (2026). Exploring generative AI in social sciences: A case study of selected universities in Karachi, Pakistan. *Social Sciences Spectrum*, 5(1), 207-223.
- Naqvi, S. K. H. (2024). Ethical Challenges of Artificial Intelligence and Way Forward.
- Ogunleye, B., Zakariyyah, K. I., Ajao, O., Olayinka, O., & Sharma, H. (2024). *Higher education assessment practice in the era of generative AI tools*. arXiv. <https://doi.org/10.48550/arXiv.2404.01036>
- Ogunleye, B., Zakariyyah, K. I., Ajao, O., Olayinka, O., & Sharma, H. (2025). Generative AI and academic integrity in higher education: A systematic review and research agenda. *Information*, 16(4), 296. <https://doi.org/10.3390/info16040296>
- Perkins, M., Roe, J., Postma, D., Hickerson, D., McGaughran, J., & Dempsey, M. (2024). Detection of GPT-generated text in academic writing. *International Journal for Educational Integrity*, 20, Article 9.

Liberal Journal of Language & Literature Review

Print ISSN: 3006-5887

Online ISSN: 3006-5895

- Rafiq-uz-Zaman, M. (2025). Between adoption and ambiguity: Navigating the AI policy vacuum in Pakistani higher education. *Research Journal for Social Affairs*, 3(6), 877-885.
- Shahid, Z., Naqvi, S., Gul, S., & Hussain, I. (2025). Effectiveness of workshop-based academic intervention on plagiarism awareness and ChatGPT use among undergraduate medical students, Karachi. *Health Professions Educator Journal*, 8(2), 18–23. <https://doi.org/10.53708/hpej.v8i2.3856>
- Speight, J. G. (2016). *Ethics in the University*. John Wiley & Sons.
- Tahira, S. S., Aziz, A., & Irshad, M. Q. (2025). Evolving Dynamics of Pakistan's Higher Education: Emerging Trends and Future Directions. *Pakistan Social Sciences Review*, 9(4), 154-163.
- Walters, W. H., & Wilder, E. I. (2023). Fabrication and errors in the bibliographic citations generated by ChatGPT. *Scientific Reports*, 13, 14045. <https://doi.org/10.1038/s41598-023-41032-5>
- Weber-Wulff, D., Anohina-Naumeca, A., Bjelobaba, S., Foltýnek, T., Guerrero-Dib, J., Popoola, O., Šigut, P., & Waddington, L. (2023). Testing of detection tools for AI-generated text. *International Journal for Educational Integrity*, 19, 26.
- Yvan, N. J. C., Charles, K., & Lucy, A. C. (2026). The impact of generative artificial intelligence tools on assessment equity for non-native English-speaking medical students: a systematic review. *BMC Medical Education*.
- Zheng, Q., Yuan, X., & Xu, L. (2025). Impact of generative models on higher education: exploring opportunities and challenges. *Education and Information Technologies*, 30(17), 25505-25542.