

Artificial Intelligence and the Professional Development Needs of SBAE Teachers

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Introduction/Need for Research

Agriculture teachers should have the ability to maintain good teaching practices and stay relevant within an ever-evolving education system and society. Artificial Intelligence (AI) has stood out as a groundbreaking and disruptive innovation, revolutionizing various components of society, including education. There is also a veil of uncertainty, concern, and negative perception over the utilization of AI within education but also the potential to improve teaching efficacy and reduce the workload placed upon teachers (Khare et al., 2018). Yet, as with most new technologies, some training is often needed in order for the benefits to be realized. With the newness of AI in education, there is a lack of understanding about the professional development needs of School-Based Agricultural Education (SBAE) teachers regarding AI, which this study aimed to address.

Theoretical Framework and Literature Review

The Technology Acceptance Model (TAM) suggests that when individuals are presented with new technology, several factors influence their decision about using it including perceived usefulness, perceived ease of use, and attitude (Davis et al., 1989). If a teacher believes that AI can help them with their job, then perceived usefulness is increased. Perceived ease of use is related to the ease or difficulty level to use the new technology. Finally, attitude is related to the individual's willingness to learn to utilize and social perceptions of the technology. Each of these factors play a role in the teacher's intentions to utilize AI as well as their willingness and needs for professional development.

Due to the newness and quickness in which AI has infiltrated the education scene, little is known about the professional development needs among teachers, specifically SBAE teachers. Some research shows that teachers lack basic AI knowledge and competency, AI teaching skills, and AI teaching self-efficacy (Sun, 2023) while other research suggests that ethical issues associated with integrating AI in the classroom is a main professional development need among teachers (Lee & Perret, 2022). While some studies exist in education, nothing has been published in SBAE related to SBAE teacher's professional development needs related to AI.

Purpose/Objective

The purpose of this study was to determine the professional development needs of SBAE teachers related to AI. Findings from the study can help state staff and teachers' associations to develop appropriate professional development programs for SBAE teachers.

Methodology

This quantitative descriptive study employed survey research methodology. An online survey was distributed to all SBAE teachers in Utah during the 2023-2024 school year. A response rate of 41.4% ($n = 70$) was achieved. The survey instrument was largely researcher developed and based on previous research (Chounta et al., 2021; Oh et al., 2019). A panel of

experts reviewed the survey instrument for face and content validity before distribution. As part of a larger study, we asked participants if they would be interested in professional development related to using AI, and what topics they preferred for training. A list of 10 potential topics were provided and participants were asked to check all that applied.

Results/Findings

Among the respondents, 74% indicated that if given the opportunity, they would be interested in participating in AI professional development, whereas 22% said they were unsure, and 4% indicated they would not be interested. The top three topics in which respondents preferred to receive further training was: (1) ways to detect improper AI use by students, (2) ways to use AI to save time on administrative tasks/paperwork, and (3) how to teach students how to use AI responsibly and effectively in academic settings (see Table 1). The topics least preferred for training included, incorporating AI into teaching specific subjects and how to prepare students for AI use in the workforce.

Table 1
Preferred Topics for Professional Development Training among SBAE Teachers

Training Topic	<i>f</i>	%
Ways to detect improper AI use by students	36	51.4
Ways to use AI to save time on administrative tasks/paperwork	34	48.6
How to teach students to use AI responsibly and effectively in academic settings	31	44.3
A basic introduction to AI	29	41.4
Utilizing AI for FFA and SAE	28	40.0
Specific types of AI platforms available to use in teaching	23	32.9
Maximizing student learning with AI	23	32.9
Instruction on incorporating AI into learning across the curriculum	23	32.9
How to prepare students for AI use in the workforce	22	31.4
Incorporating AI into teaching specific subjects	22	31.4

Conclusions/Recommendations/Impacts

Overall, our findings suggest that the teachers in this study are willing to learn about AI, reflecting some level of perceived usefulness, ease, and positive attitude towards AI. Yet, a proportion of the sample was unsure whether they wanted training in the use of AI. This indicates a possible lack of basic understanding, particularly regarding the perceived usefulness of AI. More research should be conducted to determine why teachers are reluctant to engage in training related to AI. Results of this study also indicate that SBAE teachers are concerned about ethical issues and the potentially negative aspects of AI in education as the top and the third top choice for training related to this. This is consistent with literature from general education studies. SBAE teachers in this study indicated a desire for training related to how AI can help them save time. This finding makes sense given the fact that SBAE teachers work excessive hours and often experience work-family conflict (Sorensen et al 2016). We recommend more research be done related to AI utilization in SBAE. There are many unanswered questions, and this current research study has helped uncover a small piece of our understanding into this topic.

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