

Determining the Self: An Exploration of Student Motivation Toward Using Generative Artificial Intelligence

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Introduction

Generative artificial intelligence (GenAI) refers to the set of tools that can produce information in the form of texts, pictures, visuals, etc. based on the inputs provided to them as training data (Feuerriegel et al., 2024). Except simply searching and finding the information asked, they can combine information from different sources to provide logical reasonings in different formats, functioning like an independent intelligent system. Some popular examples of GenAI include ChatGPT, Google Bard, Microsoft Copilot, and Claude (Jackson, 2023). These tools have been used in a wide variety of areas including education with several past research indicating its transformative power in the educational sector (Baidoo-anu & Ansah, 2023; Mittal et al., 2024). GenAI tools are also indicated as useful in agricultural education (Lengyel et al., 2024). While past research has found that students use GenAI tools in agricultural education (Urbina et al., 2025), limited research has explored students' motivation toward using these tools for educational purposes. Hence, this research addresses this gap by exploring the motivation of agricultural graduate students toward GenAI. More specifically, we explored the perceived autonomy, perceived completeness, and perceived relatedness of the students toward using GenAI for educational purposes.

Theoretical Framework

The research was framed using the self-determination theory. The theory introduces three basic psychological needs that motivate people toward certain behaviors: autonomy competence, and relatedness (Ryan & Deci, 2000). Autonomy refers to the feeling of capacity to regulate one's own behavior, competence is the capacity to successfully engage in and complete tasks, and relatedness is one's feeling of connectedness (Deci & Ryan, 1985). This theory has been widely used in agricultural education to study motivation (Bowling & Ball, 2020; Hur et al., 2024).

Methods

A quantitative survey instrument was developed and validated with a panel of experts consisting of 3 faculty members. The instrument included the demographic questions, and questions to measure perceived autonomy (PA), perceived completeness (PC), and perceived relatedness (PR). PA, PC, and PR were measured on a 5-point Likert scale each having 5 items. One item on each measure was reverse coded during data collection, which were recoded to the original scale during data analysis. Example items included: PA = 1. *I feel free to choose how I use AI tools for learning*, 2. *AI tools provide me with interesting options*; PC = 1. *I think I am pretty good at using AI tools for learning*, 2. *Using AI tools for my studies makes me feel competent*; PR = 1. *I have the opportunity to be close to others in my academic community when I use AI tools*, 2. *I feel close to others when I use AI tools*. We used the Cronbach's alpha values to test the reliability of the instrument. The variables perceived autonomy ($\alpha = .70$), perceived competence ($\alpha = .92$), perceived relatedness ($\alpha = .88$) satisfied the reliability requirements (Nunnally, 1978). We used convenience sampling (Golzar et al., 2022) to collect data with graduate students in the college of food, agriculture, and environmental science (CFAES) at The Ohio State University (OSU) using an online data collection tool, Qualtrics. A total of 25 graduate students responded from the CFAES ($N = 25$). More than three quarters of the students were from the department of agricultural communication, education, and leadership ($n = 20$, 80.00%). More than half of the participants were female ($n = 14$, 56.00%) with the remaining

being male ($n = 11, 44.00\%$). The age of the students averaged 31 years ($M = 30.75, SD = 7.12$). Data were analyzed by using descriptives statistics in SPSS Version 29.

Results

The frequencies of all the items under perceived autonomy and perceived competence were higher on the agreement side (anchors 4 and 5 of the Likert scale) than the disagreement side (anchors 1 and 2 of the Likert scale). However, the frequencies of items under the perceived relatedness showed mixed responses with the majority of the items having the highest frequencies for neutral anchor (anchor 3 on the Likert scale) compared to agreement or disagreement side. Even if 25 participants completed the survey, some of them reported some items to be not applicable to them, especially if they were not using the AI tools, resulting in different sample sizes for each variable (Table 1). However, to ensure uniformity, we tested the averages for each variable in two ways: first, imputing the missing values, and second, only retaining the complete responses under each variable. On doing so, we got the similar results (results similar to Table 1) in both cases, overcoming the issue of different sample sizes. Overall, the students felt autonomous ($M = 3.66, SD = .78$) and competent ($M = 3.81, SD = .94$) on using GenAI tools for educational purposes. However, their feeling of connectedness/relatedness by using generative AI tools was neutral ($M = 3.04, SD = .78$).

Table 1

Perceived Autonomy, Competence, and Relatedness of Students Toward Using GenAI Tools

Motivation Needs	<i>N</i>	<i>M</i>	<i>SD</i>
Perceived Autonomy	25	3.66	.78
Perceived Competence	16	3.81	.94
Perceived Relatedness	14	3.04	.78

Discussion, Conclusion, Implication, and Recommendations

Motivation consists of a large part in agricultural education research (Bowling & Ball, 2020). Being an emerging technology, researchers' interests in exploring AI use in agricultural education have increased (Lengyel et al., 2024). The findings of this research suggest that the graduate students use AI tools for learning purposes with the feelings of autonomy and competence. This means to say that the use AI can motivate students to be self-directed/independent learners. On the question about their feeling of closeness with people around them while using the AI tools, they reported that their relatedness while using AI tools was neutral. According to Deci and Ryan (1985), higher autonomy, competence, and relatedness is related to the higher motivation of people, guiding people to make their choices themselves. The level of PA and PC suggest that curriculum developers can integrate AI tools in coursework to promote the self-directed learning, while being mindful of ethical considerations. Our results on PR with a neutral level of relatedness is somewhat expected considering the emerging nature of AI as these tools do not necessarily generate connectedness with other people until it is highly used and prioritized by everyone in the class. Hence, professors may allow collaborative AI-enhanced learning environment to encourage relatedness, again, considering the ethical concerns. Future research should consider including a larger and more representative sample size to be able to generalize the findings to a broader population of agricultural education students.

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