

EXPLORING THE ADOPTION OF AI TOOLS IN TEACHING BY FACULTY IN A COLLEGE OF AGRICULTURE



T. Grady Roberts and Sarah A. Bush

Department of Agricultural Education and Communication, University of Florida

Author Note

Correspondence concerning this article should be addressed to T. Grady Roberts, Department of Agricultural Education and Communication, University of Florida, PO Box 110540, Gainesville, FL, 32611. Email: groberts@efl.edu.

Abstract

AI technologies have widespread applicability across all sectors, including education. The purpose of this research was to explore the perspectives of instructors in a college of agriculture in the USA about adopting AI tools in their teaching. We employed a multiple case-study design, conducting focus groups with three groups of instructors (non-adopters, planning to adopt, and early adopters). Overall, we discovered five themes related to instructors' adoption of AI in their teaching: (a) Learning about AI, (b) Problems with AI, (c) Benefits of AI, (d) Adopting AI, and (e) Teaching with AI. Four of the five were present in all three cases, with Benefits of AI not present in Case One (the non-adopter group). All three groups discussed knowledge, but had varying levels. All three groups also saw relative advantage in helping them complete job-related tasks.

Keywords: artificial intelligence; higher education; pedagogy; ethics; technology; SDG 4: Quality Education

Artificial intelligence (AI) has the potential to revolutionize many tasks of college faculty, including teaching (Michel-Villarreal et al., 2023; Rahiman & Kodikal, 2023). The possibilities seem almost endless with new applications of AI being released rapidly—new innovations are available every semester (Michel-Villarreal et al., 2023; Rahiman & Kodikal, 2023). Some universities are prioritizing the adoption of AI throughout the curriculum, including the University of Florida (UF), the setting for this study. However, the successful implementation of AI tools in teaching ultimately falls on individual faculty (Macfarlane, 2021). Given the recency of widespread access to AI tools, the adoption of these tools for teaching has not been thoroughly examined. This study seeks to understand this phenomenon from the perspectives of three groups of faculty: (a) those already using AI in their teaching, (b) those planning to start using AI in their teaching, and (c) those with no plans to start using AI tools in their teaching. Results can provide insights to college administrators and faculty development specialists.

Theoretical Framework and Literature Review

We used Rogers' (2003) diffusion of innovations (DOI) theory as the lens to understand the adoption of AI tools in teaching. In this theory, Rogers (2003) proposes that people undergo a five-stage process when deciding whether to adopt an innovation: knowledge, persuasion, decision, implementation, and confirmation. In the persuasion stage, Rogers (2003) highlighted five innovation characteristics that affect adoption: compatibility, trialability, relative advantage, observability, and complexity. Rogers (2003) also classified people based on how soon they adopt an innovation as innovators, early adopters, early majority, late majority, or laggards.

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Given how quickly AI tools are evolving, we focused our literature review on research published in the last five years that focused on AI adoption in higher education. Several studies have begun examining various factors that contribute to faculty adoption of AI technologies in their teaching. Faculty were motivated to adopt AI tools in their teaching based on the opportunity to explore new technologies, the ability to personalize learning, saving time, and their own professional development (Al-Mughairi & Bhaskar, 2024). The innovativeness of teachers was also found to affect their adoption of AI tools in their teaching (Nissim & Simon, 2025; Uzumcu & Acilmis, 2024). A faculty member's self-efficacy in using AI tools positively influenced how easy they perceived it was to use and their overall attitudes toward AI tools (Wang et al., 2021). Increases in self-efficacy also reduced anxiety towards using AI tools (Wang et al., 2021). Additionally, perceived ease of use positively affected adoption (Ghimire & Edwards, 2024).

Several studies investigated the adoption of AI tools in higher education teaching using the technology acceptance model (Davis, 1989), which hypothesizes that perceived risk, performance expectancy, and effort expectancy influence attitudes, which in turn influence behavioral intention and, ultimately, adoption. Facilitating conditions also influence behavioral intentions. In these studies, perceived risk negatively impacts attitudes (Chatterjee & Bhattacharjee, 2020; Helmiatin & Kahar, 2024; Rahiman & Kodikal, 2023), while performance and effort expectancy positively influence attitudes towards AI tools (Chatterjee & Bhattacharjee, 2020; Helmiatin & Kahar, 2024; Rahiman & Kodikal, 2023). The influence of facilitating conditions was mixed, with Chatterjee and Bhattacharjee (2020) and Rahiman and Kodikal (2023) showing positive relationships and Helmiatin and Kahar (2024) showing a negative relationship, indicating the importance of the broader institutional context. Ultimately, the perceived usefulness of AI tools impacted faculty acceptance of generative AI tools (Ghimire & Edwards, 2024).

Several studies investigated how the higher education context impacted adoption. Shwedeh et al. (2024) showed that policies and regulations affected adoption. Similarly, Michel-Villarreal et al. (2023) revealed there is a need for clear policies, guidelines, and frameworks for the successful implementation of AI tools in higher education. Lack of institutional support was seen as a barrier to adoption (Al-Mughairi & Bhaskar, 2024). Inequities and biases in generative AI tools may also have disproportionate impacts on international students (Farrelly & Baker, 2023).

Ethics and responsible usage were also identified as barriers to adopting AI tools. For example, adoption was inhibited by concerns about accuracy (Al-Mughairi & Bhaskar, 2024), data security (Al-Mughairi & Bhaskar, 2024; Michel-Villarreal et al., 2023), and academic integrity (Michel-Villarreal et al., 2023). When discussing academic integrity, Farrelly and Baker (2023) noted current difficulties in detecting if written work was created by generative AI.

The existing literature is beginning to paint the landscape related to AI usage for teaching in higher education. However, there are several notable gaps. First, this phenomenon has not been examined within the context

of colleges of agriculture. Second, much of the existing research was conducted outside the United States. Third, existing research has not explicitly compared faculty based on their stage of adoption. Our study begins to fill these gaps.

Purpose

The purpose of this research was to explore the perspectives of teaching faculty in a college of agriculture about adopting AI tools in their teaching. A single research question guided our research: how do perspectives of faculty differ based on their level of adoption of AI tools in their teaching?

Methodology

We employed a multiple case-study design (Creswell & Poth, 2018) using qualitative methods. Case One included faculty who had not adopted AI tools and had no immediate plans to do so. Case Two included faculty who were planning to start using AI tools in their teaching. Case Three included faculty who had already been using AI tools in their teaching. The context was the College of Agricultural and Life Sciences (CALs) at the UF during the spring of 2024. This research was approved by the UF IRB board (Approval #ET00023469). An invitation to participate in the research was sent out to all faculty with teaching responsibilities through the CALs teaching listserv, with a link to a web form to volunteer to participate. Faculty selected which of the cases best fit their adoption status when they volunteered. This process resulted in four people in Case One, nine in Case Two, and seven in Case Three. Results are only applicable to our participants.

Data were collected in April of 2024 using focus groups conducted via Zoom with each case. Focus group sessions were video-recorded and transcribed verbatim. Focus groups lasted between 53 and 58 minutes. Three versions of the moderator's guide were developed using Rogers' (2003) DOI theory, with questions focusing on decision stages and characteristics of innovations. A panel of experts familiar with Rogers' (2003) theory reviewed the moderator's guides and gave us feedback.

Although our moderators' guides were developed using Rogers' (2003) work, we elected to analyze data inductively to allow the data to speak for itself without the constraints of a deductive approach. Participants were assigned pseudonyms to protect their identities. We used open coding to generate initial codes and then axial coding to organize initial codes into broader themes (Saldaña, 2021). Each case was analyzed independently, and then we used an additional cycle of coding to refine our analysis across all three cases (Saldaña, 2021). We connect our findings back to Rogers' (2003) work in the conclusions section of this article.

We implemented several steps to ensure the credibility, dependability, confirmability, and transferability of our study (Lincoln & Guba, 1985). Credibility was established through

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prolonged engagement, the makeup of our research team, peer debriefing, and member checking. The lead research leads faculty development in CALS and regularly interacts with participants. Our second researcher is a social scientist with expertise in change and innovation. We had regular peer debriefing sessions throughout the project. We also sent copies of the transcripts to participants for member checking and made several adjustments based on participant requests. Dependability and confirmability were established through an audit trail. Transferability was established through a rich description of participants and the broader context. Reflexivity is also important for confirmability, and the following paragraph is a first-person description of our research team.

Researcher 1: I am a professor of agricultural education and lead faculty development efforts for CALS related to teaching, which has given me a working relationship with almost all our teaching faculty. I value the autonomy given to faculty about how they approach their teaching. I am just starting to explore how I might use AI technologies in my teaching. I believe that any technology used in teaching should be done with intentionality for the purpose of enhancing learning. Researcher 2: I am an assistant professor of agricultural leadership education with a focus on change processes and problem-solving. I teach our undergraduate and graduate-level courses on change and innovation in personal, organizational, and societal contexts. I also teach a class on big data and social science, where we discuss ethical considerations for using big data in relation to AI technology. I have a pragmatic approach to teaching and believe that teachers should implement practices that will best prepare students for life and their future careers. With AI at the forefront of new innovations, I believe this technology should be used in classrooms in a

way that prepares students for how they may use it in their future professions. This includes considering the ethical implications and responsibilities students have for both classroom and professional usage.

Results

Five overall themes were identified: Learning about AI, Problems with AI, Benefits of AI, Adopting AI, and Teaching with AI. Results for each case are presented below. A summary of the themes and sub-themes is presented in Table 1.

Case One: Faculty Who Have Not Adopted AI Technologies

Case One involved four faculty members who had not adopted AI technologies and had no immediate plans to adopt them. Becky teaches human nutrition courses. Jim teaches in the food science program. Megan teaches wildlife ecology courses. Laura teaches courses in human nutrition and dietetics. Analysis of the focus group with these faculty revealed nine sub-themes organized into four overarching themes. It is important to note that while Benefits of AI was a theme for Cases Two and Three, it did not appear as a theme for Case One.

Learning About AI

This theme focuses on what faculty know about AI and how they learn about AI. Sub-themes include familiarity, knowledge level, and the need for faculty development.

Familiarity. These faculty expressed very little familiarity with AI technologies. Becky said, "I have almost no familiarity

Table 1

Cross-Case Comparison of Themes and Sub-Themes

Themes	Case One Sub-Themes	Case Two Sub-Themes	Case Three Sub-Themes
Learning about AI	Familiarity Need for Faculty Development	Knowledge Level Playing Around with AI Current Uses Peer Adoption Possibilities	Training Programs
Problems with AI	Errors & Inaccuracies	Access to AI Tools Assessing Student Learning Errors & Inaccuracies Ethics	Errors & Inaccuracies Ethics Student Voice
Benefits of AI		Efficiency Time	Efficiency Increases in Student Engagement
Adopting AI	Expectation to Use Inevitable Advantages of AI	Expectations to Use Future of Education	Inevitable Students Motivated Me
Teaching with AI	AI Uses in Planning & Teaching Negative Impacts on Learning Student Readiness	AI Uses in Planning & Teaching AI Tool Selection Acknowledge AI Student Readiness Scaffolding	AI Uses in Planning & Teaching AI Tools Used Student Readiness Scaffolding

Case One: Faculty who have not adopted AI technologies; Case Two: Faculty who are planning to start using AI technologies; Case Three: Faculty who are currently using AI technologies.

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with it.” Jim shared that he had played around a little with ChatGPT and assumed that was the case with most faculty. Jim also expressed challenges with understanding which technologies are considered AI. Faculty shared they were aware that others in their departments were using AI in their teaching (Becky, Laura, Jim) and research (Becky, Jim). In contrast, Megan reported that “other people are just trying to avoid at all costs.” Megan shared that they have discussed AI in teaching at their department meetings and that they were hiring new faculty specifically for their AI expertise.

Need for faculty development. Faculty expressed a great need for structured opportunities to learn about AI technologies. Megan summed it up best when she said “... I feel like at a college or institutional level. We need to be provided [with] some pretty robust and ongoing resources to navigate all of this.” Faculty expressed frustration with little guidance from the “Dean’s office” about what is expected of faculty (Laura) and how faculty might be evaluated on their AI usage (Jim). Faculty reported they had taken a few short trainings (Megan) and listened to what other faculty were doing (Becky). Although they expressed a need for training, Megan did acknowledge that she was “so ridiculously busy to become an AI expert now, on top of everything else.” Laura also indicated she was too busy to learn about AI.

Problems with AI

This theme focuses on the problems faculty perceive with AI tools in teaching. The only problem with AI expressed by the faculty in this case study was concerns with errors and inaccuracies generated by the AI tools. Megan shared a story about a colleague who discovered an AI tool had made up articles and attributed them to real researchers. Jim agreed and said, “It happens a lot. ChatGPT will make up references.” Becky also shared a story about a colleague who said an AI tool generated an essay and included a valid citation, but the citation did not actually say the things that AI said it did.

Adopting AI

This theme focused on various aspects that faculty indicated are impacting their decision to use AI tools in their teaching. Sub-themes included Expectations to Use, Inevitable, and Advantages of AI.

Expectation to use. Faculty shared they perceive they are expected to start using AI technologies. Jim said, “So right now, we’re being asked by people above us with much greater salaries to do things they don’t even know what they’re asking.” Megan expressed a similar sentiment, suggesting a need for clearer expectations for AI usage rather than just a vague charge to do more.

Inevitable. Faculty in this case study acknowledged it is inevitable that AI tools will become interconnected in almost everything we do. Laura summed up this sub-theme when she said, “But the fact that it’s here, it’s not going to go away.” Faculty acknowledged that current AI tools have some limitations, but they anticipate the tools improving and becoming more widespread (Jim, Laura).

Advantages of AI. Faculty in this case study expressed mixed feelings about the advantages of adopting AI tools at this time. Becky said she is not interested in using AI

at this time, but she is listening to how others use it. Jim sees AI as just another tool, like many other tools he already uses. He summed it up by saying, “I’m not quite there yet.” In contrast, Laura acknowledged that AI is an “intelligence which we’ve never faced before. So, I think we’re, I think we are in a different ball game.” Megan was very indifferent, not knowing yet if AI offers any advantages over what she is currently doing.

Teaching with AI

This theme captures the ways that faculty see AI tools impacting teaching. Sub-themes included AI Uses in Planning and Teaching, Student Readiness, and Negative Impacts on Learning.

AI uses in planning and teaching. Faculty shared a variety of ways they thought that AI could be used in planning and teaching. Faculty thought that AI tools could be used to generate learning objectives (Megan), quizzes/exams (Megan), fact sheets (Laura), and letters of recommendation (Laura). Laura did express reservations about ChatGPT’s ability to design assignments for students. Jim shared one example where he encouraged senior students to use Dall-E for a senior project.

Student readiness. Faculty assumed that students were already using AI tools. Laura captured it clearly when she said, “I don’t think it’s about if they’re using it. I think that most all of them are using it.” Although they may be using AI tools, faculty believe that students do not know how to use them very well (Jim, Megan). They are primarily using it to generate ideas and outlines (Laura).

Negative impacts on learning. These faculty expressed concerns about how AI tools might have negative impacts on student learning. One of their biggest concerns was that AI tools would reduce or eliminate the need for students to think for themselves (Becky, Jim, Megan, Laura). Megan noted that students can easily use AI to do their writing assignments. Jim expressed concerns about students learning “critical skills” and being “creative” when using AI. Megan summed it up when she said, “It’s like giving them a tool to bypass all the stuff they actually need to be able to do themselves before they can do those skills themselves.”

Case Two: Faculty Who are Planning to Start Using AI Technologies

Case Two was comprised of nine faculty who indicated they had plans to start using AI tools in their classes. Susan teaches online courses in environmental horticulture. Jennifer teaches marine sciences classes both face-to-face and online. Steve teaches turfgrass management courses. James teaches environmental science courses. Mary teaches human nutrition and dietetics courses. Stacy teaches dietetics classes. Bill teaches data and modeling courses in the agricultural and biological engineering program. Mark teaches disease management courses in plant pathology. Amy teaches genetics courses in agronomy. Analysis of the focus group revealed eighteen sub-themes organized into five overarching themes.

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Learning About AI

This theme captures how faculty view their own learning about AI. Sub-themes include Knowledge Level, Playing Around with AI, Current Uses, Peer Adoption, and Possibilities.

Knowledge level. Faculty shared they had a basic understanding of AI tools. Mark summed it up when he said, “I would say I’m an amateur at it right now.” When prompted about specific tools, faculty indicated they knew the basics of large language models (James, Susan) and image generators (James). Susan shared that she knew about ChatGPT but did not realize there were so many other AI tools available. James acknowledged his gap in knowledge between the basics of using a tool and then using the tool for teaching purposes.

Playing around with AI. When asked about familiarity with AI, faculty in this case study indicated they had used a few tools. Mark stated it clearly when he said, “I’ve been kind of dabbling in it, playing with it a little bit.” Steve and Stacy also used the word “playing” to describe their current level. Faculty specifically mentioned ChatGPT (Jennifer, Stacy), image generators (Jennifer, Stacy, Mark), and photography tools (James).

Current uses. Faculty were currently using AI for non-teaching tasks. Several faculty members indicated that they use AI to improve their writing (Amy, Mary, Bill). Others indicated they use it to provide a summary of a document (Bill, James, Steve). Other uses included automated email responses (Mark), writing a short speech (Jennifer), and the Zoom AI summary tool (Amy).

Peer adoption. Faculty members reported mixed awareness about whether their peers were already using AI in their classes. Jennifer, James, and Mark indicated they knew of at least one person in their department using AI tools in their teaching, whereas Mary was not aware of any in her department. Susan shared that her department “is not having that conversation [about AI] right now, but maybe we will.”

Possibilities. Faculty in this case study had a hard time thinking about the possibilities of how they might use AI tools in their teaching. Susan shared, “My problem is I’m unaware of all the different things I could use.” Mark shared that he was overwhelmed with all the options of different AI tools that could be used. Mark went on to share that there was no way he could learn all of the available AI tools, so he was frustrated about where to start.

Problems with AI

Faculty perceived there are several problems associated with using AI in their teaching. Sub-themes include Access to AI Tools, Assessing Student Learning, Errors and Inaccuracies, and Ethics.

Access to AI tools. Faculty expressed frustrations about being able to access many subscription-based AI tools. Mark summed it up when he said “I think that’s what holds me back a lot is the accessibility.” James went further and called it “shameful” that as the self-proclaimed “AI university,” there are no institutional subscriptions to these tools. Providing institutional subscriptions to faculty, staff, and students would remove barriers to adopting AI tools

(James). Mark also mentioned that student access was also important.

Assessing student learning. Faculty were concerned about being able to understand what students actually learned when they were using AI tools. Amy asked, “How can I tease out the AI’s ability but assess the student’s ability and skills?” Faculty were worried about students using AI and not actually learning what she had hoped (Jennifer, Mary). Amy said there is a need to develop a tool that could show which parts were generated from AI and which parts came from the student.

Errors & inaccuracies. Faculty expressed concerns about the accuracy of information generated by AI. Susan said it is important to teach students that they need to “validate” any information they get from AI. James elaborated that he was “less inclined to trust [AI tools] about information that they provide on topics that I’m less familiar with.”

Ethics. This group of faculty shared concerns about the ethics of using AI tools, both for themselves and their students. Jennifer said when she uses AI, she sometimes feels like she is “cheating” or “not doing my job.” Bill expressed similar sentiments. When talking about students, James said there is a need for AI detectors that can show when AI has been used. Stacy said that right now, AI is “very much a gray area for students” because of inconsistent rules and expectations from course to course. She went on to say that it is important to have very explicit guidelines for students in your classes.

Benefits of AI

This theme focuses on the benefits faculty see in using AI. Two sub-themes emerged: Efficiency and Time.

Efficiency. Faculty referenced that AI tools make them more efficient at their jobs. Amy said that when you are using AI, “you’re doing your job more efficiently, I feel.” Bill said he has also seen efficiency from his students. He referenced one instance when a student took 30 minutes to do something that would typically take three days. James acknowledged that AI could bring efficiency but related it to just another iteration of technology innovations.

Time. Related to efficiency, the faculty talked about the time it takes to learn and use AI tools. Jennifer, James, and Mary discussed how AI tools can save time. In contrast, Susan and Mark explained that they did not have the time to learn a new tool. Mark summed up both sentiments when he said AI “also adds more time when it’s supposed to be saving time.”

Adopting AI

This theme captures various aspects that faculty say influenced their decisions to start using AI tools. Sub-themes included Expectations to Use and the Future of Education.

Expectations to use. Faculty reported mixed feelings when asked if they felt they were expected to use AI tools. James said he feels “implicit encouragement from the university” to use AI tools. In contrast, Steve said he has not felt any pressure, and his decision to start using AI tools in his teaching was related to his “own interests.”

Future of education. Several faculty members shared how they see AI as part of the future of education

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and expected by their students. James elaborated on how technologies evolve over time, and AI is just the next iteration of tools to use in his teaching. Mark shared how his “students bring up AI” in his classes.

Teaching with AI

This theme focuses on the ways that faculty see AI tools impacting teaching. Sub-themes included AI Uses in Planning and Teaching, AI Tool Selection, Acknowledge AI, Student Readiness, and Scaffolding.

AI uses in planning & teaching. Faculty shared several current or intended ways they plan to use AI in their teaching. AI can be used to create things used in teaching, like grading rubrics (Jennifer) and discussion topics (Amy). James discussed how he hoped that one day, an AI model could be used to help faculty select the appropriate learning activities for their students. Stacy and Mary discussed how they could see AI being used for simulations where students interact with fictitious people. Faculty noted several specific ways they might have students use AI, including writing assignments (Mark, Steve) and modeling exercises (Steve, Bill). Mark is thinking about using AI in group assignments so that more experienced students can help less experienced students.

AI tool selection. Faculty discussed the need to be intentional when selecting the AI tools they use in their teaching. As an example, Stacey emphasized the importance of “instructors being intentional” when selecting AI tools by asking, “What’s the purpose of using this tool?” The learning objective should also be considered when selecting an AI tool (Stacy). Susan talked about how AI tools might differ by discipline, so knowing what is happening in the workforce is important. Several faculty members discussed the need to coordinate AI tools across courses (Mary) and departments (Mark). Mark went on to say that all faculty need a voice in selecting AI tools if a department or program is going to select common AI tools.

Acknowledge AI. Faculty discussed the importance of acknowledging when AI tools are used. They described how they plan on modeling this behavior in their teaching by indicating when they used a large language model (Bill, Susan) or a graphic generator (Bill). Susan and Mark described how they plan to require students to indicate when they used AI tools and how they used them.

Student readiness. This group of faculty expressed concerns about the current skill levels of their students in using AI tools. Susan summed it up when she said, “I think we’re assuming that our students know how to do this one. I don’t think that they necessarily do.” Several faculty have already observed great variability in what students know, with some students being very advanced and others being very apprehensive about AI tools (Susan, Steve, Mark). Mark went on to say that rolling out AI tools is going to be “complex” due to differences in what students know.

Scaffolding. When implementing AI tools into their teaching, faculty emphasized the importance of scaffolding students as they learn how to use these tools. Mark said that exposure is the first stage. Mary talked about intentionally building AI into a course in ways that provide more structure early and then gradually give students greater freedom in

using AI. James added that having students show their work and explain how they came up with whatever they submit would also be helpful. Scaffolding could also occur in a degree program by introducing AI tools in the introductory classes and then gradually increasing the complexity of tasks they are asked to use AI (Mary, Susan).

Case Three: Faculty Who are Currently Using AI Technologies

This case study included seven faculty who were already using AI tools in their courses. Chris teaches postharvest courses in horticultural sciences. Rachel teaches classes about managing nonprofit organizations. Mary teaches introductory courses in family, youth, and community sciences. Wendy teaches food science classes. Cathy teaches entomology classes. Christy is in agricultural and biological engineering and teaches courses about modeling and data analysis. Debbie teaches introductory public speaking and writing classes. Results from this group of faculty revealed twelve sub-themes organized into the five overarching themes.

Learning About AI

This theme focused on how this group learned about AI technologies. Faculty mentioned several **Training Programs** offered by the university teaching center. They specifically referenced the “Harnessing AI Faculty Learning Community” (Cathy) and the “AI in the SEC” online program (Wendy).

Problems with AI

This theme outlined problems these faculty see with using AI tools in their teaching. Sub-themes were Errors & Inaccuracies, Ethics, and Student Voice.

Errors & inaccuracies. Faculty shared that they widely assume that AI will generate incorrect or incomplete information. Mary shared, “be aware that it’s going to make mistakes.” Wendy added that although not perfect, it “gives us something that we can start with.” Rachel shared several examples about how she used AI to generate an initial response, and then, knowing it was inaccurate, she updated it with correct information.

Ethics. This group of faculty had considerable discussion about the ethical considerations of using AI by themselves and their students. Some of the conversation focused on students using AI-generated material and presenting it as their own (Rachel, Debbie, Wendy). The limitations of current AI detectors were also noted (Debbie). Several faculty members discussed the need to be proactive and discuss with students the appropriate usage of AI in your class (Debbie, Christy). Wendy noted that she has observed a difference in AI usage between her online and face-to-face courses, with online students using more AI. Faculty acknowledged the learning opportunity for students who were inappropriately using AI tools by helping them understand what is acceptable (Wendy, Debbie).

Student voice. Faculty in this focus group expressed concerns about students losing their “voice” in their writing. Faculty were referencing tools like Grammarly that suggest

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edits to written text (Cathy, Rachel). Rachel summed it up by saying, "It strips the voice out." They were worried that all student writing assignments would look nearly the same (Cathy, Rachel). Debbie shared that tools used in writing and reviewing resumés might benefit students.

Benefits of Using AI

This theme captures how this group of faculty sees the benefits of using AI tools. The sub-themes were Efficiency and Increases in Student Engagement.

Efficiency. Faculty expressed several ways in which using AI has made them more efficient. Christy said that she uses AI in "All sorts of ways to make [her] level of work lower." Wendy and Debbie specifically mentioned saving time. Debbie also discussed how AI tools were making her teaching assistants more efficient.

Increases in student engagement. Several faculty reported that AI tools were increasing student engagement in their courses. Debbie said AI activities made learning "made it more fun and engaging for them." Cathy described a "super fun" activity where she had her students interact with a chatbot as if it were a homeowner with an insect problem. Debbie described how she uses AI to give feedback on discussion posts and that it really increased the quality of responses.

Adopting AI

This theme focuses on the things that faculty said impacted their choice to start using AI tools. Sub-themes included Inevitable and Students Motivated Me.

Inevitable. Faculty felt that AI will eventually matriculate into almost everything we do. Mary said it clearly: "So it's kind of the world in which we're moving into." Rachel added, "So rather than fight it, I try to get it ahead of it, learn it myself, and teach them how to use it." Faculty felt that instead of ignoring or fighting AI technologies, they needed to embrace them and get out in front (Debbie, Mary, Rachel, Wendy).

Students motivated me. This group of faculty shared how their students motivated them to adopt AI tools in their teaching. Debbie shared that "the initial push came from the students." Mary added that her students encouraged her to "stay relevant." Rachel added that she feels pressure to "get ahead" of her students. On a different level, Mary felt motivated by her students to give them the skills necessary to be successful when they graduate.

Teaching with AI

This theme summarizes things related to how this group of faculty are currently using AI tools in their teaching. Sub-themes include AI Uses in Planning & Teaching, AI Tools Used, Student Readiness, and Scaffolding.

AI uses in planning & teaching. Faculty described several ways in which they are already using AI in their teaching. Some examples include creating assignments (Mary), creating directions for assignments (Mary, Rachel), creating rubrics (Debbie), creating discussion questions (Christy, Mary), creating exam questions (Christy), creating scenarios (Cathy), generating images used in presentations (Christy), and creating fictitious data (Christy). Wendy said

she is "just trying a lot of different things" with AI to enhance her teaching. Faculty are having students use AI to create drafts of assignments (Wendy, Debbie, Rachel) and model various biological processes (Christy). Faculty are also asking students to critically analyze things created by AI (Wendy, Debbie).

AI tools used. Faculty shared several examples of specific tools they are using. Examples include ChatGPT (Rachel, Cathy, Mary), Microsoft CoPilot (Wendy), Gemini (Wendy), Perusal (Wendy), Perplexity AI (Christy), Image Creator (Cathy), Google Dot (Chris), Top Hat (Mary), Pack Back (Debbie), and Flip (Mary, Debbie). Debbie shared concerns about the accessibility of one of the technologies since students had to pay an access fee.

Student readiness. Faculty reported that students were generally not very experienced with AI tools. Wendy shared that she surveyed the students in one of her courses, and about 70% said that they had never used AI. Mary indicated she had a great variability in student experience with AI, with some never using it before and some using it all the time. Given the extensive usage of technology by this generation, several faculty were surprised by how little many students knew about AI (Wendy, Debbie).

Scaffolding. Given how little many students knew about AI, faculty shared how they scaffolded learning. Several faculty spent some class time teaching students how to use the tools they will need in that class (Rachel, Mary). Other faculty had students describe how they used AI and then reflect on how things went (Mary, Wendy). Faculty also described an iterative process where AI could be used for initial drafts and then they had to refine on their own (Debbie). Cathy and Wendy discussed the importance of giving students the autonomy to use the tools they choose.

Conclusions and Discussion

Overall, we discovered five themes related to faculty adoption of AI in their teaching: (a) Learning about AI, (b) Problems with AI, (c) Benefits of AI, (d) Adopting AI, and (e) Teaching with AI. Four of the five were present in each of the three cases, with Benefits of AI not present in Case One (the non-adopter group). We also identified 28 unique sub-themes. Only three sub-themes were present across all three cases: Errors & Inaccuracies (Problems with AI), AI uses in Planning & Teaching (Teaching with AI), and Student Readiness (Teaching with AI), which supports Rogers' (2003) assertion about differences in characteristics of adopter groups.

Case One - Non-Adopters

Overall, faculty in this group focused on how this change was inevitable, but their resistance to change was based on ethical concerns and incompatibility with their teaching/educational philosophies. Participants discussed having some knowledge and even attending some training programs. However, they did not feel what was being shared was enough to persuade them to use AI tools.

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When connecting Case One to Diffusion of Innovations (Rogers, 2003), we discovered that faculty saw a relative advantage in using AI with their research or even on projects that included design elements. The only relative advantage they saw related to teaching was with tools like Turnitin that benefit the teacher. There was a great deal of concern about compatibility with teaching philosophies, especially concerning critical thinking and communication skills. This was also shared by their discussion and the subtheme errors and inaccuracies related to Problems with AI. Complexity was not discussed except the complexity of where things are headed with AI and need for faculty development regarding Learning about AI. Faculty did discuss trialability when they shared trying new assignments or looking into ways to incorporate AI while also still promoting critical thinking. Observability was only discussed concerning the importance of using AI in research.

Faculty in Case One did not express a high self-efficacy related to AI in teaching, which likely played a part in the decision not to adopt, consistent with Wang et al. (2021). This also implies they may not find AI tools easy to use, which Ghimire and Edwards (2024) found impacted adoption. They also focused on the negative aspects of AI tools, including the tendency towards inaccuracies and ethical concerns, which aligned with previous findings from Al-Mughairi and Bhaskar (2024), Michel-Villarreal et al. (2023), and Farrelly and Baker (2023). The concerns they raised about institutional expectations align with Michel-Villarreal et al. (2023) and Shwedeh et al. (2024).

Case Two - About to Adopt

Overall, the faculty in this case felt the need to start using AI tools in their teaching. They highlighted concerns about both their own and students' knowledge related to AI tools. They believe AI should be used when compatible with an assignment or the student's field of study. Ultimately, they identified a knowledge gap between what is possible and what could be done in the classroom. They want to use AI tools but still recognize they need to learn more.

In relation to the innovation characteristics outlined in Diffusion of Innovations (Rogers, 2003), this group of faculty in Case Two saw a relative advantage for themselves and their students in being more efficient. When discussing compatibility, they stressed the importance of AI being the right fit for a particular assignment or based on the student's field of study. They also discussed accessibility issues. The complexity of AI technologies was noted, and the importance of training students was emphasized, related to access and the time investment for learning AI tools. For trialability, this group discussed trying out new things and techniques to help students learn how to use AI tools. Under observability, this group acknowledged how observing their peers influenced their decision to adopt.

Faculty in Case Two highlighted a need to learn more, which likely impacted their perceptions about their abilities to use the technologies appropriately, which is congruent with Chatterjee and Bhattacharjee (2020), Helmiatin and Kahar (2024), and Rahiman and Kodikal (2023). Faculty in this case did report using AI for non-teaching tasks, which

was congruent with what Nissim and Simon (2025) found. Similar to Case One, they discussed some of the negative aspects of AI tools, including the tendency of inaccuracies and ethical concerns, which were previously identified by Al-Mughairi and Bhaskar (2024), Michel-Villarreal et al. (2023), and Farrelly and Baker (2023). These faculty also described institutional issues like access to technologies and expectations for use, which are examples of what Michel-Villarreal et al. (2023) noted.

Case Three - Adopters

In Case Three, faculty generally focused on the positive benefits of using AI tools and discussed how they teach and encourage students to adopt these technologies. They shared how their students helped motivate them to be early adopters. They did acknowledge some limitations of AI and were specifically worried about students losing their own voice in their writing when using AI tools to generate and edit their written work. Faculty discussed knowledge of what was to come as the drive to learn more. Several also discussed how their graduate students and teaching assistants were a knowledge source.

In connection with the innovation characteristics outlined in Diffusion of Innovations (Rogers, 2003), faculty described the relative advantage of AI tools regarding efficiency in their personal tasks, research activities, and teaching. They also discussed the relative advantage related to student use and how it would prepare students for the future workforce and increase their efficiency—even indicating that students motivated them to adopt. For compatibility, they primarily discussed how they wanted students to understand the compatibility and proper usage of AI tools related to ethics. Additionally, they noted how AI tools fit in their classes and are compatible with their assignments and grading practices. Their discussion of complexity focused on reducing the complexity of AI software for their students. When discussing trialability, faculty mentioned trying something out before adopting or shifting their assignments after trial and error. This included attending trainings to learn about these tools and see how they would fit in their classroom. They also saw assignments using AI as an opportunity for students to try something new. When talking about observability, they shared positive observations from student feedback.

Faculty in Case Three had already adopted AI tools and exhibited high levels of self-efficacy (Nissim & Simon, 2025; Wang et al., 2021). They described how AI tools aided in their efficiency, which was consistent with Al-Mughairi and Bhaskar (2024). They generally found AI tools very useful, aligning with Ghimire and Edwards (2024). As early adopters, they were likely innovators, aligning with Uzumcu and Acilmis (2024) and showing little or no concern for the risks associated with trying new things, which was previously supported by Chatterjee and Bhattacharjee (2020), Helmiatin and Kahar (2024), and Rahiman and Kodikal (2023). Much like faculty in Case One and Case Two, they highlighted the importance of sound leadership at the institutional level, which aligns with what Michel-Villarreal et al. (2023) and Shwedeh et al. (2024) shared. The concerns they raised about inaccuracies

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when using AI tools and ethical concerns were consistent with Al-Mughairi and Bhaskar (2024), Michel-Villarreal et al. (2023), and Farrelly and Baker (2023). Their concerns about students losing their voice were novel and not indicated in the literature.

Summary

All three groups discussed knowledge but had varying levels. All three groups also saw the relative advantage in helping them complete job-related tasks. Case One focused more on concerns with their own compatibility and complexity related to teaching philosophy. Case Two discussed the importance of compatibility for the student and the assignments. Case Three discussed wanting to persuade students to use AI and act as opinion leaders.

Recommendations

Our findings can inform practice, particularly at UF. Administrators should work to develop and communicate a clear vision for AI usage in teaching. This could include taking a position on what constitutes ethical and unethical use of these technologies. There was a consistent message about learning more about these technologies. Additional training for faculty at all levels should be offered with practical applications that demonstrate relative advantage, compatibility, trialability, observability, and reduced complexity.

Our results also shed light on the need for additional research. First, our data represents a slice in time about a rapidly evolving technology. This phenomenon should continue to be examined to understand how results might change over time. Additionally, our data came from only one university, so replication at other universities would be important to understanding the bigger picture. Our study only examined AI in teaching from the perspectives of faculty. Additional research should explore student perspectives as well.

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