

# Online Teaching Workshops and Conferences: A COVID-19 Survey on Faculty Teaching Agriculture

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## Abstract

Educators adapted to teach online during the COVID-19 pandemic, many for the first time and without adequate training. We anticipate COVID-19 accelerated the prevalence of online course offerings at the post-secondary level with long-term effects. Thus, it is imperative that educators are prepared to navigate online teaching. The purpose of our study was to evaluate the interest of post-secondary agricultural sciences faculty in training opportunities focused on online instruction. To guide our data interpretation, we adopted the Theory of Skill Acquisition as our theoretical framework. Our data indicate that faculty are interested in participating in Online Teaching Workshops or Conferences with a preference for them to be hosted through online platforms. When asked about the regularity in which Teaching Workshops or Conferences should be attended, our respondents felt attendance should be mandated with a fair degree of regularity, rather than once at the beginning of their academic careers. These data indicate faculty are interested in increasing their competency in online teaching, presumably to transition through the stages of skill acquisition, as outlined by our theoretical framework. As online teaching becomes more prevalent, institutions and professional societies must support faculty training in this specific skill.

*Keywords:* skill acquisition, teacher training, E-learning, higher education

Educational institutions responded to COVID-19 by switching from face-to-face to online instruction, virtually overnight. Given the emergency change in mode of instruction and a general lack of faculty preparedness for online teaching – especially for novice faculty (Benito et al., 2021; Lichoro, 2015; Martin et al., 2019) – training may be

necessary for continuity of education in the online classroom during and after the pandemic. In a study conducted at the beginning of COVID-19, 34% of faculty teaching medical sciences were anxious about teaching online and 33% were previously unaware of different approaches to teach online (Rahim et al., 2020). In a non-pandemic context, faculty are generally required to receive training prior to teaching online. Vang et al. (2020) reported that 90% of community college faculty received mandated training before they taught an online course. However, due to the rapid and unprecedented nature of COVID-19, this training may not have preceded teaching online during the pandemic. In a small sample ( $n = 10$ ) of animal science instructors teaching during spring 2020, 60% reported learning how to teach online through training offered by their institutions (Erickson and Wattiaux, 2021). Despite this, research indicates general student dissatisfaction with online courses during COVID-19. Moorberg et al. (2021) reported 21% of post-secondary students in natural or life sciences were not satisfied with the transition to online learning in any of their classes in spring 2020. Further, in another study conducted on students enrolled in an agricultural college during COVID-19, only 21% felt their instructor provided quality online instruction and 61% felt their online courses were less or much less effective in developing their knowledge (Rees et al., 2021). Cumulatively, these data suggest that post-secondary faculty may need additional training that prepares them for online teaching.

Training in online teaching has implications beyond COVID-19. Teaching online courses has increasingly become an expectation of faculty; 69% of post-secondary institutions in the United States report that online learning is critical for their long-term strategies (Allen & Seamon, 2013). COVID-19 accelerated implementation of online learning at the post-secondary level: in fall 2018, 64% of post-secondary students were not enrolled in online courses (National Center for Education Statistics, 2021).

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In fall 2020, amidst the Covid-19 pandemic, only 23% of post-secondary institutions offered classes primarily in-person and an additional 4% offered courses fully in-person (National Center for Education Statistics, 2021).

### Theoretical Framework

To guide our study, we adopted the Theory of Skill Acquisition framework which outlines a five-stage process of growth that happens in an individual and characterizes their progression through the learning process of a specific skill (Dreyfus & Dreyfus, 1986). The first stage of the Theory of Skill Acquisition is novice; this is characterized by recognition of relevant discrete facts, features, and rules for decision-making that are so clearly and objectively defined as to be virtually context free. The second stage of the Theory of Skill Acquisition is the advanced beginner. As compared to the novice, the advanced beginner has more practical time and experience with their skill, allowing them to handle different situations with several solutions. The third stage of the Theory of Skill Acquisition is the competent performer; this is the growth that happens through reflection, acquisition of new knowledge, and placement of responsibility upon oneself (Flyvbjerg, 2001; Schon, 1983; Smith, 2001). The fourth stage is proficiency, during which the educator is becoming more self-competent with their skill. The final stage of the Theory of Skill Acquisition is expert. The expert educator bases certain aspects of their teaching on reactivity rather than guidelines or rubrics (Dreyfus & Dreyfus, 1986). This stage is not simply based on “the rules” because experience and acquirement of knowledge is intertwined into the educator’s pedagogy.

### Purpose and Objectives

The purpose of our study was to analyze the interest in and support of post-secondary faculty teaching agricultural sciences during COVID-19 to participate in training. To achieve this, our study addressed the following objectives: 1) determine faculty interest in attending an Online Teaching Workshop or Conference focused on agricultural sciences in an online or in-person format; 2) quantify how much faculty would expect to spend to attend an Online Teaching Workshop or Conference focused on agricultural sciences in an online or in-person format, and 3) determine the regularity with which faculty feel they should be required to attend Online or General Teaching Workshops or Conferences.

Ultimately, we expect our data to inform development of future conferences and workshops centered around teaching in agricultural sciences. Development of these training opportunities will be important in the post-pandemic landscape because COVID-19 has changed the face of post-secondary agricultural education, as evidenced by previous data on the impact of COVID-19 on adoption of software, technology, and social media in the agricultural sciences classroom (Carrasco et al., 2021; Tasci et al., 2021). As we emerge from the pandemic and educational institutions return to “normal”, we hypothesize online learning will be offered at a higher rate than before COVID-19 and faculty

will require training to maximize their effectiveness in the classroom.

### Methods

This study was part of a larger study that employed a mixed methods approach to data collection, facilitated through an electronic survey-based questionnaire. The questionnaire was designed to assess the impact of COVID-19 on teaching in agricultural-based disciplines at the postsecondary level. The Texas State University Institutional Review Board approved this research as exempt (#7380) and all participants were provided written informed consent prior to participation. The population was faculty and instructors who held a formal teaching appointment based in agricultural sciences during the COVID-19 pandemic (spring 2020, summer 2020, fall 2021) at colleges and universities across seven southern states (AL., AR., FL., GA., LA., MS., and TX.). Our participants were identified by searching college and departmental websites in the target states, conducted in summer 2020. Using a total population of 1,795 faculty and instructors, a sample size of 317 with a 95% ± 5 confidence interval was calculated.

Data was collected using a researcher-developed instrument that contained five sections. Section 1 consisted of nine questions including personal and institutional demographics. Section 2 consisted of three questions related to formal, informal, and non-formal training in teaching. Section 3 consisted of seven questions related to the use of technology, including electronic devices, software, and social media, before and as a result of COVID-19. Section 4 consisted of fifteen questions related to teaching experiences during COVID-19, including questions related to course and career impacts. Section 5 included eight questions related to future training and professional development in relation to online teaching. The data presented here are from Sections 1 and 5.

Following recommendations of Gates et al. (2018) on establishing a face-validated instrument, we identified a panel of experts outside of the research team and participant group. The panel included ten Agricultural Education faculty with expertise in survey design and online teaching. The panel assessed the questionnaire for face, content, and construct validity. Based on initial panel recommendations, we revised the questionnaire and resubmitted it for further review until the final version was approved.

To establish reliability, the questionnaire was piloted by agriculture faculty from multiple sub-disciplines who were not part of the research team, participant group, or expert panel. We sent 14 faculty a prenotice informing them of the pilot study. Three days later, we sent them a link to the questionnaire. Within seven days, we received six completed questionnaires, yielding a response rate of 43%. One week after the survey was distributed, a reminder was sent to the non-respondents. Within two weeks, two additional faculty responded for a total response rate of 57%. Data from the pilot study were coded and entered using the Statistical Package for the Social Sciences (SPSS) 25.0 software. We calculated a Cronbach’s alpha

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reliability coefficient ( $\alpha = 0.790$ ) for Section 5 which, based on interpretations provided by George and Mallery (2003), was good.

Our questionnaire was available to participants from early September to mid-October 2020. Dillman et al. (2014) recommends the use of a five-point contact data collection model, including a prenotice, the questionnaire, a reminder, a second reminder, and then the invocation of a special procedure during a five-week window. Using Qualtrics, we sent a prenotice to 317 participants. Three days later, we sent an email containing the link to access the questionnaire. Over the next three weeks, we sent three reminder emails to non-respondents. These reminder emails were sent weekly on Wednesday mornings to allow participants time to respond at the beginning of the workday. Two hundred and fifty-five participants provided usable data and eighteen participants did not teach in the spring of 2020. Overall, our response rate was 86.1%. With a response rate exceeding 85%, no additional procedures were used to account for non-response error, following recommendations of Lindner et al. (2001).

Using SPSS 25.0, data were analyzed using descriptive statistics and measures of central tendency to report the frequency and percentage of faculty interested in general or online teaching workshops or conferences as a result of COVID-19 and how much they would expect to pay for these opportunities. We also reported the frequency and percentage of faculty who felt this training should be mandated and at what regularity. Additionally, descriptive statistics were calculated for the demographic characteristics of the participants and their institutions of employment.

### Results and Discussion

The gender identity of our respondents was male (62.6%) or female (37.4%) with 0.0% of respondents opting not to disclose (Table 1). The majority of respondents were born between either 1946-1964 (38.0%) or 1965-1980 (36.9%). Respondents were White or Caucasian (81.9%), Asian (4.6%), Hispanic or Latino (4.2%), or Black or African American (3.5%), with few respondents reporting "Other" (2.3%) or opting not to disclose (1.9%). An overwhelming majority of our survey population held a Doctoral degree as their highest degree (84.6%) with 12.7% holding a Masters and 1.2% holding a Bachelors.

The academic demographics of our sample population and the institutions at which they were employed are displayed in previous publications (Carrasco et al., 2021; Tasci et al., 2021). Briefly, the majority of respondents were full time (34.2%), associate (25.2%), or assistant professors (26.4%) with the remaining distributed between instructor (7.9%), lecturer (3.9%), or adjunct (2.0%). Respondents had wide distribution in the number of years they had taught at the post-secondary level; 19.0% taught at least 30 years while 22.4% taught five years or fewer. These demographics are interesting because, as outlined in the Theory of Skill Acquisition, the time and experience an educator has invested acquiring their teaching skills will be reflected through their pedagogy and actions in the classroom, especially when they have achieved the expert

Table 1.

Demographics of sample population (n = 255)

	Frequency	Percent
Gender identity		
Male	159	62.6
Female	95	37.4
Date range born		
1981-1996	59	23.1
1965-1980	94	36.9
1946-1964	97	38.0
1928-1945	4	1.6
Prefer not to disclose	1	0.4
Ethnic identity		
Asian	12	4.6
Black or African American	9	3.5
Hispanic or Latino	11	4.2
White or Caucasian	212	81.9
Other	6	2.3
Prefer not to disclose	5	1.9
Highest degree		
Doctoral	219	84.6
Masters	33	12.7
Bachelors	3	1.2

stage. The institutions our respondents were employed at were 1862 Land-Grant (52.2%), Regional (30.3%), 1890 Land-Grant (8.0%), two-year (5.2%), or private four-year (4.4%) institutions. By design, we only targeted institutions in the Southern region of the United States; Texas had the highest representation with 55.9% of respondents employed at an institution in Texas. All faculty taught classes within the overarching discipline of agricultural sciences; 20.8% of our respondents taught Animal Science Courses; 14.5% taught Crop and Soil Science; 13.7% taught Agricultural Education, Extension, Leadership, and Communication courses; and 11.0% taught Agricultural Economics and Business.

We asked respondents about their interest in attending an Online Teaching Workshop or Conference focused on agricultural sciences in either an online or in-person format (Table 2). Overall, there was fair interest with only 9.6 and 10.2% reporting they were "very disinterested" in attending an Online Teaching Workshop or Conference in either an in-person or online format, respectively. Accordingly, our data indicate that faculty have interest in learning more about how to teach online through workshops and conferences, likely reflecting that they are in the earlier stages of skill acquisition as experts of a given skill do not require

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**Table 2.**

*Faculty (n = 255) interest in attending an Online Teaching Workshop/Conference focused on agricultural sciences in an in-person or online format*

	In-person, %	Online, %
Very interested	14.6	16.2
Interested	22.2	27.9
Neutral	29.3	28.9
Not interested	24.2	16.8
Very disinterested	9.6	10.2
Total	100	100

additional formal training. Rather, experts have a sense of comfort and strong sense of intuition towards different situations (e.g., the COVID-19 pandemic forcing planned face-to-face instruction to online platforms) due to previous experiences (Dreyfus & Dreyfus, 1986).

In general, there seemed to be more interest in attending an Online Teaching Workshop or Conference delivered in an online format as 44.1% of respondents reported being “very interested” or “interested” versus 36.8% for the in-person format (Table 2). As a result of COVID-19, faculty have become acclimated to attending meetings, workshops, and conferences hosted through online platforms. It is unclear what underlies the preference of our respondents to attend the hypothetical workshop or conference online but we hypothesize it may be related to convenience and/or concern over personal safety, as our survey was distributed in fall 2020 before a COVID-19 vaccine was available. Recent data indicate that, during COVID-19, academic conferences that were moved online for the first time were successful in engaging attendees in talks and plenaries but engagement in networking and social opportunities was low (Raby & Madden, 2020). If Online Teaching Workshops or Conferences are adapted into an online format, organizers should investigate best practices (Busse & Kleiber, 2020; Roos et al., 2020) to ensure social opportunities are ample and well-attended, as it ensures attendees are able to engage in non-formal and informal training opportunities and develop communities of practice.

After gauging faculty interest in attending an Online Teaching Workshop or Conference, we asked how much they would expect to pay for such an event, delivered either in-person or online (Table 3). Interestingly, 42.2% of respondents expected registration for an in-person event to be free whereas a slightly larger percentage (49.0%) expected registration for an online event to be free. These data are interesting and suggest that future online teaching opportunities should be offered free of charge to ensure cost is not a barrier to attendance. This attendance is essential as online course offerings are likely to be more prevalent than before the pandemic and online learning is accompanied by increased reliance on technology, introducing new responsibilities that instructors need to be trained for (Walters et al., 2017). A similar pattern was

observed for the next highest monetary category, where 31.3% of respondents would expect to pay \$1-150 for an Online Teaching Workshop or Conference delivered in-person and slightly more, 39.1%, would expect to pay that sum for the workshop or conference to be delivered online. More faculty would expect to pay \$150-300 for the workshop or conference to be delivered in-person than online, 20.8 versus 11.5%, respectively.

**Table 3.**

*The amount faculty (n = 255) expect to pay for registration to attend an Online Teaching Workshop or Conference focused on agricultural sciences in an in-person or online format*

	In-person, %	Online, %
Free	42.2	49.0
\$1-150	31.3	39.1
\$150-300	20.8	11.5
\$300-450	4.2	0.0
\$450-600	1.6	0.5
Total	100	100

With the statement of Allen and Rueter (1990) in mind, that “it has been sarcastically noted that college teaching is the only profession requiring no formal training of its practitioners” (p. 9), we asked respondents if they agreed that participation in Teaching Workshops or Conferences that have a focus on general or online instruction should be required for faculty teaching at the post-secondary level (Table 4). For Teaching Workshops or Conferences with a focus on general instruction, 39.8% of respondents either “strongly agreed” or “agreed” that participation should be mandated, 24.5% were “neutral”, and 35.7% either “disagreed” or “strongly disagreed”. For Teaching Workshops or Conferences with a focus on online instruction, 31.2% either “agreed” or “strongly agreed” that participation should be mandated, 32.7% were “neutral”, and 36.2% either “disagreed” or “strongly disagreed”. Overall, these data indicate that faculty were in stronger support of mandated training centered around general, rather than online, instruction.

Interestingly, in a study by Robinson and Hope (2013), it was reported that only 37% of faculty at a post-secondary institution in Florida had enrolled in a course to develop their pedagogy since completing their highest degree. These data align with ours and cumulatively suggest that post-secondary faculty are generally not supportive of pursuing training. However, this contrasts the findings of Benito et al. (2021), who reported that 92% of post-secondary faculty who taught during COVID-19 felt they should be supported and trained in online teaching. It is unclear why our respondents viewed training in online teaching less favorably than the overwhelming findings of Benito et al. (2021). Perhaps our respondents do not anticipate an ongoing need for online teaching training as they expect to return to face-to-face instruction when the COVID-19 pandemic no longer limits our ability to physically gather. Before COVID-19, online

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learning was on the rise. In 2013, 26% of students at post-secondary institutions in the United States took at least one online course; this increased to more than 33% of students by 2017 (Kiesel et al., 2020). This underlines the need for training in online pedagogy, expanding beyond the immediate demand created by COVID-19.

**Table 4.**

*Faculty (n = 255) agreement with mandated participation in Teaching Workshops or Conferences that have a focus on general or online instruction*

	General instruction, %	Online instruction, %
Strongly agree	11.7	8.2
Agree	28.1	23.0
Neutral	24.5	32.7
Disagree	16.3	16.3
Strongly disagree	19.4	19.9
Total	100	100

Agricultural sciences is a complex discipline including diverse sub-disciplines that span the social and hard sciences. Many concepts in agricultural sciences are practical and traditionally taught through a “hands on” approach. Faculty teaching agricultural sciences require broad knowledge but, more importantly, the ability to communicate topics to students with diverse competencies and academic interests. This can be difficult in face-to-face instruction and would arguably be even more difficult in an online classroom. Our data indicate faculty recognize the need for training opportunities that strengthen their teaching skills, especially as it pertains to online teaching. Under the umbrella of the Theory of Skill Acquisition, participating in workshops and conferences could fulfill requirements of the novice stage and may be important for early career faculty. We asked respondents who “strongly agreed” or “agreed” that participation in Teaching Workshops or Conferences that have a focus on general or online instruction should be required for faculty teaching at the post-secondary level the regularity in which they felt this participation should occur (Table 5). For general instruction, most respondents felt participation should be required once every other year (34.2%) or once per year (42.1%). There was a similar pattern for online instruction, with 31.1% of respondents reporting participation should be required once every other year (31.1%) or once per year (39.3%). This was interesting as it demonstrates that faculty who are supportive of mandated training (39.8 and 31.2% for general and online instruction, respectively) recognize the ongoing need for training in general and online instruction, even if they are not actively teaching online courses. Although we are unsure what motivated this observation, it may reflect faculty awareness that technology is required in the online classroom and the desire to stay up to date with this technology, given how quickly it evolves.

According to the Theory of Skill Acquisition, one

**Table 5.**

*Frequency with which faculty feel Teaching Workshops or Conferences that have a focus on general or online instruction should be required*

	General instruction, %	Online instruction, %
Once prior to teaching an online course	3.9	11.5
Less than once every other year	17.1	8.2
Once every other year	34.2	31.1
Once per year	42.1	39.3
More than once per year	2.6	9.8
Total	100	100

enters the competent performer stage when they seek new knowledge and place various responsibilities upon themselves. A fair amount of our respondents appear to be at this stage of skill acquisition as they expressed a desire for mandated online teaching workshops or conferences with some degree of regularity, most often once every other year. Among faculty who received online teaching training via institutional workshops at the beginning of the pandemic, 88% agreed that they were effective in training faculty how to teach online (Rahim et al., 2020). It is promising that some institutions were able to train faculty on how to teach online before integrating them into the classroom. However, anecdotal observations indicate this was not the case for all post-secondary institutions. A recent report indicates the 39% of post-secondary students were dissatisfied with their online learning experience during the pandemic (Benito et al., 2021), indicating there is a widespread opportunity to improve pedagogy in the post-secondary online classroom.

### Summary

Faculty preparation for teaching is critical to maximize effectiveness in the classroom. COVID-19 highlighted the importance of this preparation as faculty who lacked prior experience teaching online courses were suddenly required to shift their mode of instruction from face-to-face to online. Our data demonstrate that faculty are interested in participating in Online Teaching Workshops or Conferences with a preference for these opportunities to be hosted through online platforms and an expectation that these opportunities will be free or relatively inexpensive. Those respondents in favor of mandated teaching training also agreed that this training should be delivered with a fair degree of regularity, rather than just once at the beginning of their teaching careers. Ultimately, our data indicate faculty are interested in increasing their competency in online teaching, presumably to transition through the stages of skill acquisition, as outlined by our theoretical framework. In the wake of COVID-19, it is anticipated that online teaching will be more prevalent. Accordingly, institutions and professional societies must support faculty training in this specific skill.

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