

# Professional Development Needs of Instructors of Online Swine Science Courses<sup>1</sup>

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## Abstract

This mixed-methods study sought to identify specific professional development needs of instructors relative to teaching, advising and recruiting students in two online programs: Swine Science Online and Professional Swine Manager. The study consisted of interviews with eight instructors and a survey of all 25 instructors in the programs. These instructors have intermediate- to novice-level self-perceived proficiency with course management systems and varying levels of self-perceived proficiency with other online education tools. They want to learn strategies and techniques to increase students' interaction in online courses but see time as a significant barrier to professional development and to improving online instruction. As a result of this study, we recommended the United States Pork Center of Excellence conduct a professional development workshop with sessions on time management related to online education, promoting student interaction in online courses and using successful, research-based strategies for online education.

## Introduction

Enrollment at U.S. colleges and universities increased by 11% from 1990–2000 and by 37% from 2000–2010 (U.S. Department of Education, National Center for Education Statistics, 2012). To accommodate increased enrollments and make education more accessible, colleges and universities are delivering more courses and programs online. In the fall of 2010, 31% of undergraduate students in the United States were enrolled in at least one distance education course (Sloan Consortium, 2013). This amounts to more than six million students (Sloan Consortium, 2013). Nearly 80% of public institutions and 70% of private, nonprofit institutions believe online education is critical to their long-term academic strategy (Sloan Consortium, 2013).

Students, instructors and institutions see several advantages to distance education over traditional education. Students who are normally shy in a traditional classroom benefit by having adequate time to think about what they want to say before posting comments or discussions online (Smith et al., 2001). Students also benefit from a more flexible schedule, the convenience of taking classes at home, increased access for nontraditional students and the possibility of more individualized attention depending on the class size (Matthews, 1999). Students and instructors may benefit by having more discussion with each other because the instructor is seen as less of an authoritarian figure and more of an equal (Smith et al., 2001). This can be good for students who may feel intimidated by professors but can also make it more difficult for instructors to give help if students become frustrated. Institutional advantages include increased enrollment, less maintenance of campus buildings and a public perception that the institution is forward thinking (Matthews, 1999).

There are also some problems related to distance education. Smith et al. (2001) note that it can take hundreds of hours for initial setup of a distance education course. Everything must be detailed and have clear directions. Students are not able to ask immediate questions as they might in a traditional classroom. In addition to developing the course, instructors must still grade assignments, respond to questions and have discussions with students (Smith et al., 2001).

Hall (1996) suggests that, as a general rule, instructors should be trained for distance education. For training to be effective, the trainers need to know what the instructors already know and also what they want to learn. The best way to find out this information is to conduct a needs assessment.

<sup>1</sup>This study was deemed exempt by the Iowa State University Institutional Review Board (IRB).

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## Professional Development Needs

A needs assessment is “any systematic procedure for setting priorities and making decisions about the allocation of educational resources” (Witkin, 1984, p. 35). When conducting needs assessments, assessors should be “attuned to the stakeholders” (Royse et al., 2009, p. 24). The stakeholders are the people affected by the problem. In needs assessments related to education and teaching, instructors are often the stakeholders.

Brown (2002) suggests working through three steps when conducting needs assessments. The first step is to gather data. There are a variety of ways to do this. Assessors can make observations or conduct interviews, surveys, panels, or focus groups. Then, assessors need to determine what expressed needs can be met through professional development or training. Some expressed needs must be handled through other means. The last step is to make formal recommendations for addressing specific needs.

Several needs assessment studies have focused on professional development for instructors of agricultural subjects. Simerly (1990) determined that many faculty members are interested in professional development focused on communication with students. Murphy and Terry (1998) concluded that many agriculture instructors want to learn better techniques for distance education. However, they also noted that some instructors do not believe distance education is a viable alternative to traditional teaching. Miller and Carr (1997) conducted a needs assessment for agricultural faculty related to distance education. They found the highest rated training need was teaching techniques for distance education. All of these needs assessment studies used similar descriptive survey research methods.

To be most effective, researchers must adapt common needs assessment approaches to the content and context of a particular situation. For this study, we asked two overarching questions: What are the specific needs of instructors of swine science courses delivered via distance education? How do these instructors want to experience professional development related to distance education?

### Purpose and Objectives

The purpose of this study was to determine the professional development needs of instructors of online courses in the Swine Science Online (SSO) and Professional Swine Manager (PSM) programs. We had four specific research questions:

1. To what extent do instructors believe they are proficient with the course management systems they are currently using?
2. To what extent do instructors believe they are proficient with the tools they are using in their online courses?
3. Do SSO and PSM instructors see any barriers to improving online teaching techniques that could be overcome through professional development?
4. What specific professional development activities

do instructors want and how do they want the activities to be conducted?

## Methods

### Design

The qualitative aspect of this mixed-methods study was a phenomenological study (Creswell, 2013) focused on the phenomenon of teaching online. Instructors shared their past experiences and current views on online education through one-on-one semi-structured interviews. Each interview lasted up to 40 minutes and was conducted over the telephone ( $n = 6$ ) or face-to-face ( $n = 2$ ).

The quantitative aspect of this study was a descriptive survey categorized as a census of intangibles (Ary et al., 2010). Survey questions were based on themes that emerged from the interviews. All ( $N=25$ ) instructors in the SSO and PSM programs were surveyed.

### Subjects

We conducted interviews with a purposeful sample size of eight instructors. Creswell (2013) indicates that between five and 25 subjects is appropriate for a phenomenological study. We chose instructors on the basis of distance education teaching experience (which ranged from no prior experience to more than four years), experience in the SSO and PSM programs and teaching location (four land-grant universities and two community colleges).

For the descriptive survey, the United States Pork Center of Excellence (USPCE) provided a list of all 25 SSO and PSM instructors who were currently teaching or would begin teaching during the next school year. Twenty-one (84%) instructors responded to the survey.

### Instruments

We developed an interview protocol following recommendations from Creswell (2012). The protocol involved a series of semi-structured questions that progressed from questions designed to establish rapport to targeted questions and those that required greater thought. Questions were based on suggestions from the USPCE and focused on instructors' experience with distance education, philosophical views on distance education, the current situation for teaching, instructors' level of distance education training, resources available to instructors, barriers to improvement, training desired by instructors and preferred methods of training. Instructors received the interview questions via email a day in advance. Before the interviews, we conducted reflexive bracketing as defined by Gearing (2004). We wrote down our own views on online education to attempt to minimize their effects on the study.

We then used themes that emerged from the interviews to create the survey. Survey questions focused on tools and course management systems, potential barriers to the improvement of online education teaching strategies and views on the type and focus

of professional development activities instructors desired. We designed the questions to avoid misleading, confusing, or embarrassing respondents (Ary et al., 2010). Survey questions used 5-point and 4-point Likert-type scales. Depending on the question, instructors selected their level of agreement or perceived proficiency.

**Data Collection**

We followed Creswell's (2012) recommendations for determining where and how to conduct the interviews. For example, we located quiet spaces to conduct the interviews, obtained consent from the instructors beforehand and were respectful to the instructors during and after the interview. We also recorded all interviews (telephone and face-to-face) with a digital audio recorder and took notes during the interview to account for instructors' attitudes and tone of voice.

The survey was conducted online using the Qualtrics survey platform. Following Dillman et al.'s (2008) recommendations, we contacted instructors up to four times by email and a fifth time, if needed, by telephone. Email contacts included a link to the questionnaire. Contacts were separated by three to five days. The response rate was 84% (n = 21) and instructors from both programs responded.

**Data Analysis**

We emailed the transcribed interviews to instructors so they could check them for accuracy and then coded the transcripts to replace any personal identifiers. Codes are used to link the findings back to specific interview transcripts. For example, T1 refers to transcript number 1. Data analysis strategies recommended by Creswell (2013) were followed. Interview notes and transcriptions were read multiple times to ascertain the main points in each interview. These main points were then written down and grouped into themes that cut across multiple interviews. Findings obtained through the interviews were used to develop survey questions. We used descriptive statistics, specifically frequencies and percentages, to analyze the survey results.

**Results**

To what extent do instructors believe they are proficient with the course management systems they are currently using?

The SSO and PSM instructors use a variety of course management systems, often at or below an intermediate level of self-perceived proficiency (Table 1). In the interviews, some instructors said they used or had used multiple course management systems. Of the instructors surveyed, a majority used Blackboard (52%, n = 11). Moodle (38%, n = 8) was another popular system. Ninety percent (n = 9) of Blackboard users and

**Table 1. Course Management Systems: Instructors' Use and Self-Perceived Proficiency**

System	Use f (%)	Proficiency f (%)			
		Novice	Intermediate	Advanced	Expert
Blackboard	11 (52%)	3 (30%)	6 (60%)	1 (10%)	0 (0%)
Moodle	8 (38%)	3 (33%)	5 (56%)	1 (11%)	0 (0%)
Scholar	2 (10%)	2 (50%)	2 (50%)	0 (0%)	0 (0%)
Desire2Learn	1 (5%)	1 (50%)	0 (0%)	1 (50%)	0 (0%)
Soft Chalk	1 (5%)	1 (50%)	0 (0%)	1 (50%)	0 (0%)
eCollege	1 (5%)	2 (100%)	0 (0%)	0 (0%)	0 (0%)
WebStudy	1 (5%)	0 (0%)	1 (100%)	0 (0%)	0 (0%)
Other	3 (14%)	2 (40%)	1 (20%)	1 (20%)	1 (20%)

Note. Not every instructor responded to the question about whether they used a particular course management system and also rated their proficiency with a particular system.

**Table 2. Online Tools: Instructors' Use and Self-Perceived Proficiency**

Tool	Use f (%)	Proficiency f (%) <sup>y</sup>			
		Novice	Intermediate	Advanced	Expert
Emails	21 (100%)	0 (0%)	7 (35%)	9 (45%)	4 (20%)
Web links	17 (81%)	1 (6%)	8 (50%)	6 (38%)	1 (6%)
Grade reports for students	15 (71%)	2 (13%)	10 (67%)	3 (20%)	0 (0%)
Online discussions	13 (62%)	1 (8%)	9 (69%)	3 (23%)	0 (0%)
Online audio lectures	13 (62%)	3 (23%)	8 (62%)	1 (8%)	1 (8%)
Online exams	13 (62%)	1 (7%)	6 (43%)	6 (43%)	1 (7%)
Course calendar	10 (48%)	1 (10%)	6 (60%)	2 (20%)	1 (10%)
Online video lectures	6 (29%)	3 (38%)	3 (38%)	1 (13%)	1 (13%)
Online labs	3 (14%)	1 (25%)	1 (25%)	0 (0%)	2 (50%)
Online chat	3 (14%)	0 (0%)	2 (50%)	2 (50%)	0 (0%)
Adobe connect	3 (14%)	1 (25%)	2 (50%)	1 (25%)	0 (0%)
WebEx	2 (10%)	0 (0%)	3 (100%)	0 (0%)	0 (0%)
Other	1 (5%)	0 (0%)	2 (100%)	0 (0%)	0 (0%)

Note. Not every instructor responded to the question about whether they used a particular tool and also rated their proficiency with the tool.  
<sup>y</sup> Percentages may not sum to 100 because of rounding.

89% (n = 8) of Moodle users rated themselves at an intermediate or novice level of proficiency.

To what extent do instructors believe they are proficient with the tools they are using in their online courses?

A majority of the SSO and PSM instructors used email (100%, n = 21), web links (81%, n = 17), grade reports for students (71%, n = 15), online discussions (62%, n = 13), online audio lectures (62%, n = 13) and online exams (62%, n = 13). A majority of instructors rated their proficiency with e-mail as advanced or expert (65%, n = 130). Fewer than half rated their proficiency as advanced or expert regarding web links (44%, n = 7), grade reports for students (20%, n = 3), online discussions (23%, n = 3) and online audio lectures (16%, n = 2).

Do SSO and PSM instructors see any barriers to improving online teaching techniques that could be overcome through professional development?

Instructors consistently mentioned time as a barrier in both the survey and interviews. The instructors felt that distance education courses were made to help save time by not having to be in a lecture or classroom for three or more hours a week. However, instructors now spend that time putting the course together and maintaining the course website.

Time (95%, n = 20) was the most common barrier to improving online education (Table 3) and a majority of instructors thought it was a highly significant barrier (70%, n = 14). One instructor (T6) stated that online



## Professional Development Needs

**Table 3. Instructors' Perceptions of Barriers to Improving Distance Teaching Techniques**

Barrier	Is a barrier f (%)	Significance f(%) <sup>y</sup>		
		Slightly significant	Moderately significant	Highly significant
Time	20 (95%)	3 (15%)	3 (15%)	14 (70%)
Lack of hands-on interaction	16 (76%)	2 (13%)	9 (56%)	5 (31%)
Lack of instructor experience	16 (76%)	7 (44%)	4 (25%)	5 (31%)
Lack of face-to-face interaction	15 (71%)	5 (33%)	7 (47%)	3 (20%)
Lack of immediate feedback from students	11 (52%)	7 (58%)	4 (33%)	1 (8%)
Technology Failures	10 (48%)	2 (22%)	6 (67%)	1 (11%)
Funding	7 (33%)	0 (0%)	6 (86%)	1 (14%)
Other	3 (14%)	1 (33%)	2 (67%)	0 (0%)

Not every instructor responded to the question of whether something was a barrier and also rated the significance of that barrier.

<sup>y</sup> Percentages may not sum to 100 because of rounding.

courses are not easier and if they're done right they do not take less time than actual face-to-face meetings. It might be more convenient for both the instructor and the students, but they still take a lot of time.

Another instructor (T3) said it takes more time to teach online courses than traditional courses:

The biggest barrier to distance ed in general is it takes so much more time to do the same amount of teaching. And if you buy into the needing to have a one-on-one relationship with the student then it continues to take that time. So, I think originally there was a lot of thought that we could offer this at a distance and enrollment is irrelevant. And any number of students can be enrolled. And certainly the feedback I get from students and from instructors is that, that's not the case. They feel like they need really regular kind of relationship development between instructors and students.

A majority of instructors also indicated that lack of hands-on interaction (76%, n = 16), lack of instructor experience (76%, n = 16), lack of face-to-face interaction (71%, n = 15) and lack of immediate feedback from students (52%, n = 11) were barriers to the improvement of distance teaching techniques. Almost one-third of instructors believed that lack of hands-on interaction (31%, n = 5) and lack of instructor experience (31%, n=5) were highly significant barriers to the improvement of distance teaching techniques.

A majority (57%, n=12) of instructors agreed or strongly agreed that they find it hard to teach hands-on topics in an online course (Table 4). Facilitating hands-on learning was a common concern raised by instructors (T1, T3, T6, T7, T8) during the interviews. One instructor (T8) commented that *"the things that you typically do hands-on, that we do typically in labs here or more traditional classes, I think are going to be pretty hard to convey and translate to an online class."* Another instructor (T3) said that *"you can't give them [the student] hands-on experience without the animal and so to me it's a compromise that you're reaching out to a lot of students that otherwise wouldn't get anything."*

Some instructors (T4, T6, T7) said it can be difficult to achieve the same course

outcomes in face-to-face and online classes. One instructor (T4) said *"I think, to be truly conversant with the ideas, is a little more challenging."* Another instructor (T7) said, *"I don't think you can expect the same outcomes from both and I don't think you can expect the same teaching outcomes from an online course and from a classroom course. And I think if you try to do that, you're going to be disappointed."*

Most instructors (T1, T2, T3, T5, T8) believed that students were able to obtain all of the desired course outcomes online.

When asked if students were able to attain all of the desired outcomes, one instructor (T3) replied, *"I hope so. If we didn't think so, then we shouldn't even offer the courses."* This discrepancy was also evident in the survey results (Table 4). Thirty-three percent (n = 7) of instructors disagreed with the statement *"Students are able to comprehend the concepts in my online course(s) equally as well as they would in a traditional classroom,"* but 24% (n = 5) agreed with the statement and 43% (n = 9) were neutral. Results were similar for the statement *"I feel there is no difference in the outcomes I want to achieve between an online class and a traditional classroom."* Twenty-nine percent (n = 6) of instructors disagreed with this statement, 24% (n = 5) agreed, 10% (n = 2) strongly agreed and 38% (n = 8) were neutral.

What specific professional development activities do instructors want and how do they want the activities to be conducted?

Most instructors agreed or strongly agreed that they wanted to learn techniques to increase student interaction (90%, n = 19), that they wanted a hands-on training session using the tools they will learn about (90%, n = 19), that they wanted to brainstorm with other instructors on what strategies and techniques work best in teaching online courses (86%, n = 18) and that they wanted research-based data on what teaching techniques have worked best (91%, n = 19) (Table 5). One instructor (T3) described how research-based data could be useful to instructors as they make decisions about teaching, noting that a particular strategy *"might be the best for student learning, but it takes twice as much time as this next thing which is 80% good."*

**Table 4. Instructors' Perceptions of Achievement of Student Outcomes (n = 21)**

Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I find it hard to teach hands-on topics.	1 (5%)	4 (19%)	4 (19%)	9 (43%)	3 (14%)
Students are able to comprehend the concepts in my online course(s) equally as well as they would in a traditional classroom.	0 (0%)	7 (33%)	9 (43%)	5 (24%)	0 (0%)
My students' online discussions are better than discussions in a traditional classroom.	0 (0%)	7 (33%)	11 (52%)	2 (10%)	1 (5%)
I feel there is no difference in the outcomes I want to achieve between an online class and a traditional classroom.	0 (0%)	6 (29%)	8 (38%)	5 (24%)	2 (10%)

Note. Percentages may not sum to 100 because of rounding.

**Table 5. Instructors' Preferences Relative to Professional Development (n = 21)**

Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I want to learn techniques and strategies to increase student interaction.	0 (0%)	0 (0%)	2 (10%)	8 (38%)	11 (52%)
I want to have a hands-on training session using the tools we will be learning about.	0 (0%)	0 (0%)	2 (10%)	11 (52%)	8 (38%)
I want to brainstorm with other instructors on what strategies and techniques work best in teaching online courses.	0 (0%)	0 (0%)	3 (14%)	10 (48%)	8 (38%)
I want to be presented research-based data on what online teaching techniques have worked best.	0 (0%)	0 (0%)	2 (10%)	13 (62%)	6 (29%)
I want to learn where I can get shelf-ready teaching materials for my classes.	2 (10%)	0 (0%)	4 (19%)	13 (62%)	2 (10%)
I want to learn new video editing techniques.	1 (5%)	0 (0%)	8 (38%)	8 (38%)	4 (19%)
I want to be able to present material from my own class so that I may receive feedback from the other instructors and experts at the workshop.	2 (10%)	4 (19%)	7 (33%)	7 (33%)	1 (5%)
I want to learn what the SSO and PSM program staff want us to teach.	2 (10%)	1 (5%)	3 (14%)	11 (52%)	4 (19%)
I want to experience online learning from a student's perspective.	1 (5%)	3 (14%)	4 (19%)	11 (52%)	2 (10%)

Note. Percentages may not sum to 100 because of rounding.

know why it is important for them to learn what is offered through the workshop, using their past experiences as a valuable teaching and learning resource that respects them as learners, capitalizing on their readiness to learn by focusing on their self-identified needs and motivating them to learn by emphasizing application to their specific situations. We plan to conduct additional research to track the extent to which these recommendations are implemented and their effects on the SSO and PSM programs.

**Summary**

Instructors in the SSO and PSM programs want to learn teaching strategies and techniques to increase student interaction in online courses and they prefer to learn this through a hands-on workshop. Because instructors have rated themselves as having intermediate- to novice-level proficiency with course management systems and varying levels of proficiency with other online education tools, a hands-on workshop would be well suited for this group. Instructors identified time as a significant barrier to professional development and to improving online instruction. The instructors value research-based information.

Our key findings are consistent with previous needs assessment studies related to distance education. For example, our finding that instructors wanted to learn strategies to enhance interaction was consistent with Simerly's (1990) finding that faculty wanted to enhance their communication with students. As with our study, Murphy and Terry (1998) and Miller and Carr (1997) found that faculty wanted to learn teaching techniques for distance learning. Faculty have shown consistency over time concerning their professional development needs for teaching at a distance. Technology is the variable that continues to change at a rapid pace. The challenge is in preparing faculty to effectively use new technologies in addressing normal teaching and learning-related issues.

As a result of this study, we recommended that the USPCE conduct a professional development workshop with sessions on time management related to online education, promoting interaction in online courses and using research-based strategies for online education. Based on the findings, we also recommend that persons involved in organizing the professional development workshop pay careful attention to design. It would be wise to carefully consider at least four of Knowles, Holton and Swanson's (2005) six assumptions regarding adult learning theory. These include making sure participants

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## Professional Development Needs

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