Information Management and Business Review (ISSN 2220-3796)
Vol. 16, No. 3S(a), pp. 1027-1033, Oct 2024

Evaluating the Impact of AI Dependency on Cognitive Ability among Generation Z in Higher Educational Institutions: A Conceptual Framework

*Suraya Ika Tamrin, Nor Farehan Omar, Khairul Nazlin Kamaruzaman, Azlul Kalilah Zaghlol, Muhammad Ridzuan Abdul Aziz
Faculty of Business and Management, UiTM Puncak Alam, Selangor, Malaysia
*ikatamrin@uitm.edu.my, norfarehan337@uitm.edu.my, khairulnazlin@uitm.edu.my, azlulkalilah@uitm.edu.my, ridzuandba@uitm.edu.my
Corresponding Author: Suraya Ika Tamrin

Abstract: This research aims to examine the factors of AI dependency (AID) and to investigate the relationship between AI dependency on cognitive ability (CA) among Generation Z (Gen Z) in higher educational institutions. The factors involved are academic self-efficacy (ASE), academic stress (AS), and performance expectation (PE). In this research, the proposed research design is a quantitative method. A self-administered questionnaire will be distributed to respondents, a group of students who were born between 1997 to 2012, and the AI user. The questionnaire will be utilizing the Google Form platform for easier data collection. A snowball sampling method will be applied. Then, the data collected will be analyzed through the partial least square (PLS-SEM) technique. The research findings are expected to highlight the significant emphasis on the contributing factors of AI dependency among Gen Z students. Then, the findings will also provide a model to understand better the impact of AI dependency on cognitive ability. Additionally, it is foreseen that the findings will help various parties, including the government, to create better models for helping Gen Z students apply AI in decent ways to help them increase their cognitive ability. It is also considered a long-term strategy to become a nation with numbers of high cognitive ability citizens. Further, a practical framework based on AI dependency on cognitive ability will be developed as a guideline to support the effort of the government or industry practitioners to increase awareness among Gen Z students on how crucial to possess high cognitive ability.

Keywords: *Digital Native*, *Artificial Intelligence, AI Dependency, Cognitive Ability, Generation Z, Higher Educational Sector*

1. Introduction

Artificial intelligence (AI) is a technology that allows computers and machines to mimic human abilities such as learning, understanding, problem-solving, decision-making, creativity, and independence. (Stryker & Kavlakoglu, 2024). The swift rise of AI as a transformative technology is altering every facet of our lives. (Lund & Wang, 2023). The advancement of AI is no exception it has been transforming numerous industries including education. AI in education involves utilizing technologies like machine learning and natural language processing to improve the learning experience. (Alneyadi, et al., 2023). The thriving of AI applications in education has received a ton of attention and is fast becoming a hot topic in policy debates (Miao & Holmes, 2021). It is said that AI applications can bring significant benefits to both students and teachers in the education sector. Such as the digitalization of educational resources, gamification, and personalized learning experiences (Zhai, et al., 2021). Further, according to Harry & Sayudin (2023), AI also could benefit the education sector in many spectrums such as personalized learning, increased efficiency, and improved student engagement in learning. Previous research done by Zhang & Aslan (2021) also stated that AI applications in education can help to provide customized learning, offer dynamic assessments, and facilitate meaningful interactions in online, mobile, or blended learning experiences among teachers and students. It can be summarized that AI applications indeed add value in the education sector, which both students and educators exploit widely to improve or accelerate the academic process and to develop additional skills and competencies.

In this research, the focus is given to the students among Generation Z (Gen Z) in higher educational institutions which refers to the youngest generation born between 1997 and 2012, who are digital natives growing up in a world where technology, smartphones, and the internet are integral parts of their daily lives (Slepian, Vincent, Patterson, & Furman, 2024). The selection of Gen Z is because this generation, born and raised in an era where technology is omnipresent, finds itself intricately entwined with digital tools and platforms from an early age. Additionally, Gen Z students are authentic digital natives who are a hyper-cognitive generation with different

student profiles than before (Hernandez-de-Menendez, Díaz, & Morales-Menendez, 2020). Further, Gen Z was generally optimistic about the potential benefits of AI, including enhanced productivity, efficiency, and personalized learning, and expressed intentions to use AI for various educational purposes (Chan & Lee, 2023). Previous research done by Chen, Jensen, Albert, Gupta, & Lee (2023) on AI in education, it was found that AI systems have enabled the customization and personalization of curriculum and content according to students' needs, leading to improved learning experiences, and overall educational quality. Nevertheless, the usage of AI leads to over-dependence on it due to a few factors such as academic self-efficacy, academic stress, and performance expectations (Zhang, Zhao, Zhou, & Kim, 2024). These factors somehow can lead to a decrease in cognitive abilities. Despite the benefits of AI in helping students with academic tasks, there is a noticeable gap in the factors that can lead to AI dependency and how the relationship between AI dependency and cognitive abilities. Due to that, this research is conducted to fill the gap mentioned above. Then, the findings are expected to highlight the significant emphasis on developing a more decent way of using AI.

There are four sections in this research, which are generally organized accordingly. Section 2 discusses the related literature to support this research's importance on AI dependency and cognitive abilities. It is then followed by Section 3, which reports the methodology that will be used throughout the research. Finally, Section 4 concludes the research.

2. Literature Review

AI in Education

AI in education refers to the use of AI techniques and tools to improve student's learning processes, personalize teachers' course materials, monitor school performance through data analysis by school administrators, and improve educational policies. (Üstün & Yavuz, 2024). Furthermore, AI in education is currently considered as an education assistant at the early stage, while AI-enabled education will play a more important role as learning requirements change. (Chen, Chen, & Lin, 2020). In the aspect of Gen Z and AI, it is generally optimistic that AI would be beneficial including enhanced productivity, efficiency, and personalized learning, and expressed intentions to use AI for various educational purposes. (Chan & Lee, 2023). However, despite all the benefits associated with AI, there is a noticeable gap in investigations on how AI dependency affects students' cognitive abilities (Zhai, Wibowo, & Li, 2024). This trend has led to a decline in the quality of how students learn through AI in education. As a result, AI in education is expected to play a more important role in students' lives, especially Gen Z. Hence, this section provides the background to this research, including its research model and related works.

AI Dependency (AID)

According to Zhang, Zhao, Zhou, & Kim (2024), AI dependency is defined as an excessive reliance on AI technologies and applications across various aspects of life, including academic studies, daily routines, and social interactions. This form of dependency is marked not only by the overutilization of AI-assisted tools but also by a significant psychological dependence on these technologies. Additionally, Zhang, Zhao, Zhou, & Kim, (2024) also mentioned that three factors influence AI dependency among students, which are academic self-efficacy (ASE), academic stress (AS), and performance expectation (PE). In this research, the three variables will be used to examine the factors of AI dependency among Gen Z in higher educational institutions and how it reflects their cognitive abilities.

Academic Self-Efficacy (ASE) and AI Dependency (AID)

Academic self-efficacy refers to perceived capabilities to learn or perform actions at designated levels in academic settings (Schunk & DiBenedetto, 2022). It is grounded in Bandura's social cognitive theory which reflects confidence in the ability to exert control over one's own motivation, behavior, and social environment, depending on the task or situation (Bandura, 1986). Individuals with high academic self-efficacy beliefs demonstrate a keen sense of confidence in their ability to effectively plan, organize, and execute academic tasks (Parmaksız, 2022). Based on the study, it is believed that individuals with higher academic self-efficacy tend to have a higher level of confidence in their ability to plan, organize, and carry out academic tasks effectively. Those with lower academic self-efficacy demonstrate lower enthusiasm for learning engagement as compared to those with higher academic self-efficacy (Cheng, 2020). As a consequence, students who lack academic self-efficacy are more likely to experience frustration and may struggle to complete their academic tasks. In these

situations, they may turn to external assistance, such as ChatGPT, or any convenient AI option, to help make up for their challenges. ChatGPT allows students to obtain quick and direct answers by simply asking questions, which may enhance their academic performance in the short term (Rahman & Watanobe, 2023). Therefore, students may depend more on AI for quick solutions instead of tackling problems on their own. In the long run, students with low academic self-efficacy are likely to over dependent on AI. A previous study conducted by Hong, et al., (2021) has confirmed that there is an impact of academic self-efficacy on the inappropriate use of technology. In this research, the technology refers to the use of AI in academic settings among Gen Z students.

Academic Stress (AS) and AI Dependency (AID)

Academic stress (AS) is a pressure that arises or is caused by academic conditions (Hakim, Fajri, & Faizah, 2022). For instance, according to Yang, Chen, & Chen, (2021), students claimed that academic-related pressures such as ongoing study, writing papers, preparing for tests, and boring professors were the most important daily problems. Additionally, academic stress is a key social-cognitive factor that contributes to problematic technology use. AI technology offers students a convenient and fast way to access academic answers, helping to meet their immediate academic needs and alleviate academic stress (Zhu, Qin, Yang, Dodd, & Conti, 2023). In the end, students become more susceptible to dependence on AI. Based on the associations between academic stress and AI dependency, Gen Z students who experience greater academic stress are more likely to depend on AI to meet their academic needs.

Performance Expectation (PE) and AI Dependency (AID)

A performance expectation (PE) is performance expectations as the degree to which individuals believe that utilizing a specific technology improves their performance (Dwivedi, Rana, Jeyaraj, Clement, & Williams, 2019). In the education aspect, performance expectation refers to aid for assessment by clarifying what students should be able to know and do at the end of the grade or grade band. (National Science Teaching Association (NSTA), 2024). This cognitive factor significantly influences the attitudes of potential users, which in turn impacts their willingness to adopt and engage with technology. When students expect that AI will enhance their academic performance, they are more likely to depend on it. As a result, this research views that performance expectations may influence the dependency on AI. Therefore, it can be summarized that Gen Z students with higher performance expectations tend to integrate AI tools into their academic-related tasks, leading to the over-dependent of AI as a coping strategy (Zhang, Zhao, Zhou, & Kim, 2024).

Cognitive Ability (CA)

Cognitive abilities (CA) of critical thinking, decision-making, and analytical thinking are important elements in research, particularly in higher education. (Soufi & See, 2019). In the education sector, CA is essential to help students acquire knowledge, develop learning skills, and recognize their style of education. With AI replacing more tasks, there is growing debate about whether this AI dependency is enhancing the students' efficiency or diminishing their cognitive ability. Understanding this balance is crucial as it navigates an era where AI and students' cognition abilities intersect more deeply than ever before.

AI Dependency (AID) and Cognitive Ability (CA)

Students might unintentionally depend too much on AI tools, which could undermine their capacity to make independent, informed decisions (Buçinca, Malaya, & Gajos, 2021). When the usage and dependency of AI are increased, this will automatically limit the human brain's thinking capacity (Ahmad, et al., 2023). Many previous studies stated that excessive reliance on AI tools among Gen Z can diminish critical thinking skills, reduce creativity, and impair their ability to engage in independent learning, ultimately affecting their cognitive development. It is proven that there is still a noticeable gap in the current literature exploring the impact of over-dependent AI tools on cognitive abilities in education and research (Ahmad, et al., 2023). Therefore, this research is conducted to fill the knowledge gap by developing the framework to show the factors of AI dependency among Gen Z students in higher educational institutions and to assess the relationship between AI dependency and cognitive abilities.

Figure 1: A Conceptual Framework of AI Dependency on Cognitive Ability

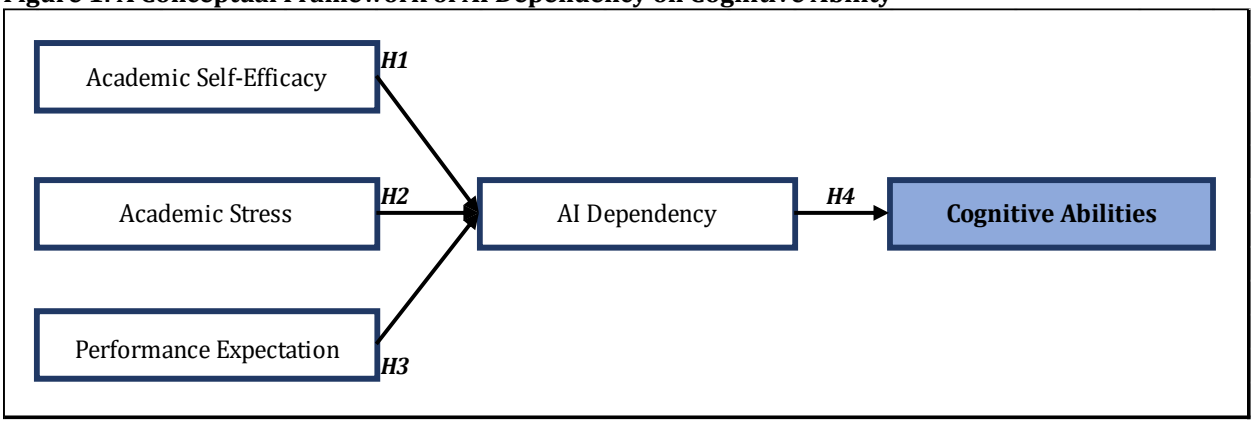

Figure 1 illustrates the factors of the ASE, AS, and PE in contributing to AI dependency (AID). The AI dependency will then be examined to see its relationship with cognitive ability among Gen Z in the higher educational sector. Based on the Figure 1, the following hypotheses are formulated:

H1*: There is a relationship between academic self-efficacy and AI dependency among Generation Z in higher educational institution*

H2*: There is a relationship between academic stress and AI dependency among Generation Z in higher educational institution*

H3*: There is a relationship between performance expectation and AI dependency among Generation Z in higher educational institution*

H4*: There is a significant impact of AI dependency on cognitive ability among Generation Z in higher educational institution*

3. Research Methodology

This research investigates the impact of AI dependency on cognitive ability among Gen Z. A quantitative research approach will be employed to comprehensively examine the factors of AI dependency and the relationship between AI dependency on cognitive ability.

Sampling and Data Collection

The target population consists of students in higher institutions that are born between 1997 to 2012, and the unit of analysis will be the user who relies on the AI tool to do their academic-related work. The reason for focusing on students that are born between 1997 to 2012 as a subject in this research is to align with the research objective which focuses on Gen Z in the higher educational sector.

Questionnaire Construction

A set of survey questionnaires will be used in this research, which will be segmented into main three sections. Section A focuses on the demographic information. Meanwhile, Section B hinges on the factors of AI dependency. Lastly, Section C examines the relationship between AI dependency and cognitive ability. Furthermore, the researchers will develop Sections A, B, and C based on the suitability of the research. Before the main sections are developed, the preliminary section will be developed to include informed consent that mainly explains the purpose of the study, voluntary participation in the survey, and assurance that their response/data will only be used in this study and will be strictly treated as confidential. Then, there will be questions asking about the born year and AI usage. Hence, only those with the required following criteria are allowed to proceed to respond to the survey questionnaire:

- Agreed to participate through informed consent
- Born in 1997 to 2012 only
- AI users – academic purpose

Then, the selected experts will validate the questionnaire's accuracy and validity. Once validated, one pilot test

will be conducted to test the questionnaire. Once done, the finalized questionnaire will be distributed through an online platform. Further, a snowball sampling method will be applied in this research which refers to a non-probability sampling method where new units are recruited by other units to form part of the sample. (Nikolopoulou, 2023). He added that snowball sampling can be a useful way to research people with specific traits who might otherwise be difficult to identify. The goal of snowball sampling in this research is to obtain a large number of Gen Z students who have been used and exposed to AI in higher educational institutions. In this research, it is challenging to engage with Gen Z students who utilize AI tools for academic purposes. Therefore, this method will be an appropriate approach and will be implemented in two steps:

Identify potential participants in the population.
The candidates will be asked whether they are an AI user. If not, they can't proceed to further the questions. Hence, the research can limit only Gen Z students who are using AI for academic purposes as the subjects.

Ask those participants to recruit other people.
It begins with one or more study Gen Z students. It then continues based on referrals from those students. This process continues until the research reaches the desired sample or a saturation point. (Nikolopoulou, 2023)

Table 1 summarizes the questionnaire construction.

Table 1: Summary of Questionnaire Construction

Section	Items
Preliminary section	Informed Consent Born Year AI User or Not
Section A: Demographic Information	Gender Marital status Education level Race Dependency level on AI Purpose of Using AI
Section B: The Factors of AI Dependency	Academic Self-Efficacy Academic Stress Performance Expectation
Section C: The AI Dependency on Cognitive Ability	AI Dependency on Cognitive Ability

Data Analysis
Once data is collected, it will be analyzed by employing the Partial Least Squares-Structural Equation Modelling (PLS-SEM) tool. The PLS-SEM method has become increasingly popular over the past two decades and more to analyze such models in business discipline (Hair, et al., 2021) and information systems (Benitez, Henseler, Castillo, & Schuberth, 2020). The primary statistical objective of PLS-SEM I prediction is that minimize the amount of unexplained variance in the structural model's dependent constructs and the measurement model's indicators (Sarstedt, Ringle, & Hair, 2022). Besides, it is said that PLS-SEM provides more flexibility to explore and experiment with numerous configurations (Dash & Paul, 2021). Hence, it is shown to be a suitable tool to be applied in the analysis of abnormally distributed data. In this research, the PLS-SEM is a powerful tool in providing evidence of the reliability and validity of the relationship between AI dependency and cognitive ability.

4. Discussion and Conclusion

The growing dependency on AI tools among students, particularly within Gen Z, raises significant concerns regarding cognitive abilities. While AI can enhance learning and provide quick access to information, it can also lead to detrimental effects if relied upon excessively. In this research, three factors led to the over-dependent on AI usage, which are academic self-efficacy, academic stress, and performance expectation. Then,

the AI dependency is examined to view the relationship between AI dependency and cognitive abilities. A set of surveys will be distributed to students who are Gen Z and AI users. Then, the data collected will be analyzed through the partial least square (PLS-SEM) technique. The research findings are expected to highlight the significant emphasis on the contributing factors of AI dependency among Gen Z students. Then, the findings will also offer a framework for better understanding the effects of AI dependency on cognitive ability. Moreover, it is expected that the findings will assist various stakeholders, including the government, in developing improved strategies to help Gen Z students use AI appropriately, thereby enhancing their cognitive abilities. It is also viewed as a long-term strategy to cultivate a nation with a significant number of citizens possessing high cognitive abilities. Further, a practical framework addressing AI dependency and cognitive ability will be created to guide all educational institutions, especially at a higher level in raising awareness among Gen Z students about the importance of developing high cognitive abilities. Moreover, students with strong skills in current technologies like AI, along with high cognitive abilities, would be a significant asset to the industry later on. Hopefully, the research will be beneficial to all AI users, especially Gen Z students and educational institutions.

References

Ahmad, S. F., Han, H., Alam, M. M., Rehmat, M. K., Irshad, M., Arrano-Munoz, M., & Ariza-Montes, A. (2023). Impact of artificial intelligence on human loss in decision making, laziness, and safety in education. *Humanities and Social Sciences Communications, 10*(311). doi://doi.org/10.1057/s41599-023-01787-8

Alneyadi, S., Wardat, Y., Alshannag, Q., . . . Ahmad. (2023). The effect of using smart e-learning app on the academic achievement of eighth-grade students. *EURASIA Journal of Mathematics, Science and Technology Education, 19*(4).

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice-Hall.

Benitez, J., Henseler, J., Castillo, A., & Schuberth, F. (2020). How to Perform and Report an Impactful Analysis Using Partial Least Squares: Guidelines for Confirmatory and Explanatory Research. *Information & Management, 57*(2), 103168.

Buçinca, Z., Malaya, M. B., & Gajos, K. Z. (2021). To trust or to think: Cognitive forcing functions can reduce overreliance on AI in ai-assisted decision-making. *Proceedings of the ACM on Human-Computer Interaction, 5*(CSCW1), 1-21. doi:10.1145/3449287

Chan, C., & Lee, K. (2023). The AI generation gap: Are Gen Z students more interested in adopting generative AI such as ChatGPT in teaching and learning than their Gen X and millennial generation teachers? *Smart Learning Environments, 10*(60). doi:10.1186/s40561-023-00269-3

Chen, L., Chen, P., & Lin, Z. (2020). Artificial Intelligence in Education: A Review. *IEEE Access, 8*, 75264-75278. doi:10.1109/ACCESS.2020.2988510

Chen, Y., Jensen, S., Albert, L. J., Gupta, S., & Lee, T. (2023). Artificial intelligence (AI) student assistants in the classroom: Designing chatbots to support student success. *Information Systems Frontiers, 25*, 161–182. doi:10.1007/s10796-022-10291-4

Cheng, Y.-Y. (2020). Academic self-efficacy and assessment. *Educational Psychology, 40*(4), 389-391. doi:10.1080/01443410.2020.1755501

Dash, G., & Paul, J. (2021). CB-SEM vs PLS-SEM Methods for Research in Social Sciences and Technology Forecasting. *Technological Forecasting and Social Change, 173*, 121092.

Dwivedi, Y. K., Rana, N. P., Jeyaraj, A., Clement, M., & Williams, M. D. (2019). Re-examining the unified theory of acceptance and use of technology (UTAUT): Towards a revised theoretical model. *Information Systems Frontiers, 21*, 719–734. doi:10.1007/s10796-017-9774-y

Hair, J., Astrachan, C., Moisescu, O., Radomir, L., Sarstedt, M., Vaithilingam, S., & Ringle, C. (2021). Executing and Interpreting Applications of PLS-SEM: Updates for Family Business Researchers. *Journal of Family Business Strategy, 2*(3), 100392.

Hakim, A. L., Fajri, M. B., & Faizah, E. N. (2022). Evaluation Of Implementation Of MBKM: Does Academic Stress Affect Student Learning Outcomes? *International Journal of Educational Research & Social Sciences, 3*(1), 1-16. doi:10.51601/ijersc.v3i1.246

Harry, A., & Sayudin. (2023). Role of AI in Education. *Injuruty: Interdisciplinary Journal and Humanity, 2*(3), 260-268.

Hernandez-de-Menendez, M., Díaz, C., & Morales-Menendez, R. (2020). Educational experiences with Generation Z. *International Journal on Interactive Design and Manufacturing (IJIDeM), 14*, 847–859.

Hong, W., Liu, R. D., Ding, Y., Jiang, S., Yang, X., & Sheng, X. (2021). Academic procrastination precedes problematic mobile phone use in Chinese adolescents: A longitudinal mediation model of distraction cognitions. *Addictive Behaviors, 121*, 106993. doi:10.1016/j.addbeh.2021.106993

Lund, B., & Wang, T. (2023). Chatting about ChatGPT: How May AI and GPT Impact Academia and Libraries? *Library Hi Tech News, 40*(3), 26-29.

Miao, F., & Holmes, W. (2021). *AI and education: Guidance for policy-makers.* UNESCO. Retrieved from UNESCO: https://unesdoc.unesco.org/ark:/48223/pf0000376709

National Science Teaching Association (NSTA). (2024). Retrieved from Performance Expectations Resources: https://www.nsta.org/topics/performance-expectations#:~:text=Performance%20Expectations%20Resources,not%20prescribe%20curriculum%20or%20lessons.

Nikolopoulou, K. (2023, June 22). *Scribbr*. Retrieved from What Is Snowball Sampling? | Definition & Examples: https://www.scribbr.com/methodology/snowball-sampling/#:~:text=Snowball%20sampling%20is%20a%20non,people%20with%20a%20rare%20disease).

Parmaksız, İ. (2022). The mediating role of personality traits on the relationship between academic self-efficacy and digital addiction. *Education and Information Technologies, 27*(6), 8883–8902. doi:10.1007/s10639-022-10996-8

Rahman, M. M., & Watanobe, Y. (2023). ChatGPT for education and research: Opportunities, threats, and strategies. *Applied Sciences, 13*(9), 5783. doi:10.3390/app13095783

Sarstedt, M., Ringle, C., & Hair, J. (2022). Partial Least Squares Structural Equation Modeling. In C. Homburg, M. Klarmann, & A. Vomberg, *Handbook of Market Research* (pp. 587-632). Cham: Springer International Publishing.

Schunk, D. H., & DiBenedetto, M. K. (2022). Academic Self-Efficacy. In K.-A. Allen, M. J. Furlong, D. Dianne Vella-Brodrick, & S. Suldo, *Handbook of Positive Psychology in Schools* (p. 15). London: Taylor & Francis Group.

Slepian, R. C., Vincent, A. C., Patterson, H., & Furman, H. (2024). 4.02 - "Social media, wearables, telemedicine, and digital health,"—A Gen Y and Z perspective. *Comprehensive Precision Medicine, 1*, 524-544.

Soufi, N., & See, B. H. (2019). Does explicit teaching of critical thinking improve the critical thinking skills of English language learners in higher education? A critical review of causal evidence. *Studies in Educational Evaluation, 60*, 140–162. doi:10.1016/j.stueduc.2018.12.006

Stryker, C., & Kavlakoglu, E. (2024, August 16). *IBM*. Retrieved from What is artificial intelligence (AI)?: https://www.ibm.com/topics/artificial-intelligence#:~:text=Artificial%20intelligence%20(AI)%20is%20technology,and%20respond%20to%20human%20language.

Üstün, A. G., & Yavuz, M. (2024). Artificial Intelligence-Supported Teacher Tools to Increase Participation in Online Courses. In R. Bansal, A. Chakir, A. H. Ngah, F. Rabby, & A. Jain, *AI Algorithms and ChatGPT for Student Engagement in Online Learning* (p. 292). United States: IGI Global.

Yang, C., Chen, A., & Chen, Y. (2021). College students' stress and health in the COVID-19 pandemic: the role of academic workload, separation from school, and fears of contagion. *PloS ONE, 16*(e0246676). doi:10.1371/journal.pone.0246676

Zhai, C., Wibowo, S., & Li, L. (2024). The effects of over-reliance on AI dialogue systems on students' cognitive abilities: a systematic review. *Smart Learning Environments, 11*(28). doi:10.1186/s40561-024-00316-7

Zhai, X., Chu, X., Chai, C., Jong, M., Istenic, A., Spector, M., . . . Li, Y. (2021). A Review of Artificial Intelligence (AI) in Education from 2010 to 2020. *Complexity*, 1-18. doi:https://doi.org/10.1155/2021/8812542

Zhang, K., & Aslan, A. (2021). AI technologies for education: Recent research & future directions. *Computers and Education: Artificial Intelligence, 2*, 100025. doi:https://doi.org/10.1016/j.caeai.2021.100025

Zhang, S., Zhao, S., Zhou, T., & Kim, J. H. (2024). Do you have AI dependency? The roles of academic self-efficacy, academic stress, and performance expectations on problematic AI usage behavior. *International Journal of Educational Technology in Higher Education, 21*(34), 1-14.

Zhu, Z., Qin, S., Yang, L., Dodd, A., & Conti, M. (2023). Emotion regulation tool design principles for arts and design university students. *Procedia CIRP, 119*, 115–120. doi:10.1016/j.procir.2023.03.085