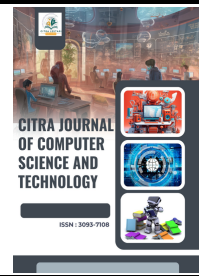




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ChatGPT Academic Engagement in Undergraduates

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ABSTRACT

Currently AI tools are becoming more integrated into day-to-day work. This skill is becoming increasingly important not only in education field but also in various careers. This research takes a survey on quantitative study approach to identify students' ChatGPT's academic engagement with. The 5 items Likert scale instrument was tested for reliability with the Pearson correlation and Cronbach alpha test showing the internal consistency. Samples of 441 have been collected among university students from two reputed private university in Malaysia. Descriptive analysis of SPSS version 29.0 is utilized to identify mean and frequency. Meanwhile Mann-Whitney U Test and Kruskal-Wallis Test analysis were used to test the relationship between variables. Study revealed 31% of students used ChatGPT for academic purposes weekly, and interestingly 7% never used it. Mann-Whitney U Test analysis showed that there are no differences in academic engagement between males. There is no significant difference in ChatGPT academic engagement between conventional students and Modular students. A Kruskal-Wallis H test analysis showed no difference of ChatGPT usage across level of study. Overall students' academic engagement is in medium. Stakeholders, policy makers, academicians, and instructors must create a well-informed guideline of using this tool for students to connect effectively with the tool in performing academic tasks.

1. Introduction

Academic engagement is strongly related to academics' scientific productivity that is characterized by energy, dedication and absorption. It is linked with motivational processes and plays an important role in achieving work goals. According to Perkmann, *et al.*, [1] students with strong academic engagement tend to devote more efforts to academic tasks and will be completed successfully. Meanwhile, ChatGPT is an artificial intelligence (AI) chatbot developed by OpenAI and launched in 2022, has become the most prominent technological tool in 21st century. It was created by OpenAI that uses machine learning to recognize and generate human-like text that was created

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by OpenAI as stated by University of Central Arkansas [2]. It can respond to or answer questions about approximately any issue, write articles, essays, social media posts, cover letters, code, emails and even can solve complex problems and translating languages into code. The images generated are constructed on natural language prompts as described by Zapier Blog [3]. Chernisky [4] explained that ChatGPT is competent on large text data by using an algorithm known as transformer in acquiring and generating text. It is like a human machine that reinforces learning through human feedback. It is the best model to handle human requests. In career development ChatGPT can be used to support job applications, such as structure resumes and writing cover letters. In research, ChatGPT can write research for papers, presentations, studies, and more as emphasized by ZDNET [5] Lo *et al.*, [6] asserted that ChatGPT potentially could boost academic engagement by offering personalized feedback, quick and easy access to data, by which it can stimulate students to vigorously take part in learning. According to InnerDrive [7] it would be able to create a more comprehensive learning environment and foster higher order thinking skills. However, Memarian *et al.*, [8] argued that its utilization must be considered when the students misuse copying and plagiarizing the information because of lack of guidance from educators. Proper training and facilitation from educators are a must to ensure responsible application.

Al Shloul *et al.*, [9] described ChatGPT can impact academic engagement by providing explanations that fit the responses of individual student needs, and relevant examples based on their understanding level, hence can promote deeper engagement. ChatGPT can offer positive behavioral engagement students such as students are more likely to submit tasks on time when using ChatGPT. The tasks completed are more efficient because this LLM (Large Language Model) helps them to enhance their assignment, refine writing and generate new ideas required by the course tasks. Emotionally, ChatGPT can offer a safe and positive environment, allow active listening, providing empathetic responses and supervision, as revealed by Padmavati [10]. According to Reeve *et al.*, [11] asserted that emotional engagement refers to the involvement of positive emotions such as interest during a learning activity. In a previous metanalysis study advocated that ChatGPT-based learning is effective in nurturing students' behavioral, cognitive and emotional engagement than non-ChatGPT learning. This study suggested ChatGPT could play a pivotal role in encouraging students' engagement such as personalized coaching, programming, teamwork, building content and assisting. The problem arises when students disengage such as over-reliance as noted by Heung *et al.*, [12], that may jeopardize students' cognitive abilities like critical thinking and problem-solving skills.

Z. Elyoseph *et al.*, [13] described that despite rising concern on the risk of ChatGPT assisted in learning to the humans' behavioral, cognitive and emotion, many studies at the same time showing an optimistic finding such a clinical study which demonstrated that ChatGPT can produce appropriate EA (emotional awareness) responses. The theoretical and clinical implications of ChatGPT can be utilized as one of the cognitive trainings for clinical populations with EA impairments. Interestingly this study showed that ChatGPT's EA-like capabilities may help with psychiatric diagnosis and assessment and be used to improve emotional language. Notably, ChatGPT's role is a significant acknowledgement in enhancing emotional well-being and fostering emotional resilience by offering personalized interactions, nonjudgmental space, and active listening characteristics of ChatGPT as evidenced by Kavitha *et al.*, [14]. Chen *et al.*, [15] revealed that users with an anxious attachment personality are inclined to grow an emotional dependency on ChatGPT and capable of engaging in complex conversations with humans. Moreover, it keeps sophisticated language competences and the capacity to pretend sympathetic answers. 'ChatGPT Effects on Cognitive Skills of Undergraduate Students' [16] was raised concern on the impact of ChatGPT personalized learning may reflect critical and creative thinking among university students in Ghana showed that integrating ChatGPT obviously influenced the students' critical, thoughtful, and creative intelligent skills and their proportions. In

another study among undergraduates' students by Swargiary [17] showed that the experimental group experienced a noteworthy rise in cognitive engagement as compared to the control group, but unpredictably the control group proved higher academic achievement. This is due to the imbalance implementation and poor management of ChatGPT personalized learning. Educators and technologists must work together to increase the benefits of ChatGPT to the cognitive skills and decrease potential negative effects.

In exploring students' academic engagement during utilizing ChatGPT, this study utilizes Social Cognitive Theory, developed by Albert Bandura in the 1960s. Social Cognitive Theory (SCT) suggests that people's behavior is shaped by both internal cognitive processes and external social environments as documented by 'The Decision Lab' [18]. Luszczynska [19] said that social cognitive theory is a general theory that emphasizes learning from environment. 'Rural Health Promotion and Disease Prevention Toolkit' [20] describes the environmental factors on the individual behavior, providing opportunities for social support through inculcating self-efficacy and expectations. People are active agents who can both influence and are predisposed by their environment. One supposition of social learning is that we learn new behaviors by perceiving the behavior of others and the consequences of their behaviors as described by Nickerson [21]. Margolis *et al.*, [22] described that social cognitive theory is different to social learning theory. Social learning theory suggested that people learn primarily by observing others while social cognitive theory combined the crucial role of cognition and human activity in learning and behavior change. Hence, social cognitive theory signifies an inclusive basis for understanding how people learn behavior within a social context. Humans are an agent to influence others and become contributors to their life, not just product of them. The theory under had been much larger than the theory of learning. It not only addressed how people obtain knowledge and capabilities but also how they inspire and control their actions and produce social systems that establish and structure their lives as revealed by Bandura [23]. Thus, this study intentions to survey undergraduate students' academic engagement with ChatGPT for academic purposes, and examine the influence of gender, mode of study, and level of study within the framework of Social Cognitive Theory.

2. Methodology

This study was conducted among undergraduate Diploma and Bachelor students at two local private universities in Petaling Jaya and Ipoh, Malaysia. 441 samples of students from both graduate and undergraduate students participated in this study. A descriptive study survey was employed to assess students' academic engagement when using ChatGPT in completing various academic tasks. 30 respondents were involved with pilots validating the questionnaire and surveying before the real study. Non-probability convenience sampling was used. The source population was defined by this local private university students. Process of universal sampling was followed by the sample size calculation by using the formula for a single population proportion, with a precision error of 5%, a confidence level of 95%, and an estimated proportion of 50%. Margin errors show 5.67 % is acceptable. A questionnaire was written in English and prepared underwent item content validation. To evaluate the questionnaire's reliability. Cronbach's Alpha is used to measure the internal consistency. Result shows all items of academic engagement survey that were sent to 30 respondents have high score/value between .835 to .914. Pearson Correlation also used to test reliability, showing there is positive correlation between the items of academic engagement, coefficient interval range .573 - .679, $r < 0.01$ (2-tailed). The data from google form responses were converted to Microsoft Excel and used for data entry and SPSS version 29 (IBM Corp., Armonk, NY) for data analysis. Descriptive statistics such as frequency and percentage were calculated for categorical data and

mean, standard deviation, and range were calculated for quantitative data. For univariable analysis, Kruskal Wallis H Test, and Mann-Whitney U Test used to determine the relationship between the items of variable (academic engagement items). The significance level was set at 0.05 and 0.01.

3. Results

3.1. Participants Background and Frequency of Usage

A total of 441 university students from a local private university participated in the study. Table 1 presents the distribution of a sample of 441 participants based on gender, level of studies, and mode of studies. Of the sample, the majority were female (71.2%, $n = 314$), while males represented 28.8% ($n = 127$). In terms of academic level, participants from diploma (39.7%, $n = 175$), bachelor's program (41.5%, $n = 183$), foundation program (12%, $n = 53$), while fewer were master's (3.9%, $n = 17$) and PhD programs (2.9%, $n = 13$). Regarding the mode of study, (59.9%, $n = 264$) were online students, while 40.1% ($n = 177$) were conventional students. The frequency of the use of ChatGPT shows that most students used it weekly (135/30.6%) followed by rarely using it (125/28.3). Students quite regularly used it monthly (76/17.02%) although not much daily (75/17%). Interestingly 30/6.8% of students never used it for academic purposes.

Table 1
Gender, level, and mode of studies of 429 participants

Variables	Percentage (%)	Number
Gender		
Male	28.8	127
Female	71.2	314
Level of Studies		
Diploma	39.7	175
Bachelor	41.5	183
Master	3.9	17
PhD	2.9	13
Foundation	12	53
Mode of Studies		
Online Distance	59.9	264
Conventional	40.1	177
Frequency of Usage		
Daily	17	75
Weekly	30.6	135
Monthly	17.2	76
Rarely	28.3	125
Never	6.8	30
Total (N)	100%	441

3.2 ChatGPT Academic Engagement Cross Gender, Mode and Level of Study

3.2.1 Result of Mann-Whitney U test (Difference frequency of usage across gender)

Mann-Whitney U Test was conducted to examine whether there were differences in academic engagement between males and females. The results indicated there were no significant difference between males ($M=3.59$, $SD=1.01$) and females ($M=3.38$, $SD=.99$), $U = 16126.5$, $Z = -1.70$, $p = >0.05$. This suggests that gender does not influence academic engagement, or its distribution is the same across categories of gender. Consequently, it retains the null hypothesis, as shown in Table 2.

Table 2

Report of the U statistic, Z score, p-value, and the mean rank for each group

Gender	N	Mean Rank	U	Z	p-value
Male	127	208.86	16126.5	-1.70	0.89
Female	314	231.77			(>.05)

3.2.2. Mann-Whitney U test (Difference frequency usage across mode of study)

Mann-Whitney U Test was conducted to examine whether there were differences in academic engagement between online distance learners and conventional/face to face students. The results indicate no significant difference between conventional students (M=3.47, SD=.89) and Modular students (M=3.42, SD=1.06), U=21683.5, Z= -.265, p = >.005. It indicated no difference in academic engagement between the means of the sample. Consequently, it accepts the null hypothesis that there is no difference between conventional and online learners. It is also suggesting that the mode of study does not significantly influence ChatGPT academic engagement, as shown in Table 3.

Table 3

Report of Mean Rank values for both groups, test statistic and p-value

	Mode of Study	N	Mean Rank	U	Z	p-value
ChatGPT Academic Engagement	Conventional	177	216.95	21683.5	-	.791
	Modular/Online	264	213.72		.265	(<.05)

3.2.3. Mann-Whitney U Test (Difference frequency usage across level of study)

A Kruskal-Wallis H test was conducted to examine if there were differences in ChatGPT academic engagement across five levels of study (Foundation, Diploma, Bachelor, Master, PhD). The results indicated no significant difference in engagement across the groups, H (4) =7.120, p=.130. The comparisons revealed that the level of studies had no significantly different levels of engagement. Consequently, it rejects the null hypothesis that level of studies has no influence on the ChatGPT academic engagement, as shown in Table 4.

Table 4

The Mean rank of each group based on the Kruskal-Wallis test, H-value and p-value

	Level of studies	N	Mean Rank	H Value	p-value
ChatGPT Academic Engagement	Foundation	52	207.5	7.120	.130
	Diploma	175	228.77		(>.05)
	Bachelor	183	240.77		
	Master	17	229.00		
	PhD	13	183.30		

3.2.4 Mean of ChatGPT academic engagement and mean standard

Table 5 demonstrated that mean for item 1 is 3.41, SD=1.13, mean for item 2 is 3.61, SD=1.20, mean for item 3 is 3.22, SD=1.20, mean for item 4 is 3.55, SD=1.17 and mean for item, 5 is 3.67, SD=1.11. Item 5 "I seek out additional resources after using ChatGPT for my studies" indicates highest mean among other item, meanwhile, item 2 showing most indicates lowest mean. Mean standard of academic engagement for all item 1 (3.41), 2 (3.61), 3 (3.22), 4 (3.55) and 5 (3.67) are in medium level. Overall level of academic engagement with ChatGPT when students using it is in intermediate

(3.44). The percentage of level of agreement whether using ChatGPT can allow them actively participating in studies more compared to not using it. Result revealed that majority of students feeling uncertain whether utilizing ChatGPT engaged them more in learning (32%). However, many too students agree with that (26.7%) followed by strongly agree (22.2%). Although majority of them showing unsure but some of them having stick with their stance that they strongly disagree (7.7%) and disagree (11.3%) ChatGPT usage makes them feeling motivated and encouraged. In sum, majority of students are unsure or uncertain that ChatGPT could provide additional resources for them in learning, completing academic tasks or other purposes related to their studies.

Table 5

Descriptive statistic for academic engagement indicator and agreement

Self-esteem	Mean	SD	Mean Standard	Result	Strongly Disagree (%)	Disagree (%)	Somewhat Agree (%)	Agree (%)	Strongly Agree (%)
Item 1: ChatGPT makes me more interested in my academic subjects.	3.41	1.13	2.34 – 3.67	Medium	6.1	14.2	31.7	28.0	20.0
Item 2: I actively participate in my studies more when I use ChatGPT.	3.61	1.20	2.34 – 3.67	Medium	10.3	15.6	32.4	24.7	17
Item 3: I feel motivated to learn more after using ChatGPT.	3.22	1.20	2.34 – 3.67	Medium	9.1	12.6	32.9	24.7	20.7
Item 4: My interaction with ChatGPT encourages me to explore academic topics in depth	3.55	1.17	2.34 – 3.67	Medium	7.7	7.9	31.0	28.4	24.9
Item 5: I seek out additional resources after using ChatGPT for my studies.	3.67	1.11	2.34 – 3.67	Medium	5.4	6.3	32.2	27.7	28.4
Academic engagement (Overall)	3.44		2.34 – 3.67	Medium	7.7	11.3	32	26.7	22.2

*SD: Standard Deviation

4. Discussion

Surveys have showed that around 30-31% of students use ChatGPT weekly for academic purposes. This finding is in line with the finding by The Knowledge Academy in UK among university students that 32% of them admit used it weekly, as reported by TheHRD [24]. However, study by George Pallivathukal [25] among healthcare undergraduate university students in Malaysia showed that only 13% used it weekly. Weekly usage highlights a rising awareness among students of the usefulness of AI tools like ChatGPT. Future research could explore the factors influencing students' decisions to use ChatGPT more regularly, including its perceived effectiveness, ease of use, or the availability of alternatives. ChatGPT supports students' understanding by providing various perspectives on the topics learnt as proposed by Alier *et al.*, [26]. Al Shloul mentioned that students regularly use ChatGPT to obtain clearer insights into learning contents [27]. ChatGPT-based learning is more active in adopting student behavioural, cognitive, and emotional engagement than non-

ChatGPT learning. Study revealed that ChatGPT is an efficient mechanism for engaging students in learning.

Study reveals that both online and conventional students have a similar level of the academic engagement when using ChatGPT for academic purposes, aligns with study by Lin *et al.*, [28] found that mode of study does not have a substantial influence on students' academic engagement. However, previous studies by Alshahrani [29] revealed that online students acknowledge ChatGPT has positive influence on their critical thinking, boost knowledge exploration and engagement. Integrating AI chatbots like ChatGPT into education helping students' engagement, motivation, and self-self-reliant learning. Study suggests online students to utilize more this chatbots since they are struggling more as compared to face-to-face students to come up with some discussion and course works. ChatGPT can help engage with their colleagues and instructors. Level of studies have no influence on students ChatGPT engagement, opposed to the finding by Simões [30] reported that students with higher level may utilized technology frequently and sophisticatedly, and Navarro added that [31] students in higher level academic programs having greater confidence to use digital tools. Future study is suggested to discover deeply whether lower academic level student has limited experience with current digital tools especially ChatGPT or whether it resulted from several factors such as accessibility due to some internet availability, cost and speed. Study suggested that education management must provide cost for internet access for online students. Rohaizam [32] described that another factor might influenced like academic integrity when educators have warned the risk of plagiarism and cheating when utilizing ChatGPT. Study suggests that instructors and education operations must provide workshop for students to use it properly.

The level of ChatGPT academic engagement is at medium level, showing that ChatGPT less allows students to become more interested in the subject matters learnt, actively participate in studies, feeling motivated, allowing explore academic topic in depth and seeking additional resources, in contrast with previous study by Abu Khurma [33] showed that ChatGPT has many benefits such as increasing student engagement and academic participation and investigation. This may result from several reasons like students who realize that ChatGPT may have certain negative impacts such as the possibility of inaccurate information and bias data provided by it. Lecturers, despite reminding students of this, must assist and guide their students to use it effectively. The problems are many lecturers do not know how to use ChatGPT efficiently. Lacking skills use this current tool among instructors especially may cause the education system to lag behind. Though some agreed that excessive use of ChatGPT can reduce academic performance, memory deficit, and develop delay in cognitive development as asserted by Abas *et al.*, [34]. However, we can deny its usefulness in nowadays time. A current study published in the academic journal Technological Forecasting and Social Change [35] found 185 skills persuaded by ChatGPT such as script programming, responding to inquiries, writing storylines and songs, rewriting articles, editing scripts, creating digital content, providing information, problem-solving and assisting with homework.

5. Conclusion

To sum up, ChatGPT remains to develop into educational settings and becomes important for upcoming research to observe how ChatGPT can increase academic engagement among university students. It will also be crucial to discover how instructors can support students in harmonizing the use of such tools by nurturing their autonomous learning skills and academic engagement. Academic dishonesty and plagiarism must be considered as serious issues. Stakeholders, policy makers, academicians, institutions and instructors must create a well-informed guideline of managing ChatGPT in learning and performing various academic course works. As ChatGPT is not a human and just a tool, the possibility of providing unprecise information is higher. Lacking skills and knowledge

using ChatGPT effectively may jeopardize autonomous learning assisted by technology, thus decreasing the self-belief on the 21st century AI learning tools in assisting learning. This study is limited which is highlighted on the academic engagement in general, further study is needed to compare the elements of academic engagement like cognitive, emotion and behavioural specifically as impacted by ChatGPT utilization.

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References

- [1] Perkmann, Markus, Rossella Salandra, Valentina Tartari, Maureen McKelvey, and Alan Hughes. "Academic engagement: A review of the literature 2011-2019." *Research policy* 50, no. 1 (2021): 104114. <https://doi.org/10.2139/ssrn.3461621>.
- [2] 'Chat GPT: What Is It?' Accessed 20 September 2025. <https://uca.edu/cetal/chat-gpt>
- [3] 'How to Use ChatGPT: A Beginner's Guide to Getting Started'. Accessed 20 September 2025. <https://zapier.com/blog/how-to-use-chatgpt/>.
- [4] Chernisky, Carina. 'LibGuides: AI Chatbots (ChatGPT): Teaching & Learning: Plagiarism & ChatGPT'. Accessed 20 September 2025. <https://guides.westoahu.hawaii.edu/chatgpt/plagiarism>.
- [5] 'How to Use ChatGPT to Do Research for Papers, Presentations, Studies, and More | ZDNET'. Accessed 20 September 2025. <https://www.zdnet.com/article/how-to-use-chatgpt-to-do-research-for-papers-presentations-studies-and-more/>.
- [6] Lo, Chung Kwan, Khe Foon Hew, and Morris Siu-yung Jong. "The influence of ChatGPT on student engagement: A systematic review and future research agenda." *Computers & Education* 219 (2024): 105100. <https://doi.org/10.1016/j.compedu.2024.105100>.
- [7] The Influence of ChatGPT on Student Engagement | InnerDrive. n.d. Uncategorised. Accessed 20 September 2025. <https://www.innerdrive.co.uk/blog/chatgpt-on-student-engagement/>.
- [8] Memarian, Bahar, and Tenzin Doleck. "ChatGPT in education: Methods, potentials, and limitations." *Computers in Human Behavior: Artificial Humans* 1, no. 2 (2023): 100022. <https://doi.org/10.1016/j.chbah.2023.100022>.
- [9] Al Shloul, Tamara, Tehseen Mazhar, Qamar Abbas, Muhammad Iqbal, Yazeed Yasin Ghadi, Tariq Shahzad, Fatma Mallek, and Habib Hamam. "Role of activity-based learning and ChatGPT on students' performance in education." *Computers and Education: Artificial Intelligence* 6 (2024): 100219. <https://doi.org/10.1016/j.caeai.2024.100219>.
- [10] Padmavati. 2025. 'Can AI Like ChatGPT Support Employee Mental Health?' North-west Executive Education, April 28. <https://northwest.education/insights/career-growth/chatgpt-and-mental-health-can-ai-provide-emotional-support-to-employees/>.
- [11] Reeve, Johnmarshall, Sung Hyeon Cheon, and Hye-Ryen Jang. "A teacher-focused intervention to enhance students' classroom engagement." In *Handbook of student engagement interventions*, pp. 87-102. Academic Press, 2019. <https://doi.org/10.1016/B978-0-12-813413-9.00007-3>
- [12] Heung, Yuk Mui Elly, and Thomas KF Chiu. "How ChatGPT impacts student engagement from a systematic review and meta-analysis study." *Computers and Education: Artificial Intelligence* 8 (2025): 100361. <https://doi.org/10.1016/j.caeai.2025.100361>.
- [13] Elyoseph, Zohar, Dorit Hadar-Shoval, Kfir Asraf, and Maya Lvovsky. "ChatGPT outperforms humans in emotional awareness evaluations." *Frontiers in psychology* 14 (2023): 1199058. [doi: 10.3389/fpsyg.2023.1199058](https://doi.org/10.3389/fpsyg.2023.1199058).
- [14] Kavitha, Krishnan, V. P. Joshith, and Sonal Sharma. "Beyond text: ChatGPT as an emotional resilience support tool for Gen Z—A sequential explanatory design exploration." *E-learning and Digital Media* (2024): 20427530241259099. <https://doi.org/10.1177/20427530241259099>
- [15] Chen, Qian, Yufan Jing, Yeming Gong, and Jie Tan. "Will users fall in love with ChatGPT? A perspective from the triangular theory of love." *Journal of Business Research* 186 (2025): 114982. <https://doi.org/10.1016/j.jbusres.2024.114982>.
- [16] 'Essel, Harry Barton, Dimitrios Vlachopoulos, Albert Benjamin Essuman, and John Opuni Amankwa. "ChatGPT effects on cognitive skills of undergraduate students: Receiving instant responses from AI-based conversational large language models (LLMs)." *Computers and Education: Artificial Intelligence* 6 (2024):100198. <https://doi.org/10.1016/j.caeai.2023.100198>.
- [17] Swargiary, Khritish. *The Impact of ChatGPT on Student Learning Outcomes: A Comparative Study of Cognitive Engagement, Procrastination, and Academic Performance*. GOOGLE, 2024. <https://doi.org/10.2139/ssrn.4914743>.

- [18] 'Social Cognitive Theory (SCT) - The Decision Lab'. n.d. Accessed 20 September 2025. <https://thedecisionlab.com/reference-guide/psychology/social-cognitive-theory>.
- [19] Luszczynska, Aleksandra, and Ralf Schwarzer. 2015. 'Social Cognitive Theory'. Pre-dicting Health Behaviour, January 1, 127–69.
- [20] 'Social Cognitive Theory Model - Rural Health Promotion and Disease Prevention Toolkit'. n.d. Accessed 20 September 2025. <https://www.ruralhealthinfo.org/toolkits/health-promotion/2/theories-and-models/social-cognitive>.
- [21] Nickerson, C. 2025. Albert Bandura's Social Cognitive Theory. 2025. Learning Theories. March 31. <https://www.simplypsychology.org/social-cognitive-theory.html>.
- [22] Margolis, May-Varas, and Mead. "Educational Learning Theories: 3rd Edition". 2022. Education Open Textbooks.
- [23] Bandura, Albert. 1977. "Self-Efficacy: Toward a Unifying Theory of Behavioral Change." *Psychological Review* 84 (2): 191–215. <https://doi.org/10.1037/0033-295X.84.2.19>
- [24] 'ChatGPT: 32% of University Students Admit to Using Weekly | theHRD'. 2023. theHRDIRECTOR, November 2. <https://www.thehrdirector.com/business-news/ai/chatgpt-32-university-students-admit-using-weekly/>.
- [25] Pallivathukul, Renjith George, Htoo Htoo Kyaw Soe, Preethy Mary Donald, Renu Sarah Samson, Abdul Rashid Hj Ismail, and Abdul Rashid Hj Ismaile Hj Ismail. "ChatGPT for academic purposes: survey among undergraduate healthcare students in Malaysia." *Cureus* 16, no. 1 (2024). <https://doi.org/10.7759/cureus.53032>.
- [26] Alier, Marc, Francisco José García Peñalvo, and Jorge D. Camba. "Generative Artificial Intelligence in Education: From Deceptive to Disruptive." *International Journal of Interactive Multimedia and Artificial Intelligence* 8, no. 5 (2024): 5-14. <https://doi.org/10.9781/ijimai.2024.02.011>.
- [27] Al Shloul, Tamara, Tehseen Mazhar, Qamar Abbas, Muhammad Iqbal, Yazeed Yasin Ghadi, Tariq Shahzad, Fatma Mallek, and Habib Hamam. "Role of activity-based learning and ChatGPT on students' performance in education." *Computers and Education: Artificial Intelligence* 6 (2024): 100219. <https://doi.org/10.1016/j.caeai.2024.100219>.
- [28] Lin, Xi, Ken Luterbach, Kristen H. Gregory, and Sarah E. Sconyers. "A Case Study Investigating the Utilization of ChatGPT in Online Discussions." *Online learning* 28, no. 2 (2024): n2. <https://doi.org/10.24059/olj.v28i2.4407>.
- [29] Alshahrana, Ali. "The impact of ChatGPT on blended learning: Current trends and future research directions." *International Journal of Data & Network Science* 7, no. 4 (2023). <https://doi.org/10.5267/j.ijdns.2023.6.010>.
- [30] Simões, Sofia, Tiago Oliveira, and Catarina Nunes. "Influence of computers in students' academic achievement." *Heliyon* 8, no. 3 (2022). <https://doi.org/10.1016/j.heliyon.2022.e09004>.
- [31] Navarro, Ricardo, Vanessa Vega, Hugo Bayona, Victor Bernal, and Arlis Garcia. "Relationship between technology acceptance model, self-regulation strategies, and academic self-efficacy with academic performance and perceived learning among college students during remote education." *Frontiers in Psychology* 14 (2023): 1227956. <https://doi.org/10.3389/fpsyg.2023.1227956>.
- [32] Rohaizam, N. Binti. "ChatGPT: Between Opportunities and Challenges in Increasing Academic Productivity." *JPUA: Jurnal Perpustakaan Universitas Airlangga: Media Informasi dan Komunikasi Kepustakawanan* 14, no. 1 (2024): 54-60. <https://doi.org/10.20473/jpu.v14i1.2024.54-60>.
- [33] Khurma, Othman Abu, Fayrouz Albahti, Nagla Ali, and Aiman Bustanji. "AI ChatGPT and student engagement: Unraveling dimensions through PRISMA analysis for enhanced learning experiences." *Contemporary Educational Technology* 16, no. 2 (2024): ep503. <https://doi.org/10.30935/cedtech/14334>.
- [34] Abbas, Muhammad, Farooq Ahmed Jam, and Tariq Iqbal Khan. "Is it harmful or helpful? Examining the causes and consequences of generative AI usage among university students." *International journal of educational technology in higher education* 21, no. 1 (2024): 10. <https://doi.org/10.1186/s41239-024-00444-7>.
- [35] 'The Job Skills Most Impacted by ChatGPT', Simon Sinek. Accessed: Jan. 27, 2025. [Online]. Available: <https://simonsinek.com/stories/the-job-skills-most-impacted-by-chatgpt-according-to-science/>