Journal of Agricultural Education, 55(2), 66-78.
doi: 10.5032/jae.2014.02066

Flipping an Agricultural Education Teaching Methods Course

Nathan W. Conner[1], Christopher T. Stripling[2], Jessica M. Blythe[3],
T. Grady Roberts[4], and Nicole L.P. Stedman[5]

Flipping or inverting a course is a relatively new approach to structuring a course. Using this method, the lectures traditionally delivered during regularly scheduled class time are converted to a media for delivery online, often in the form of videos. Learners are expected to view the online lectures prior to class. Then in turn, in-class time is used for a variety of application-type activities. This study documents participants' perceptions of flipping an agricultural education teaching methods course. Based on data from a focus group, we concluded that the participants thought the flipped classroom approach aided their learning of the teaching methods and the teaching and learning principles presented in the course. However, the participants offered numerous suggestions for improving the flipped classroom experience.

Keywords: flipped classroom; teacher preparation; preservice

As technology becomes more prevalent in postsecondary education, it has provided the opportunity for postsecondary instructors to reexamine the way in which coursework has typically been structured. Teacher-centered activities generally dominate college classrooms and are often associated with lower cognitive learning levels (Ewing & Whittington, 2009; McCarthy & Anderson, 2000; Whittington, 1995), which leaves students on the receiving end of one-way transmission of knowledge. In 2009, the National Research Council (NRC) called for a transformation of agricultural education so that tomorrow's college graduates will be ready to enter a complex, global workforce. The NRC called for improving "how learning and teaching occur" in college classrooms (NRC, 2009, p. 35), specifically suggesting that lecture should be used less and other active strategies should be considered. A flipped classroom model would allow instructors to engage students through a variety of different learning activities by moving traditional teacher-centered activities, such as lecture, online for students to access before in-class time. The flipped classroom model offers the opportunity to change pedagogical practice by taking advantage of technological progress.

[1] Nathan W. Conner is an Assistant Professor in the College of Agriculture and Human Ecology at Tennessee Tech University, PO Box 5034, Cookeville, TN 38505, Email: nconner@tntech.edu.
[2] Christopher T. Stripling is an Assistant Professor in the Department of Agricultural Leadership, Education and Communications at the University of Tennessee, 320B Morgan Hall, 2621 Morgan Circle, Knoxville, TN 37996-4511, Email: cstripling@utk.edu.
[3] Jessica M. Blythe is a Doctoral Candidate in Agricultural Education in the Department of Agricultural Education and Communication at the University of Florida, 411 Rolfs Hall, Gainesville, FL 32611, Email: jmblythe@ufl.edu.
[4] T. Grady Roberts is an Associate Professor of Agricultural Education in the Agricultural Education and Communication Department at the University of Florida, PO Box 110540, Gainesville, FL 32611, Email: groberts@ufl.edu.
[5] Nicole L. P. Stedman is an Associate Professor of Agricultural Education in the Department of Agricultural Education and Communication at the University of Florida, PO Box 110540, Gainesville, FL 332611, Email: nstedman@ufl.edu.

Priority four of the National Research Agenda for Agricultural Education challenges educators to provide meaningful learning for students and design courses that promote academic growth and future success (Doerfert, 2011). This study aligns with priority four by implementing a teaching approach that attempts to provide an academic learning experience that promotes growth in pedagogical knowledge and skills. Additionally, educators will better understand how students perceive the education provided by using the flipped classroom approach. If agricultural educators are going to implement the flipped classroom approach in their courses, research seeking to understand the learners' perceptions of this approach should aid in the design and delivery of these courses. This research will begin to examine one particular design and implementation of the flipped classroom approach and will provide insight into using the flipped classroom approach in an agricultural teaching methods course.

Literature Review and Theoretical Framework

Flipped or Inverted Classrooms

The flipped classroom model first appeared in academia in 2000. Baker (as cited in Strayer, 2007) sought opportunities to spend more in-class time actively engaging students without eliminating any course content. To do this, Baker provided lecture notes online and then utilized in-class time for group work and practice problems. Since 2000, college instructors from a range of disciplines have instituted a similar flipped classroom model (Frederickson, Reed, & Clifford, 2005; Lage, Platt, & Treglia, 2000) without always referring to the practice as a flipped classroom. Over the past decade, the flipped classroom model has continued to evolve as technological advancements have made recording and sharing videos easier. Online postings used in the flipped classroom model have progressed from a simple PowerPoint posting to full video recordings of entire lectures, which include audio files, slides, and other visual aids.

Technological advances over the past decade have allowed classrooms to transform into interactive learning environments, instead of an environment where the focus is on the one-way transition of knowledge (Bransford, Brophy, & Williams, 2000). Classroom flips are typically motivated by an instructor's desire to provide active participation and collaborative work during scheduled in-class time (Strayer, 2007). As technology continues to develop there is a need to continue to explore and validate the flipped classroom model and the impacts that it has on student learning.

Teaching Activities

In the *Taxonomy of Learning Activities* model, Roberts, Stripling, and Estepp (2010) conceptualized seven different learning activities based on the relationships and interactions that occur during the various learning activities.

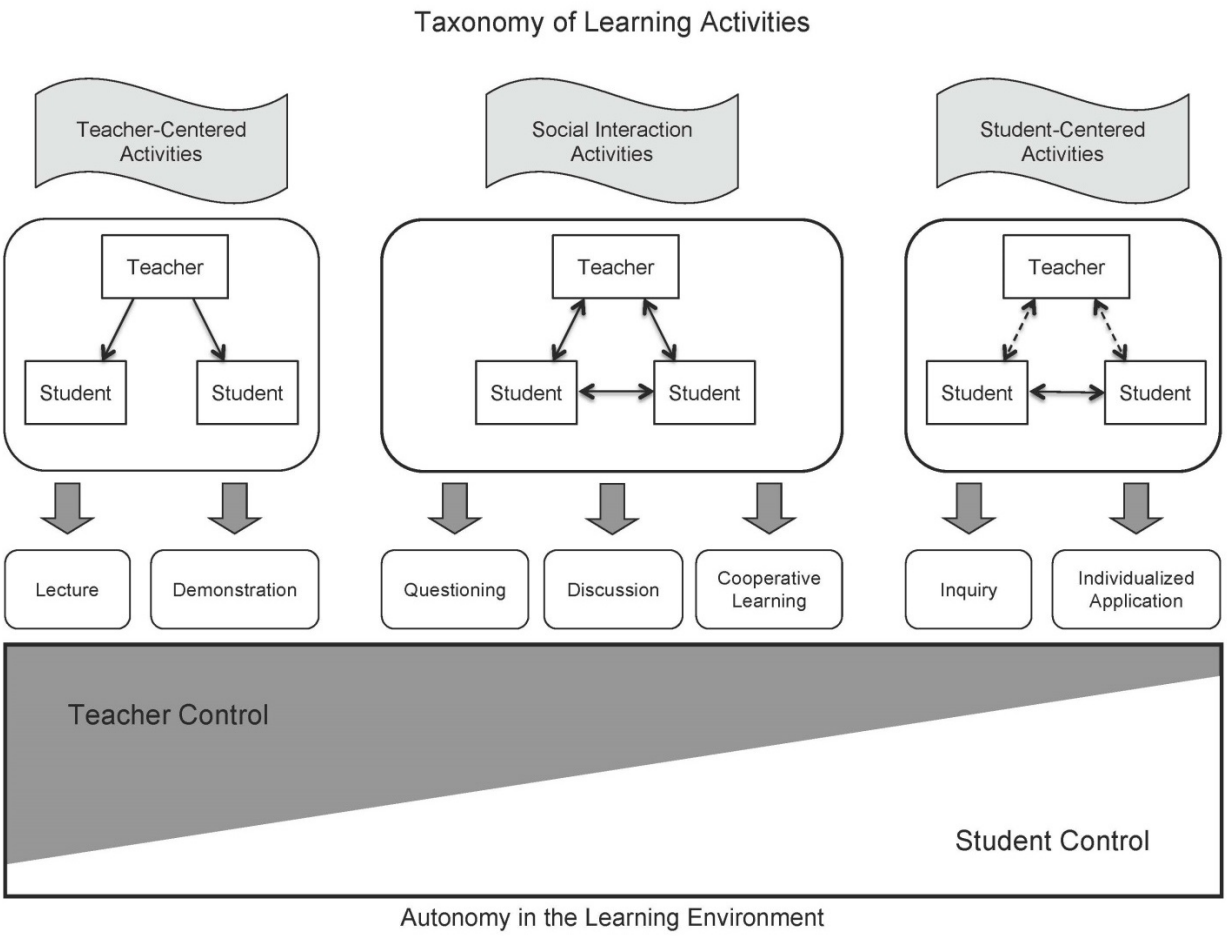

Figure1. Taxonomy of Learning Activities Model (Roberts, Stripling, & Estepp, 2010)

According to Roberts et al., the design of the model allows one to visualize the amount of autonomy the learners have in the learning environment when various learning activities are used. As one progresses from left to right on the model, control of the learning environment shifts from the teacher to the learner. The model differentiates between three types of learning activities: (a) teacher-centered, (b) social interaction, and (c) student-centered. The teacher-centered activities are lecture and demonstration, in which the instructor has control of the learning situation and communication occurs from teacher to student, typically in one direction. Furthermore, there is very little student to student interaction in this segment of the model. The second segment of the model accounts for the social interaction activities, which include activities such as questioning, discussion, and cooperative learning. Here there are interactions from student to student, student to teacher, and teacher to student and the control of the learning situation is more balanced between teachers and students. The third segment of the model represents the activities in which students hold the control of the learning situations. These student-centered activities, such as inquiry and individualized application have a strong base in individualized experiences of the learners. These activities are controlled by the student while the teacher acts as a facilitator or supporter of the learning process.

In a flipped or inverted classroom, the teacher-centered activities from the *Taxonomy of Learning Activities* model (Roberts et al., 2010) are moved to an online format, in which students participate in the one-way transmission of information before attending a class session. In turn,

this allows for more of the social and student-centered activities to occur during class time, when the instructor can be present to facilitate and assist student learning.

Previous Research

Empirical evidence about flipped or inverted classrooms is just beginning to appear in the literature. As a relatively new teaching innovation, the extent to which this practice has been adopted is still uncertain. There are a few examples, often case studies, which are beginning to document the flipped classroom teaching approach.

Shimamoto (2012) used the flipped classroom approach when delivering professional development to teachers. Shimamoto (2012) developed a flipped class experience for current teachers (7th to 12th grade) interested in learning how to flip their own classes. He found the online module portion of the flipped experience was effective in giving an overview, but the participants would have liked to have seen more examples of the approach being used.

Gardner (2012) documented flipping of an undergraduate agricultural economics course. The lectures in the course were recorded and posted as videos for students to watch before coming to class. In-class time was used for working on homework, quizzes, and other activities. Gardner reported students were satisfied with the flip, but the effect on learning outcomes was uncertain. Students in this course watched the online videos at different rates, with some students only watching 70% of the lectures. Gardner speculated student effort was a key variable in learning outcomes.

Strayer (2007) examined flipping of two undergraduate level statistics courses. Lectures were delivered online outside of traditional in-class time and in-class time was used for activities such as using spreadsheets. Students in the flipped classes reported less satisfaction with the class structure. Additionally, students in the flipped classes were more *unsettled* than their peers in traditional classes.

Theoretical Perspective

From a theoretical perspective, one way to think about flipping a classroom is using Bloom's (1956) *Taxonomy of Educational Objectives*. Bloom's (1956) lower level cognitive domains (knowledge and comprehension) are focused on and outside of class time and the more complex domains (application, analysis, synthesis, and evaluation) are focused on during in-class time. As noted by the National Research Council (2009), and supported by Whittington (1995), instructors in colleges of agriculture are often teaching at lower cognitive levels (knowledge and comprehension). In turn, students are likely then asked to take the concepts learned in class, and then while out of class, apply, analyze, synthesize, or evaluate those concepts though some kind of homework, assignment, or project. This was certainly the case in the lecture portion of the *Teaching Methods in Agricultural Education* course at the University of Florida. This course traditionally met twice a week and consisted of one lecture session and one laboratory session in which the students performed microteachings. The lecture session consisted of in-class time that was used to lecture about a variety of different teaching methods and then the participants were given an assignment to apply those concepts by developing a lesson that used the method. The lesson creation (application and synthesis) occurred in isolation, without ready access to the instructor or teaching assistants. This study documents an example of flipping this situation.

Purpose

The purpose of this study was to investigate learners' perceptions of flipping an agricultural education teaching methods course by moving in-class lectures online to allow time in class to model various teaching methods, provide student led learning activities, and time for lesson plan preparation.

Methods and Procedures

Researcher Subjectivity

The subjectivity statement allows the researchers' to explore and share their closeness and bias regarding the phenomena being studied with the readers (Glesne, 1999). There were five researchers involved in this study: (a) one agricultural education doctoral student, (b) two assistant professors of agricultural education (who were doctoral students at the time of the study), (c) one associate professor of agricultural leadership and (d) one professor of agricultural education. Four of the five researchers have experience teaching agricultural education courses at the secondary and postsecondary levels and have been formally prepared as teacher-educators. The remaining researcher is an expert in agricultural leadership and has experience teaching agricultural leadership courses at the collegiate level. In addition, the agricultural leadership expert has experience facilitating focus groups and other qualitative data collection techniques. Three of the researchers were teaching assistants (TAs) for this course, and one of the researchers was the lead instructor.

Epistemological and Theoretical Perspective

Epistemology is defined by Crotty (2003) as "the theory of knowledge embedded in the theoretical perspective and thereby in the methodology" (p. 3). The epistemological perspective for this study was constructionism in which the participants construct their own knowledge and meaning (Crotty, 2003). People construct meaning based on their experiences and perceptions, and their constructed meaning may change over time (Crotty, 2003).

According to Crotty (2003), a theoretical perspective is "the philosophical stance informing the methodology and thus providing a context for the process and grounding its logic and criteria" (p.3). The theoretical perspective for this study was social constructionism since the participants in this study "enter social milieu in which a 'system of intelligibility' prevails" (Crotty, 2003, p. 54). According to Crotty, individuals construct reality through social interactions. The meaning given to the object or phenomenon has a particular meaning only if it is agreed upon by human beings (Crotty, 2003). In order to understand reality, individuals must socially interpret and make sense of the phenomenon that already exists (Crotty, 2003).

Description of the Teaching Methods Course

The course met for two hours twice a week and consisted of one traditional lecture class session and one laboratory session in which the students performed microteachings. This study focused on the traditional lecture portion of the course and not the laboratory portion. Typically, in-class time was being used to deliver new information through lectures and other activities, and the concepts related to the teaching methods were being disseminated primarily at the knowledge and comprehension levels. However, the student participants were being asked to apply the newly acquired information in their microteachings and lesson planning. Application of the new concepts was a challenge for many student participants due to the abstract concepts that were being delivered through in-class lectures.

Changes made to the teaching methods course altered the structure and content delivery of the lecture portion of the course. Course content that was traditionally delivered through lecture, was modified to allow for online delivery, thus online modules were created. There were nine modules throughout the semester and each module was 10-20 minutes in length and consisted of a narrated PowerPoint and a quiz. Upon completion of the narrated PowerPoint, the participants were required to take a short quiz consisting of five to six multiple-choice questions. The participants were allowed to use the module while taking the quiz. The modules were administered over the university's online e-learning system. This change allowed the in-class lecture time to be used by the instructor and the TAs to simulate a middle or high school classroom and demonstrate the teaching method(s) the participants would be expected to use in their microteachings. After each demonstration, the participants were given time to critique the professor and the TAs and to ask clarifying questions.

Description of Participants

The participants in this study were undergraduate preservice teachers at the University of Florida. Due to the purposeful sampling used for this study, participants were required to be enrolled in the *Teaching Methods in Agricultural Education* course at the University of Florida during the fall 2011 semester. Purposeful sampling helped the researchers to select participants that would provide meaningful insight regarding the phenomenon being studied (Merriam, 1998). Based on the *Teaching Methods in Agricultural Education* course enrollment, there were 19 potential participants for this study, which consisted of 16 females and 3 males with an average age of 21.5 (SD = 1.12) years and a grade point average of 3.44/4.00. Due to the structuring of the agricultural education curriculum at the University of Florida, the participants were completing their first semester of their senior year of college and preparing to complete their student teaching internship in the spring. Fourteen of the potential participants elected to participate in the study and remained anonymous to the researchers. In order to protect the identity of the participants, the participants were assigned numbers by a third party transcriptionist and are referred to by using the letter S followed by their assigned number (S1, S2, etc.).

Design of the Study

This study was conducted under the qualitative paradigm because it allowed the researchers to interpret and understand the phenomenon based on the view points of the participants (Denzin & Lincoln, 1994). Creswell (1998) described qualitative research as the following:

> Qualitative research is an inquiry process of understanding based on distinct methodological traditions of inquiry that explore a social or human problem. The researcher builds a complex, holistic picture, analyzes words, reports detailed views of informant, and conducts the study in a natural setting. (p. 15)

When designing this study, researchers used the basic or generic methodological approach (Merriam, 1998). The basic or generic methodological approach allowed for the inclusion of rich description and the interpretation of data through the emergence of reoccurring patterns and themes (Merriam, 1998).

Data Collection/Data Analysis/Trustworthiness

A focus group was selected to collect data for this study. The focus group was approximately one hour in length. Focus groups can be thought of as an interview that is specifically designed to be administered to a group of participants (Berg, 2001). An additional

researcher not affiliated with this course was used to facilitate the focus group. The facilitator made a digital audio recording of the focus group and retained the audio recording until after the completion of the semester and after all grades had been submitted. This procedure was approved by the University of Florida's IRB. The following interview protocol was used to guide the focus group:

1. What did you think of the online video lectures?
2. How do you think the online video lectures impacted your learning?
3. Moving the lectures online allowed for a variety of in-class activities, such as the instructors modeling the various teaching methods, having you all work together to practice some of the methods, and giving you time to plan your next lab presentation. What did you think of these activities?
4. What advice would you give another professor who was thinking of making a similar change to one of his or her courses?
5. What other thoughts do you have about this approach that Dr. Robert's implemented this semester?

The focus group was transcribed verbatim by a third party transcriptionist not associated with the study. The constant comparative method was used in order to compare the collected data to the categories that emerged from the data (Creswell, 1998). Four of the five researchers analyzed the data and read the transcripts at least twice before beginning the analysis process. Categories were allowed to emerge from the data and then individual thoughts and statements were placed into the appropriate category. Coding was done by hand through a process that included line by line open coding, axial coding, and selective coding (Tesch, 1990). The researchers' individually analyzed the data and then met in order to reach a consensus on the categories and findings that emerged from the data.

Trustworthiness was obtained through the establishment of credibility, transferability, dependability, and confirmability (Dooley, 2007; Lincoln & Guba, 1985). In order to ensure dependability and credibility, audit trails were created to document methodological decisions and to trace the findings back to the original data (Dooley, 2007). Multiple researchers were used in order to allow for triangulation of the findings and to help establish the credibility of this study (Dooley, 2007; Lincoln & Guba, 1985). In addition, member checking was used throughout the focus group to ensure that the statements the participants made were accurate (Dooley, 2007). Detailed descriptions of the participants and the setting were included in order to allow readers to decide whether or not the findings of this study are transferable to a particular setting (Erlandson, Harris, Skipper, & Allen, 1993; Lincoln & Guba, 1985; Merriam, 1988). A limitation of this study was that data were collected from only one group of participants in one particular course and caution should be used in generalizing the result of this study.

Findings

Three overarching categories and seven sub-categories emerged from the data and were agreed upon by the researchers. The overarching categories include: (a) the quality and effectiveness of online video modules, (b) in-class lecture time, and (c) overall learning that took place due to the use of the flipped classroom approach. The overarching categories and the sub-categories will be discussed individually.

The Quality and Effectiveness of Online Video Modules

Ineffectiveness of Online Video Modules. Participants in this study felt the online video modules were ineffective and did not impact their learning. Participant S2 stated, "the content isn't bad, it is just who wants to sit there on their computer screen." In agreement with participant S2, participant S3 added, "Yeah, on that, I mean, honestly they could have just given us the

handouts and I would have gotten as much from it." The content that was delivered through the online video modules was valued by the participants; however, the participants felt they were not being treated like college students when the PowerPoint slides were narrated or read to them. Participant S4 stated, "Don't just read me what is on the PowerPoint. We are in college, we can read." The participants felt the video modules were not constructed in the appropriately manner, because it was possible for the participants to read the PowerPoint slides and obtain the information needed to successfully complete the quiz. However, participant S3 felt that the video modules were beneficial when used as a set of notes in which to refer back to throughout the course.

Improvements to Online Videos Modules. Participants felt that if online videos were going to be used to transmit content, changes needed to be made. Participant S4 indicated that the videos needed to elaborate and further explain the content mentioned on the PowerPoint slide. One suggestion was to provide questions for future students to answer while listening to the online video. Participant S1 said "you should have to listen to the PowerPoint in order to get the information." Another participant suggested providing a set of partially completed notes for future students because that would encourage the students to watch the online videos in order to "fill in the blanks in your notes" (S3). Additionally, participant S2 suggested incorporating online discussions into the online videos in order to ensure that future students watch the online videos.

Ineffectiveness of Online Quizzes. The participants agreed that the online quizzes were very easy to forget until it was time for class to begin and then it was too late to take the online quiz. In addition to forgetting to take the online quizzes, participants felt the quizzes were not very challenging and that being allowed to use notes during the quiz was pointless. Participant S2 stated that "the content was great, but it was a pointless use of an online quiz," because students had access to the PowerPoint slides during the quiz.

Quiz Improvement Methods. The participants felt changes to the online quizzes needed to be made if the quizzes were going to be used as part of the online video modules. Participant S2 suggested the online video modules be designed to prevent future students from accessing the content once the student clicks on the button that activates the quiz. The quizzes "would have been more effective because that would have forced you to know that material, versus having it pulled up and going along with it during the quiz" (S2). Additionally, participant S1 suggested extending the deadline for the quizzes and allowing future students to take the quiz after lecture instead of having the deadline before lecture began. It was suggested that the extension of the deadline would help future students to remember to take the online quiz.

In-Class Lecture Time

Structure and Time Management. When asked about the use of in-class time, the participants felt there was too much going on during the in-class sessions. Participant S1 said, "I think we had too many TAs in here trying to teach all of us." Participants did not feel that it was necessary or beneficial to have four different instructors teaching in one class session (S1; S3; S4; S5). Participant S5 said, "I think the fact of having all three TAs in one day give the same example of … what we are focusing on, was a little much." Additionally, participant S6 expressed concern over the scheduling of the content and stated that the lesson for the class session "was always a week ahead" of the lab session which led to confusion between the learning activities taking place in the lecture portion of the course and the microteaching that were being presented in the lab portion of the course. Participant S2 agreed by stating,

> I don't know about you all, but if I teach on Tuesday, there is no way I am getting ready for the next week's lesson, have it read, or even have a thought about it on Thursday. I do it the day before.

Additionally, some participants felt as if the lecture portion of the class should have provided more time for them to work with the instructors on developing their lesson plans (S5; S6). However, participant S8 disagreed with the previous suggestion and said,

> I am happy that we didn't have planning time with the TAs necessarily, because I know that next year we are not going to have that and if the TAs give you your whole lesson plan, and you could be out there next semester clueless as to what you are doing.

Participant S8 indicated that the structure of the course was beneficial due to the exposure to the teaching method examples that were presented in the in-class sessions. Participant S8 stated, "I felt like I was gaining something as a teacher and not non-essential things that they make us learn". Participant S9 concurred by indicating that the multiple examples of how to use a teaching method were beneficial and allowed the students to observe multiple ways a teaching method might be utilized in a school-based agricultural education classroom. Similarly, participant S11 felt that multiple demonstrations were valuable and helped in the learning process.

Suggested Restructuring of In-Class Lecture Time. Participants indicated the TAs/professor should rotate teaching responsibilities and take turns attending the in-class sessions. Participant S3 said, "they could have rotated out and not all had to be in this classroom at the same time, because it was just a lot." Participant S7 suggested the lecture portion of the course should be entirely online and lab sessions should occur twice a week. The additional lab section would be used to prepare for the microteachings (S7). Another suggestion was to increase the amount of planning time by reducing the quantity of teaching method examples given by the TAs/professor in each in-class session (S11; S7).

In addition, participants suggested the timing of topics in the in-class portion needed to correspond better to the microteachings in their lab sessions (S3; S7; S8; S9). To that end, the participants suggested the teaching method(s) that are expected to use in the microteachings should be taught in the lecture session directly prior to the lab section in which the method(s) are to be used. The participants also suggested a portion of the in-class lecture time should be used to discuss classroom management techniques. Participant 8 mentioned that classroom management techniques were briefly mentioned in the lab sections, but should also be covered in the in-class lectures. This would allow the participants to be aware of and practice the classroom management techniques in their lab sections. Lastly, the participants suggested the in-class lecture time should include strategies for teaching exceptional learners or students with individualized educational programs (S4).

Overall Learning That Took Place Due to the Use of the Flipped Classroom Approach. Even though the participants focused on the negative aspects of the use of the flipped classroom approach, the participants acknowledged that the approach helped them learn. Participant S1 stated, "…overall, it was a really good class (agreement heard). I know we are focusing on all the negative. I really did learn how to do all those different learning modalities." Participant S7 stated, "…aside from the internet thing, which I thought was pointless, this class was by far the best class we have taken." Participant S6 felt that the use of preflection activities enhanced the learning that took place during the class sessions and helped to reinforce the content that was taught through the online lectures. Additionally, participant S8 indicated the hands-on portion of the course was enjoyable.

There was an agreement from many participants that this course helped to effectively prepare them for their student teaching internship (S5; S6; S7). In agreement with the previous statement, participant S2 felt the course helped to build confidence in their teaching skills and was very helpful when they presented a lesson to actual high school students. Participant S7 acknowledged the course did a great job of preparing the participants to incorporate a variety of teaching methods into their teaching.

Conclusions, Implications, and Recommendations

The participants' perceptions of flipping the agricultural education teaching methods course were mixed. Overall, participants were satisfied with the course and felt that the flipped classroom approach aided their learning of the teaching methods and the teaching and learning principles presented in the teaching methods course. However, the participants also provided specific criticism related to the online lectures, online quizzes, and the in-class portion of the course. The results of this study are a bit perplexing given the fact the participants offered the aforementioned criticisms over the flipped approach, but then went on to indicate, "this class was by far the best class we have taken." The mixed perceptions found in the current study seem to mirror some of the inconsistency found in the existing literature. The dissatisfaction with the flipped course was consistent with Strayer's (2007) findings, while the overall satisfaction is consistent with Shimamoto's (2012) study. Gardner (2012) raised the question about learning outcomes when using the flipped classroom approach. To that end, the qualitative data suggests the participants perceived an increase in their pedagogical knowledge as a result of the flipped teaching methods course.

Recommendations for Practitioners

Based on feedback from participants, the following suggestions are offered to the instructors of an agricultural teaching methods course. Related to the online modules: (a) develop modules with narration that cannot be interpreted as just reading the slide, (b) provide guided notes to be used with the online lectures/videos, and (c) add video examples of each teaching method to the online modules. Related to the quizzes, consider adjusting the delivery of the quiz; perhaps offer during in-class time as a mechanism to promote greater in-class discussion. Related to in-class activities: (a) use fewer instructors in any given class session (i.e. do not have multiple TAs and the professor demonstrating a teaching method in a single in-class session); (b) provide more planning time in-class so students and instructors can interact more; and (c) structure the course so there is less time between the delivery of concepts (i.e. specific teaching methods) and the corresponding microteaching lab.

In addition to the feedback offered by students, the instructors would also offer some recommendations for others to consider if planning similar changes in a course. First, be sure to communicate to students about the rationale for why the change is being made. Second, be very diligent the first few weeks of the semester in making sure students understand what is expected. Third, make the best use of in-class time; do not redeliver the lecture that was online. Use the in-class time to allow students to apply the concepts taught online. Fourth, recognize that with any new instructional innovation, the learner will need time to adjust to the new environment, and the instructor may encounter challenges during implementation. Thus, one should be prepared to evaluate and adjust as needed.

Moreover, instructors should recognize that course evaluations (student evaluation of instructors) might be impacted. For the semester examined in the current study, the course ratings were lower than previous semesters (3.91/5.00 in the semester in question compared to 4.59/5.00 and 5.00/5.00 for the previous two semesters). This could have implications for others wishing to try this approach. Some departments and colleges embrace a culture of innovativeness and are accepting of the occasional anomaly in course evaluations. However, depending on the specific situation at any given university, it may be wise for untenured faculty to seek less drastic approaches to flipping a course. Perhaps, try flipping a few individual lessons, rather than a whole course.

Recommendations for Researchers

Flipping a classroom should be further investigated to determine the efficacy of the approach in a variety of different contexts. Much of the current research, including this study, focuses on student perceptions. Additional research should be conducted to determine the short-term and long-term outcomes of the approach. The participants felt they learned the course content and believed the course objectives were accomplished using the flipped classroom approach. However, empirical research should be conducted in order to determine whether or not the flipped classroom approach increased content knowledge and skill acquisition compared to a traditional teaching approach. Future research should also be conducted to determine if the flipped approach is more appropriate for certain types of courses or intended learning outcomes. This particular course focused on skill development, but would the flipped classroom approach be effective in a classroom that focused on content knowledge alone? It would also be worthwhile to investigate some specific aspects of the online lectures (length, type of media, etc.). The participants did not appreciate looking at a PowerPoint slide while listening to someone read from the slide. Therefore additional media options should be investigated in order to determine if a different media option would be received more positively by the students.

References

Baker, J. W. (2000, April). *The "classroom flip": Using web course management tools to become the guide by the side.* Paper presented at the 11th International Conference on College Teaching and Learning, Jacksonville, FL.

Berg, B. L. (2001). *Qualitative research methods for the social sciences*. Needham Heights, MA: Allyn and Bacon.

Bloom, B. S. (1956). *Taxonomy of educational objectives. Handbook 1: The cognitive domain.* New York, NY: David McKay Co Inc.

Bransford, J., Brophy, S., & Williams, S. (2000). When computer technologies meet the learning sciences: Issues and opportunities. *Journal of Applied Developmental Psychology, 21*(1), 59-84.

Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five traditions.* Thousand Oaks, CA: Sage Publications.

Crotty, M. (2003). *The foundations of social research*. Thousand Oaks, CA: SAGE Publications.

Denzin, N. K., & Lincoln, Y. S. (1994). *Handbook of qualitative research*. Thousand Oaks, CA: Sage Publications.

Doerfert, D. L. (Ed.). (2011). *National research agenda: American Association for Agricultural Education's research priority areas for 2011-2015*. Lubbock, TX: Texas Tech University, Department of Agricultural Education and Communications. Retrieved from http://aaaeonline.org/files/research_agenda/AAAE_NRA_(2011-15)_full_report.pdf

Dooley, K. E. (2007). Viewing agricultural education research through a qualitative lens. *Journal of Agricultural Education, 48*(4), 32-42. doi: 10.5032/jae.2007.04032

Erlandson, D. A., Harris, E. L., Skipper, B. L., & Allen, S. D. (1993). *Doing naturalistic inquiry: A guide to methods.* Newbury Park, CA: Sage Publications.

Ewing, J. C., & Whittington, M. S. (2009). Describing the cognitive level of professor discourse and student cognition in college of agriculture class sessions. *Journal of Agricultural Education, 50*(4), 36-49. doi: 10.5032/jae.2009.04036

Frederickson, N., Reed, P., & Clifford, V. (2005). Evaluating web-supported learning versus lecture-based teaching: Quantitative and qualitative perspectives. *Higher Education, 50*, 645-664.

Gardner, J. G. (2012, August). *The inverted agricultural economics classroom: A new way to teach? A new way to learn?* Paper presented at the Agricultural & Applied Economics Association's Annual Meeting, Seattle, WA.

Glesne, C. (1999). *Becoming qualitative researchers: An introduction*. New York, NY: Longman.

Lage, M. J., Platt, G. J., & Treglia, M. (2000). Inverting the classroom: A gateway to creating an inclusive learning environment. *Journal of Economic Education, 31*, 30-43.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Newbury Park, CA: Sage Publications.

McCarthy, J. P., & Anderson, L. (2000). Active learning techniques versus traditional teaching styles: Two experiments from history and political science. *Innovative Higher Education, 24*(4), 279-294.

Merriam, S. (1988). *Case study research in education: A qualitative approach.* San Francisco, CA: Jossey-Bass.

National Research Council. (2009). *Transforming agricultural education for a changing world*. Washington, DC: National Academies Press.

Roberts, T. G., Stripling, C. T., & Estepp, C. M. (2010). A conceptual model of learning activities for college instructors [Abstract]. *NACTA Journal, 54*(1) Supplement, 71.

Shimamoto, D. (2012, April). *Implementing a flipped classroom: An instructional module.* Presentation at the Technology, Colleges, and Community Worldwide Online Conference, Honolulu, HI. Retrieved from http://scholarspace.manoa.hawaii.edu/bitstream/handle/10125/22527/ETEC690-FinalPaper.pdf?sequence=1

Strayer, J. F. (2007). *The effects of the classroom flip on the learning environment: A comparison of learning activity in a traditional classroom and a flip classroom that used an intelligent tutoring system*. (Unpublished doctoral dissertation). The Ohio State University, Columbus, OH.

Tesch, R. (1990). *Qualitative research: Analysis types and software tools.* London, England: RoutledgeFalmer.

Whittington, M. S. (1995). Higher order thinking opportunities provided by professors in college of agriculture classrooms. *Journal of Agricultural Education, 36*(4), 32-38. doi: 10.5032/jae.1995.04032