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ChatGPT in Teaching and Learning at University Classes: Are Traditional Pedagogues better Fit?

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Abstract

This research assesses the connection between collaborating with ChatGPT, note recitation and academic performance in the context of the Master's degree program at Tribhuvan University in Nepal. As teaching and learning paradigms have rapidly changed, students have been confronted with the need to blend traditional lecturing pedagogical methods with the inevitable inclusion of AI technologies. This study utilized a mixed method (QUAN-qual) approach with quantitative data from sample sizes of 280 university students and interview data from 10 university students. The results indicated that collaborating with ChatGPT significantly affected students performance, (path coefficient, 0.32 ($t=3.01$, $p<0.002$)). Similarly, collaborating by reciting notes, exhibited a strong positive relationship with student performance (path coefficient, 0.38, ($t=2.95$, $p<0.003$)). Therefore, the findings highlight a hybrid effect of AI-tools and recitation in student performance. The COVID-19 pandemic intensified the already urgent need for online learning at TU, highlighting significant challenges such as poor and limited internet access (costly). TU might consider a pragmatically directed blend of AI tools and existing textbooks as part of a contemporary pedagogical framework.

Introduction

Tribhuvan University (TU), being the oldest institution for higher learning, has historically had an important role in producing competent human resources in Nepal. Prior to the pandemic, teaching and learning at TU was based on reciting from notes (Tiwari, 2023) that consisted of face-to-face conversation coupled with the student reliance on printed

copies of notes for student learning and exam preparation (Neupane, 2024). With the onset of COVID-19, there was a new and rapid shift to digital resiliency, not that it improvement online course, but it did offer system vulnerabilities, such as a share digital divide and unpreparedness for distant learning (Alenezi, 2023; Maity, 2021; Zou, et al., 2021).

The promise that AI brings is very exciting for positive changes in learning and teaching. Nevertheless, here at TU, the pace of implementation has been too fast with it being second nature for university students to use (Tiwari, 2023). Primarily, there are real issues which are the secondary issues like concerns of plagiarism and originality. So far, ongoing discourse on the integration of AI and ethics at TU is of importance as a smaller version of a recurrent national issue. We are now entering an epoch of profound change in education, with the most significant being the integration of AI (Zhou, 2023). Because of its foundational scalability and personalizability, the integration of ChatGPT will constellate established educational practices (Lin & Chen, 2024). Indeed, technological advances have, in the past, had such major impacts on students learning and performance. Since Gutenberg's time, an era of democracy in knowledge dissemination there have been many evolution in digital text formats (Neuberger, 2023).

The adoption of AI has become increasingly widespread, especially for students at TU (Acharya & Basnet, 2024). Recently, global trends appear to be challenging the idea of unmoderated use of AI for learning (Yin & Su, 2025). Nepalese higher education practices, including at TU, presents challenges and opportunities for AI technology adoption. With the introduction of ChatGPT, there is a potentially idealistic opportunity to implement the use of an advanced technical solution to stimulate learning experiences, manage operational pressures, and ultimately develop digital learning skills amongst students. However, this consideration should contemplate the existing conditions of the local infrastructure, the digital divide, and the readiness of academic programs at TU to enable this type of change. In addition, Gautam and Acharya (2023) said the students utilization of pedagogical strategies may differ, as they draw equally from formal notes and online materials.

Nonetheless, the situation is revealing deep technological developments, and in doing so, reveals many unresolved challenges. Among them, those that privilege the ethical aspects of data privacy or the interference of humanity in education. The assessment of ChatGPT's usefulness in enhancing students' understanding, retention, and engagement is an evident benefit. To examine the long-term effects of integrating ChatGPT into higher education, it is important to impart ethical concern. It focuses on the effective and ethical use of ChatGPT in the academic setting, keeping in mind students' interests and performance (AlAli & Wardat, 2024). This study assesses the role of ChatGPT compared to traditional methods emphasizing textbooks on student learning outcomes, retention, and engagement. There's worry about how ChatGPT could change students' critical thinking, tech reliance, and data privacy in higher education (Acharya & Basnet, 2024). So, this study looks at how students are using ChatGPT for learning.

Methodology

It uses a mixed-methods approach, gathering both numeric and information data at the same time. The primary aim of this research was an investigation with both the data.

The qualitative portion produced a rich and nuanced understanding of students' experiences, beliefs, and readiness to use AI in education. The simultaneous collection and analysis of each type of data contributed to a broader understanding and complementary evidence of the complex phenomenon under investigation (Johnson & Onwuegbuzie, 2004; Pant et al., 2023).

A descriptive survey design was part of the quantitative component. A sample of 280 students was chosen using simple random sampling out of the Master's degree students under education programs of TU. All Master's degree candidates enrolled in TU education programs during the academic year 2081 made up the study's population. The student enrollment records were included in the sampling frame. To guarantee representatives, a basic random sample of 280 students was chosen. Since TU is the biggest and oldest university in Nepal, offering a wide range of educational programs throughout the nation, it was selected as the study site. An online questionnaire was developed for assessing students' perceptions, attitudes, and readiness towards the AI integration. The draft questionnaire has been pilot tested with a small group of students to be able to correct, ensure clarity, and confirm the validity/reliability. Online data collection for the quantitative phase has been conducted via a secure survey platform from October to November 2024.

The qualitative part used an interpretative approach to extract rich data on students' lived experiences. Using purposive sampling, ten students were selected from all possible stages of their academic program, which consists of second-semester (2 students), fourth-semester (4 students), sixth-semester (2 students), and eighth-semester (2 students). This sampling method was used to provide for variety as well as saturation. Recruitment was done through professor's contacts and directly reaching out to students. The semi-structured interviews were mainly conducted in Nepali, allowing a more natural and comfortable way of expressing themselves for the participants. Interviews took an average of half an hour for each student and were recorded with the consent of the participant. Recordings were then transcribed verbatim by a professional and later translated into English for analysis. Qualitative data were analyzed following six-step thematic method (Braun & Clarke, 2022). It consists the data familiarization, making initial codes, exploring major themes, review themes, define and name themes, and come to the research results.

Results

The results of the study is based on both the quantitative and qualitative study. Table 1 shows the frequency of learning resources of the Master's level students.

Table 1: *Frequency of Resource Usage*

Resources Used	Number of Students Using AI Frequently	Percentage (%)	Usage Trend
ChatGPT	168	68.6%	Higher usage
Note recitation	77	31.4%	Lower usage
Total (N = 245)		100%	—

Note recitation by the students in TU led to an almost negligible use of educational technology in higher education before the pandemic. Pedagogical frameworks did not primarily focus on reliable digital infrastructure, such as good internet access and e-learning platforms. Also, digital literacy among students were not primarily emphasized in educational development. The lack of digital preparedness meant that the forced transition to online learning was not an evolving trend but a shocking, dramatic rupture into a predicated educational system.

Table 2: ***Path Coefficients of Learning Tools and Academic Performance***

Learning Tool	Mean/SD	Path Coefficient (β)	t-value	P-value	Interpretation
ChatGPt use	**0.35**	**0.32**	**3.01**	<0.002	Significant positive relationship
Note recitation	**0.042**	0.38	2.95	<0.003	Significant positive relationship

Note*: N = 245. Significance level set at p < 0.05*

Result shows that both ChatGPT and note recitation affect in learning of the Master's level students.

Table 3: *Student Resource Engagement and Academic Impact*

Learning Resource	Impact on Students' Learning	Association	Implication
ChatGPT	Cognitive support, real-time assistance	Moderate (β = 0.32)	Enhances engagement, self-paced learning
Note recitation	Deep reading knowledge	Strong (β = 0.38)	Supports comprehension, structured knowledge acquisition

Table 3 shows a comparative overview of how each learning resource contributes to student success and highlights the **complementary value** of integrating ChatGPT tools with note recitation methods.

Forced Shift to Online Learning

The COVID-19 pandemic forced an unprecedented shift to digital learning in higher education. It created an entirely new paradigm of teaching and learning. The shift compelled to learn online digital tools at any cost by the students. This shift relying mainly on the online platform. The suddenness of the pivot created a lot of pressure wherein the main aim was to achieve academic continuity, even compromising on established standards of teaching and learning quality and comprehensive of digital tools. During an interview, one of the students (S1) said:

"The sudden shift to online learning during COVID-19 was overwhelming. As a student, I had to quickly learn digital tools to continue learning, even though I had little experience on mobile phones only. The lack of proper ICT infrastructure and frequent power cuts made it extremely challenging to engage us."

Inadequate ICT infrastructure and an inconsistent power supply further compounded these difficulties, making

consistent online engagement challenging.. There arose a spontaneous need for training and support in the use of digital tools and platforms for content delivery and assessment. Teachers who were used to the traditional methods suddenly found themselves under the pressure of adapting to remote teaching that is, teaching content and completing assessments digitally. It is noted that:

"Students and teachers both faced tremendous pressure during the pandemic. We were forced to adapt to online platforms immediately, compromising some teaching standards just to maintain academic continuity. There was an urgent need for training in digital tools, as most of us were not prepared for remote teaching and digital assessments."

Students and teachers responded by quickly enhancing their e-learning platforms, such as Moodle and Learning Management Systems (LMS) to create common distance learning portals. These efforts aimed to provide students with access to e-content and digital repositories via various devices. After that, it's worth mentioning that students were pretty open to online school during the pandemic. Lots of them saw it as a flexible way to manage their time. Because tech was quickly adopted to fix an urgent issue, it paved the way for later tech like AI; convenience often beat ethical concerns.

Effects on Learning Outcomes and the Digital Divide

Switching to online learning fast had some good sides, like giving some learners more flexible options. For the most part, though, it messed up how well people learned. COVID-19 made the gap between those who have tech and those who don't even bigger, and AI is just making that worse, which is worrisome. Learners who didn't even have basic internet or devices struggled with online learning. Now, using AI the wrong way is a big risk. Usually, it's because they don't know how to tell what's good online from what's not, haven't been taught enough, or don't get the ethics of AI. This makes the learning gap worse, and those left behind might not use AI the right way.

"Online learning was flexible for some, but the fast switch mostly hurt grades. Students without good internet or computer skills had a tough time. Plus, AI like ChatGPT made things even more unfair. So, we really need rules that teach people how to use tech in a good way and make sure everyone can get online."

This problem shows that it's not just about using tech. We really need rules that consider all about tech access and being a good digital citizen. The way we use AI like ChatGPT shows how quickly AI is getting into classrooms, which changes how we learn. Education is just one example the implicit approval shows the wide variety of choices being shown in finding quick fix or greater efficient productivity. But, it's possible that if schools and students only look to short fixes and quick solutions, we might forget to think about the ethics involved and how this affects the future.

Ethical AI Integration and Sustainable Educational Practices

It is found that the change how we teach and what rules we have. It's really important that we create clear ethical rules that fit Nepal's culture and society when it comes to stuff made by AI.

> *TU needs to get ahead of the AI game with a plan that does more than just banning it. We need some rules about how to use AI the right way in schools*

here in Nepal, and good policies to handle misuse, catch cheaters, and hold people responsible.

We need clear rules about what's okay and not okay when using AI for schoolwork. This means being open about how we spot AI use and what happens if it's used the wrong way. At the same time, strong rules should be set up and followed to protect things like data privacy, who owns what, and making sure AI is used fairly. We also need to know who's responsible if AI causes problems. Doing this helps us use AI in a safe and smart way. AI systems trained on international datasets may often not do justice to the vast diversity of the Nepali society and might be enforcing the same bias and stereotypes that they wish to quash.

AI, when trained using global data, could end up strengthening prejudices against smaller groups in Nepal. There's also a danger it could spread wrong info and hurt local creative jobs. So, we need to be cautious about how we mix AI into things here.

So as to genuinely integrate the advantages of AI, the University should promote a campaign that offers more than just a stern 'no'. Innovative education needs to be developed, new restrictions established, and clear ethical standards that are suitable to the culture of Nepal when it comes to issues of AI-created materials.

Teachers and students should get solid AI training. They need to learn how to use it the right way for school, create assignments that AI can't easily cheat on, and get what it means to be a good digital citizen. If these are missed, it's not possible to add AI ethically or in a way that is useful.

We need rules that plainly spell out what's okay and not okay when using AI for schoolwork. These rules have to be clear about how we'll spot AI and what happens if it's used the wrong way. Sturdy rules need to be put in place and followed when it comes to things like keeping data private, protecting who owns what, being open about using AI, and knowing who's responsible. One of the teachers, the one who helps research students with tech, put it this way:

We need solid rules for data privacy, who owns what, being open about how AI is used, and who's responsible when things go wrong. If we don't have these, it's going to be really hard to use AI the right way in schools.

To make sure we add AI in a good way, we need to be organized and careful. Teachers and staff in education and admin need constant training on AI stuff. This means learning how to create assignments that AI can't just do for students and how to teach classes where AI helps students learn instead of doing the work for them.

Discussion

The results from the study clearly show that both ChatGPT and the practice of note recitation play a significant role in boosting the academic success of Master's students. While both methods are statistically important, the data suggests that note recitation has a slightly stronger positive impact compared to using ChatGPT. This suggests that even though AI tools like ChatGPT are becoming increasingly important in today's education landscape, traditional learning techniques like note recitation still hold considerable value for achieving success in learning. There

is a positive correlation between ChatGPT use and performance, which is consistent with recent work indicative of the potential in AI tools to facilitate enhanced learning. For example, Chiriboga et al. (2025) found that AI chatbots enable personalized learning, immediate feedback, cognitive support, and, consequently, increase student engagement and comprehension. Like this, Ayeni et al. (2024) found that ChatGPT could be an important asset for students because the chatbot allows real-time assistance to understand concepts even creating practice questions, which improves self-paced learning and problem-solving skills. Cognitive support and real-time assistance as associated to ChatGPT suggest that students utilize AI for immediate informational needs and as enhancements to their understanding.

Conversely, there exists a strong positive correlation between those who take notes and their academic performance. Note recitation contributes to academic success (or, personal employability success), is a widely accepted method to help facilitate basic knowledge and deeper reading. Note recitation is a tested, traditional, and respected method of reading, understanding, and retaining knowledge in an organized framework of knowledge. Davar et al. (2025) found that active recall and spacing, which used notes and note recitation to facilitate the process, resulted in increased understanding and long-term retention of information. Acharya and Acharya (2022) in support of Davar et al. found that traditional approaches to study and study techniques build hard skills and soft skills for studying, or knowledge development, to promote higher-order learning (i.e., critical thinking, analytical skill development, etc.) through knowledge acquisition. Through their study, the researchers found note recitation possessed a slightly high, positive path coefficient. Note recitation explicitly engages the primary conditions for productive use of knowledge. The synergetic importance of both tools offers a great opportunity to consider pedagogy to offer the potential to produce the best learning opportunities for students when the student is encouraged to synthesize the knowledge retrieved with ChatGPT gradually, while simultaneously drawing on their prior knowledge from the recitation of their notes. In fact, students may decide to quickly clarify or understand a complex idea or topic, and consider any unanswered questions they may have in AI or ChatGPT before recalling what they learned in their notes, which may further consolidate their knowledge from the reading as new information is unlocked, they also had learned from their prior active recall experience or experiences prior to learning with ChatGPT.

TU would have been mostly conventional teaching until the COVID-19 pandemic which would become a critical part of the contemporary landscape and future integration of AI technologies. This context is vital because it explains the "rapid and often uncritical adoption of new technologies, including AI, as institutions and individuals sought immediate solutions for continuity, potentially bypassing strategic planning and ethical considerations." Rushing things can make us forget about what's really right, ethically speaking. Experts worry that we're putting AI into schools too fast, without making sure we're safe first (AlTwijri & Alghizzi, 2024; Tzirides et al., 2024). The study says this creates a bad situation where people who are already struggling can be even more at risk of misusing new tech like AI. This is because they might not know enough about computers, haven't had enough training, or don't fully get the ethical side of things. Other studies on fairness in tech back this up, showing that the good stuff from AI usually doesn't spread to everyone equally.

For instance, not monitoring could potentially increase the gaps between individuals (Kasinidou et al., 2024). The quantity of Master's students using ChatGPT is remarkably high, combined with the fact that use is mostly non-critical, raises an unsettling ethical issue. While recognizable benefits, such as cognitive support mechanisms and real-time insights, can be considered benefits of AI, the study presents ethical dilemmas categories as they relate to "Authenticity and Trust, Plagiarism and Intellectual Property," bias and stereotyping, misinformation and manipulation, and loss of human ingenuity. These dilemmas are applicable not only to students in Nepal; the world of educators is concerned with integrity over student products with the recent availability of AI platforms (eg. Bohara, 2024; Lawaju et al., 2024). The active disallowance of AI in examinations created by Tribhuvan University is in response to continuing issues with academic integrity as they relate to use of AI.

The research is providing suggestions for the moral incorporation and sustainable educational practices that, as far as their consequences are concerned, may represent a detailed roadmap in the context of institutional infrastructures such as Tribhuvan University and the like to follow. Moving forward, it is essential to make a transition from "reactive, punitive approaches to proactive, holistic strategies": the establishment of "comprehensive ethical guidelines adapted to the cultural and societal context of Nepal" and "the committee to create strong regulatory frameworks" in relation to data privacy and intellectual property, as well as developing and implementing "robust and continuous faculty training programs". All these center around the responsible use of AI. Additionally, the emphasis on the Infrastructure Development and Equitable Access are direct attempts to lessen the digital divide through providing investments in internet connectivity and ICT infrastructure programming in historically under-resourced space. This complements global calls for access to digital equity to have the same rights for everyone for the benefits of AI-having been called a bridge to development-(Baskota & Poudel, 2024). Furthermore, a future-oriented approach is also evidenced in Redesigning "curricula and assessment methods to emphasize and measure AI-resistant skills such as critical analysis, complex problem-solving, creative ideation and original research." The focus moves away from rote learning that can easily be replicated by AI, and toward those skills that are best kept in the human mind, which are fundamental to higher-order thinking (e.g., Baskota & Poudel, 2024). Equally, developing a culture that prizes authentic learning over a quick fix, and acknowledging human oversight in the generation and review of the AI content creation are important.

The experiences of TU very efficiently equip it to provide an important case study for all the universities in the world, especially within the realm of higher education in developing countries. Apparently, the problems and the solutions suggested have universal currency. With a shifting landscape wherein the sector of education stands, a growing air of resounding synchronicity comes into balancing technological change with a resolute principled ethical underpinning and putting renewed emphasis on human-centered learning. As the study proposes, both traditional learning material and AI-based resources serve different purposes academically and thus do so complementarily for each learner. A positive correlation between the use of ChatGPT and note recitation seems to exist, however, the ensuing space arises therein for confrontation with different use frequencies and ethical dilemmas related to uncritical acceptance

of AI for comma: to maintain a balanced sharing of the contentious issues pertaining to intended application for benefits of AI as well as taking active measures against the risks whenever hard ethical guiding principles can be fully articulated, thorough training, and development, equal infrastructure, and a reorientation in the framing of pedagogy away from human skill approach to an AI skill approach. The developments at the university demonstrate important lessons for those in higher education on technological change (Khanal et al., 2024), it is based not in AI, rather reference learning and like context through ethical and genuine intellectual development for the future of learning.

Conclusion and Implication

The study indicates that the abrupt transition to online learning during COVID-19 at TU resulted in significant changes in teaching and learning. While it introduced new possibilities and challenges in relation to digital and AI-enhanced education. Online platforms and applications such as ChatGPT became more accessible and flexible modes of learning, but revealed issues around ICT availability, digital skills, and the ethical use of AI within a learning environment. The challenges have typically been most acute amongst students with limited access to resources within ICT. The study is limited to one site of higher education, namely TU and highlights primarily qualitative input of participant experience that may not be reflective of near range of experience within other higher education contexts in Nepal. Nevertheless, the key takeaway from the study is the need for robust policy frameworks, ethical guidance, and continued training opportunities for staff and students. This is vital to ensure that AIs and digital learning tools are leveraged fairly, ethically, and effectively for enhancing higher education and promoting academic continuity in a digital citizenship.

Reference

Acharya, K. P., & Acharya, M. (2022). Teachers' experiences and reflection on social networking site: Application of Facebook on students' learning. *Interdisciplinary Research in Education*, *7*(1), 147-162. https://doi.org/10.3126/ire.v7i1.47506

Acharya, M., & Bansyat, S. (2024). Teachers' Perceptions of Integrating ChatGPT in Nepalese Classrooms. *Interdisciplinary Research in Education*, *9*(1), 140-150. https://doi.org/10.3126/ire.v9i1.69753

AlAli, R., & Wardat, Y. (2024). Enhancing classroom learning: Chatgpt's integration and educational challenges. *International Journal of Religion*, *5*(6), 971-985. https://doi.org/10.61707/znwnxd43 https://doi.org/10.61707/znwnxd43

Alenezi, M. (2023). Digital learning and digital institution in higher education. *Education Sciences*, *13*(1), 88. https://doi.org/10.3390/educsci13010088

Ali, S. (2023). Artificial intelligence in education: Is it a tool or a threat? *Journal of Educational Technology Systems, 52*(2), 221-236.

AlTwijri, L., & Alghizzi, T. M. (2024). Investigating the integration of artificial intelligence in English as foreign language classes for enhancing learners' affective factors: A systematic review. *Heliyon*, *10*(10). https://doi.org/10.1016/j.heliyon.2024.e31053

Ayeni, O. O., Al Hamad, N. M., Chisom, O. N., Osawaru, B., & Adewusi, O. E. (2024). AI in education: A review of personalized learning and educational technology. *GSC Advanced Research and Reviews*, *18*(2), 261-271. https://doi.org/10.30574/gscarr.2024.18.2.0062

Baidoo-Anu, D., & Ansah, R. O. (2023). Education in the era of Generative Artificial Intelligence (AI): Understanding the opportunities and challenges of ChatGPT. *Journal of Science and Technology, 3*(1), 1-13. https://doi.org/10.2139/ssrn.4337484

Baskota, P., & Poudel, T. (2024). Artificial intelligence and computer-mediated communication: the text analysis and undergrad's class observation. *Discover Education*, *3*(1), 131. https://doi.org/10.1007/s44217-024-00187-7

Bohara, D. K. (2024). A paradigm shift in ELT with artificial intelligence: A review on the current state in nepal. *Journal of NELTA Gandaki*, *7*(1-2), 111-122. https://doi.org/10.3126/jong.v7i1-2.70232

Braun, V., & Clarke, V. (2022). Conceptual and design thinking for thematic analysis. *Qualitative psychology*, *9*(1), 3. https://doi.org/10.1037/qup0000196

Chee, K. N., & Sanmugam, M. (Eds.). (2023). *Embracing Cutting-edge Technology in Modern Educational Settings*. IGI Global. https://doi.org/10.4018/979-8-3693-1022-9 https://doi.org/10.4018/979-8-3693-1022-9

Chiriboga, S. P. J., Burgos, A. L. T., Avila, M. M. R., Chida, J. L. C., Macias, K. J. A., Morante, Y. E. C., & Párraga, A. P. B. (2025). Artificial Intelligence and Personalized Learning in Foreign Languages: An Analysis of Chatbots and Virtual Assistants in Education. *Revista Científica de Salud y Desarrollo Humano*, *6*(1), 882-905. https://doi.org/10.61368/r.s.d.h.v6i1.515

Davar, N. F., Dewan, M. A. A., & Zhang, X. (2025). AI chatbots in education: challenges and opportunities. *Information*, *16*(3), 235.https://doi.org/10.3390/info16030235

Dwivedi, Y. K., Kshetri, N., Dwivedi, R., & Singh, J. (2023). Generative Artificial Intelligence and its applications: A bibliometric analysis and research agenda. *Technological Forecasting and Social Change, 192*, 122557. https://doi.org/10.1016/j.techfore.2023.122579 https://doi.org/10.1016/j.techfore.2023.122579

Eke, H. N. (2023). ChatGPT: The new face of plagiarism? *Journal of Responsible Technology, 14*, 100067.

Gautam, T. R., & Acharya, K. P. (2023). Science learning strategies at secondary level schools in Nepal. *Pragyaratna k/1f/Tg*, *5*(1), 138-151. https://doi.org/10.3126/pragyaratna.v5i1.59281

Hwang, G. J., Tu, Y. F., & Tang, K. Y. (2022). AI in online-learning research: Visualizing and interpreting the journal publications from 1997 to 2019. *International Review of Research in Open and Distributed Learning*, *23*(1), 104-130. https://doi.org/10.19173/irrodl.v23i1.6319

Johnson, R. B., & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational researcher*, *33*(7), 14-26. https://doi.org/10.3102/0013189X033007014

Karanam, K., O'Dwyer, L. M., & Svirsky, L. (2023). The effects of active recall and spaced repetition on learning and retention in higher education: A systematic review and meta-analysis. *Educational Psychology Review, 35*(1), 1-30.

Kasinidou, M., Kleanthous, S., Busso, M., Rodas, M., Otterbacher, J., & Giunchiglia,

F. (2024). Artificial intelligence in everyday life 2.0: Educating university students from different majors. In *Proceedings of the 2024 on Innovation and Technology in Computer Science Education V. 1* (pp. 24-30). https://doi.org/10.1145/3649217.3653542

Khanal, B., Devkota, K. R., Acharya, K. P., Chapai, K. P. S., & Joshi, D. R. (2024). Evaluating the competencies of university teachers in content, pedagogical, and technological knowledge. *Cogent Education*, *11*(1), 2360854. https://doi.org/10.1080/2331186X.2024.2360854

Lawaju, P., Adhikari, S. U., & Devkota, J. (2024). Impact of AI in Education: An Evidence from Use of ChatGPT in Management Education in Nepal. *Quest Journal of Management and Social Sciences*, *6*(3), 621-642. https://doi.org/10.3126/qjmss.v6i3.72875

Liawrungrueang, W., Park, J. B., Cholamjiak, W., Sarasombath, P., & Riew, K. D. (2025). Artificial intelligence-assisted MRI diagnosis in lumbar degenerative disc disease: a systematic review. *Global Spine Journal*, *15*(2), 1405-1418. https://doi.org/10.1177/21925682241274372 https://doi.org/10.1177/21925682241274372

Lin, H., & Chen, Q. (2024). Artificial intelligence (AI)-integrated educational applications and college students' creativity and academic emotions: students and teachers' perceptions and attitudes. *BMC psychology*, *12*(1), 487. https://doi.org/10.1186/s40359-024-01979-0 https://doi.org/10.1186/s40359-024-01979-0

Lomis, K., Jeffries, P., Palatta, A., Sage, M., Sheikh, J., Sheperis, C., & Whelan, A. (2021). Artificial intelligence for health professions educators. *NAM perspectives*, *2021*, 10-31478. https://doi.org/10.31478/202109a

Maity, S., Sahu, T. N., & Sen, N. (2021). Panoramic view of digital education in COVID-19: A new explored avenue. *Review of Education*, *9*(2), 405-423. https://doi.org/10.1002/rev3.3250

Malloch, M., O'Connor, B. N., Evans, K., & Cairns, L. (2021). The SAGE handbook of learning and work. https://doi.org/10.4135/9781529757217

Mishra, N. R. (2021). Teachers and Students' Perception on Intended and Enacted Teaching Methods in Higher Education Teaching. *Researcher: A Research Journal of Culture and Society*, *5*(1), 99-110. https://doi.org/10.3126/researcher.v5i1.41381

Neuberger, C., Bartsch, A., Fröhlich, R., Hanitzsch, T., Reinemann, C., & Schindler, J. (2023). The digital transformation of knowledge order: A model for the analysis of the epistemic crisis. *Annals of the International Communication Association*, *47*(2), 180-201. https://doi.org/10.1080/23808985.2023.2169950

Neupane, R. N. (2024). Transforming educator growth: Professional development at tribhuvan university. *Prāgyik Prabāha*, *12*(1), 56-68. https://doi.org/10.3126/pp.v12i1.69972

Okocha, A. N., & Otegbulu, A. C. (2024). Addressing the digital divide in Africa: Strategies for equitable access to digital education. *International Journal of Educational Technology in Higher Education, 21*(1), 1-18.

Pan, S., & Wu, X. (2023). The impact of traditional learning methods on critical thinking skills development in higher

education: A comparative study. *Journal of College Teaching & Learning, 20*(2), 11-25.

Pant, R. R., Acharya, K. P., Bishwakarma, K., & Awasthi, M. P. (2023). Writing and Publishing a Scientific Research Paper. *Curriculum Development Journal*, *31*(45), 148-166. https://doi.org/10.3126/cdj.v31i45.68986

Rudnicka, A., Szumski, P., & Mazurek, S. (2023). Ethical guidelines for AI in education: A systematic literature review. *Computers & Education: Artificial Intelligence, 4*, 100115. https://doi.org/10.1016/j.caeai.2022.100115

Sousa, M. J., Marôco, A. L., Gonçalves, S. P., & Machado, A. D. B. (2022). Digital learning is an educational format towards sustainable education. *Sustainability*, *14*(3), 1140. https://doi.org/10.3390/su14031140

Susnjak, T. (2023). ChatGPT: The end of online exam integrity? *Applied Artificial Intelligence, 37*(2), 1-14. https://doi.org/10.3390/educsci14060656

Tikader, B. (2023). Use of cutting-edge technologies in digital age for effective teaching in higher education. *EPRA International Journal of Multidisciplinary Research (IJMR)-Peer Reviewed Journal*, *9*(10), 142-146.

Tiwari, H. P. (2023). An Optimization-Based Artificial Intelligence Framework for Teaching English at College Level Under Tribhuvan University. *Journal of English Language Teaching and Linguistics*, *8*(1), 79-91.

Tzirides, A. O. O., Zapata, G., Kastania, N. P., Saini, A. K., Castro, V., Ismael, S. A., ... & Kalantzis, M. (2024). Combining human and artificial intelligence for enhanced AI literacy in higher education. *Computers and Education Open*, *6*, 100184.

Xie, Y., Chen, Z., & Li, J. (2023). Exploring the potential of AI chatbots in supporting student learning: A systematic review. *Educational Technology Research and Development, 71*(3), 897-916.

Yim, I. H. Y., & Su, J. (2025). Artificial intelligence (AI) learning tools in K-12 education: A scoping review. *Journal of Computers in Education*, *12*(1), 93-131. https://doi.org/10.1007/s40692-023-00304-9

Zhou, C. (2023). Integration of modern technologies in higher education on the example of artificial intelligence use. *Education and Information Technologies*, *28*(4), 3893-3910. https://doi.org/10.1007/s10639-022-11309-9

Zou, D., Zhang, R., Xie, H., & Wang, F. L. (2021). Digital game-based learning of information literacy: Effects of gameplay modes on university students' learning performance, motivation, self-efficacy and flow experiences. *Australasian Journal of Educational Technology*, *37*(2), 152-170. https://doi.org/10.14742/ajet.6682