Permission, Perception, And Practice: Investigating Factor Dissonance in Student AI Engagement

Ean J. Richards
Graduate Student
Stephen F. Austin State University
PO Box 13000
Nacogdoches, TX 75962
(936) 468-4061
richardsej2@jacks.sfasu.edu

Garrett T. Hancock
Assistant Professor
Stephen F. Austin State University
PO Box 13000
Nacogdoches, TX 75962
(936) 468-4061
Garrett.Hancock@sfasu.edu

Candis Scallan
Associate Professor
Stephen F. Austin State University
PO Box 13000
Nacogdoches, TX 75962
(936) 468-4061
Carrawaycl@sfasu.edu

Michael Maurer
Full Professor
Stephen F. Austin State University
PO Box 13000
Nacogdoches, TX 75962
(936) 468-4061
maurerma@sfasu.edu

Introduction

The idea of Artificial Intelligence (AI) is not a new one. The first time the term was used was in the 1950s with the idea that machines would be able to replicate human intelligence (Bini, 2018). Today Generative Artificial Intelligence is an extremely complex algorithmic program that uses data from large data sets to learn copious amounts of information and then respond in a human tone to the inputted query (Helm et. al., 2020). With the rapid gain in usage and popularity of AI by Generation Z (Gen Z) students, a growing concern by educators is that students may begin to rely on AI and be unable to learn or study independently (Wogu et. al., 2018). In Billy & Anush (2023), students in STEM programs with a higher understanding of AI were more apt to implementing AI into their program, believing that it would have a positive impact on their education. On the opposite side, they reported that students with a lower understanding tended to be more wary about using AI for their education. Misconceptions of AI by students can cause unfounded fears and lessen their ability to use AI effectively in their education (Billy & Anush, 2023). It is important to gauge students' literacy in AI and use that information to find the best way for instructors to educate students on the proper uses, applications, and environments so that they get the most out of their education for the future (Cruz-Benito et. al., 2019). The purpose of this project was to gauge students' usage and perceptions of using AI at the secondary level. Specifically, this study aimed to examine environmental, behavioral, and cognitive factors relating to secondary students' engagements with AI.

Theoretical Framework

This study utilized Bandura's Social Cognitive Theory (SCT) (Bandura, 1986) as a theoretical framework. The Social Cognitive Theory offers a framework of how cognitive, behavior, and environmental factors work dynamically and reciprocally to determine a basis of a human's behavior (Schunk & DiBenedetto, 2023). The questions in this study asked of the responding parties could fall under each of these three key factors in the SCT model; questions such as "My High School teachers allowed use of Artificial Intelligence" and "In High School, I was taught how to use Artificial Intelligence in a classroom setting" can fall under the Environmental Model; questions like "How often did you use Artificial Intelligence in High School" and "In High School, I was likely to use Artificial Intelligence while working on an assignment" can fall under the Behavior model; and "In High School, I found the use of Artificial Intelligence improved my grades" falling under the Cognitive model.

Methodology

This study was conducted using a survey-based instrument through the Qualtrics program. The survey was broken into two parts: a questionnaire with statements and respondents selected answers on a Five-Point summated scale followed by a demographic question portion. The survey was dispersed to freshman undergraduate agriculture students at Stephen F. Austin State University during a level 1000 agriculture course. Data were analyzed using a descriptive analysis based on the recommendations of Linder and Linder (2024).

Results and Findings

A total of 82 respondents completed the instrument, of which every agricultural concentration offered in the Department of Agriculture at Stephen F. Ausitn State University was represented. A total of 74 (90.24%) of the respondents received their high school education at a public school, 18 (21.95%) respondents identified themselves as male and 64 (78.05%) identified themselves as female. When respondents were asked about their allowed use of artificial intelligence, responses indicated an average disagreement (M = 4.02; SD = 0.99) with 62 (75.31%) indicating sometimes or never. Furthermore, an average disagreement in being taught how to use AI (M = 3.80; SD = 1.31) was shown, with a total of 51 (62.20%) somewhat or strongly disagreeing. When responding to the question regarding the frequency of use, respondents were relatively middle of the road (M = 3.01; SD = 1.11) with 26 (31.71%) responding somewhat to very often. This was echoed when asked how likely the respondent was to use AI when completing an assignment (M = 3.11; SD = 1.26), with 29 (35.37%) respondents indicating somewhat or strongly agree. Conversely, when asked if respondents felt the use of AI has improved their grades, they responded positively overall (M = 2.58; SD = 1.14) with 44 (53.09%) responding in agreement compared to the 14 (17.28%) disagreeing responses.

Conclusion/Implication

The results show that the connections, as indicted by Bandura's SCT (1986), are in dissonance when it comes to students' use of AI at the secondary level. Statements asking if the respondents were allowed to use AI and if they were taught how to use AI show that the *Environmental Factors* should influence a non-use behavior. However, the statements asking about the frequency of use and when they would use AI, *Behavioral Factors*, show there is no indication for or against the use of AI by the respondents. With their environment pushing toward "no use" and their behavior indicating neither "use nor no use", the key finding points to a *Cognitive Factor* wherein the perceived value or benefit leans positive, while the findings of this study are limited in scope due to its size, there is value in further research to establish an understanding of this perceived phenomenon. Therefore, further research, with a larger response pool, must be done to conclude how SCT plays a role in student's use of AI at the secondary level. The dissidence among the factors could be pointed towards a perceived "reward" outweighing the established environmental "risk." Based on the dissidence present, it may be time for institutions and educators to start looking into ways to find a middle ground for the future of education as the AI boom has only just begun.

References

Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs.

Billy, I., & Anush, H. (2023). A study of the perception of students and instructors on the usage of Artificial Intelligence in education. *International Journal of Higher Education Management*, *09*(02). https://doi.org/10.24052/IJHEM/V09N02/ART-6

Bini, S. A. (2018). Artificial Intelligence, Machine Learning, Deep Learning, and Cognitive Computing: What Do These Terms Mean and How Will They Impact Health Care? *The Journal of Arthroplasty*, *33*(8), 2358–2361. https://doi.org/10.1016/j.arth.2018.02.067

Cruz-Benito, J., Sánchez-Prieto, J. C., Therón, R., & García-Peñalvo, F. J. (2019). Measuring Students' Acceptance to AI-Driven Assessment in eLearning: Proposing a First TAM-Based Research Model. In P. Zaphiris & A. Ioannou (Eds.), *Learning and Collaboration Technologies. Designing Learning Experiences* (pp. 15–25). Springer International Publishing. https://doi.org/10.1007/978-3-030-21814-0_2

Helm, J. M., Swiergosz, A. M., Haeberle, H. S., Karnuta, J. M., Schaffer, J. L., Krebs, V. E., Spitzer, A. I., & Ramkumar, P. N. (2020). Machine Learning and Artificial Intelligence: Definitions, Applications, and Future Directions. *Current Reviews in Musculoskeletal Medicine*, *13*(1), 69–76. https://doi.org/10.1007/s12178-020-09600-8

Lindner, J. R., & Lindner, N. (2024). Interpreting Likert type, summated, unidimensional, and attitudinal scales: I neither agree nor disagree, Likert or not. *Advancements in Agricultural Development*, *5*(2), 152–163. https://doi.org/10.37433/aad.v5i2.351

Schunk, D. H., & DiBenedetto, M. K. (2023). *Learning from a social cognitive theory perspective—ScienceDirect*. https://www.sciencedirect.com/science/chapter/referencework/abs/pii/B9780128186305140047

Wogu, I. A. P., Misra, S., Olu-Owolabi, E. F., Assibong, P. A., & Udoh, O. D. (2018). *Artificial Intelligence, Artificial Teachers and the Fate of Learners in the 21st Century Education Sector: Implications for Theory and Practice*.