As universities aim to prepare students for future careers, programs should address the development of students' employability skills – an area identified as a significant gap between education and the needs of employers in the food, agriculture, and natural resources (FANR) sector (National Academies of Sciences, Engineering, and Medicine [NASEM], 2021). College students are more likely to be hired by employers if they have engaged in authentic, real-world experiences in their undergraduate careers (Dunnington et al., 2007). As such, universities should foster environments in which students are actively engaged in the learning process (Gibson et al., 2018). Agricultural courses and programs often face difficulties nurturing leadership and critical thinking skills (Arum & Roska, 2011; Strong et al., 2021). According to NASEM (2021), educational methods need improvement to enhance employer and alumni satisfaction in FANR programs. Moreover, employers require workers to be adaptable and self-managing with additional skills, such as collaborating in diverse groups and using interpersonal and communication skills (NASEM, 2021).

Capstone courses, or culminating courses in which students can apply previously learned competencies, can provide students with authentic career-focused experiences to foster the development of employability skills such as teamwork, communication, and interpersonal skills (Dunlap, 2005; Schachter & Schwartz, 2009). NASEM (2021) discovered intentional instructional strategies and diverse experiences, including extracurricular activities, can be used to develop employability skills. Project-based learning (PBL) is an instructional strategy where students engage with a real-world or career-oriented project to facilitate learning. PBL increases student engagement when compared to alternative methodologies (Helle et al., 2006).

To cultivate career-ready students, faculty must extend beyond traditional lecture-based delivery and create an environment that encourages active student engagement while fostering creativity and critical thinking in courses (Delialioglu, 2012; Gibson et al., 2018; Nilson, 2016). To meet the needs of FANR, agricultural companies should diversify their talent to include farmers, scientists, engineers, and communications professionals (NAESM, 2021). In this study, we explored the perspectives and encounters of students enrolled in an agricultural communications capstone course. We sought to gain insights into students' opinions and experiences regarding PBL and to assess their sense of career preparedness upon finishing the course and program. Further, we aimed to advance the scholarship of teaching and learning in agricultural communications settings through this work.

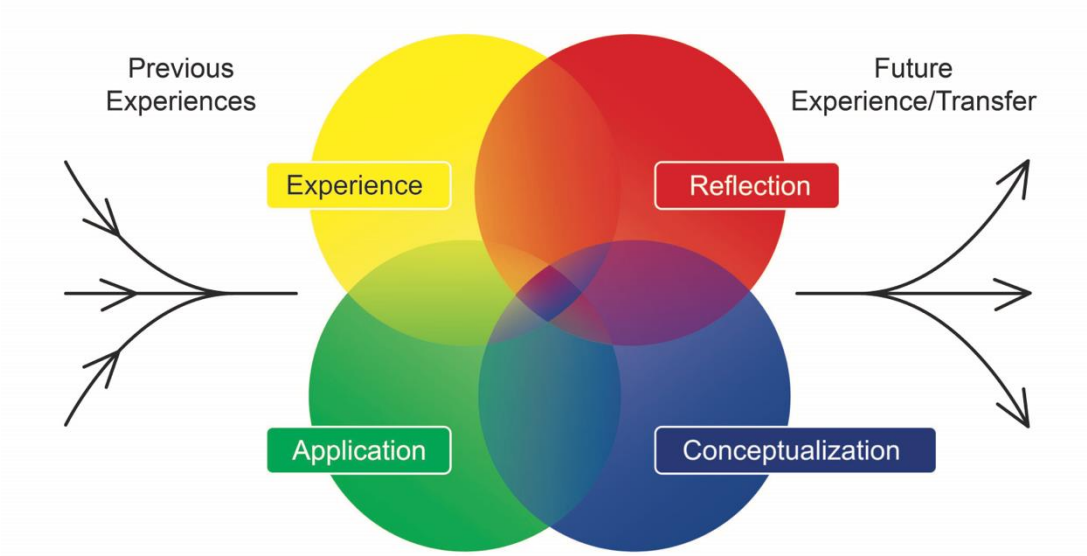
Conceptual Framework & Literature Review

This study was framed with experiential learning theory and PBL teaching methodology (Dewey, 1897; Kolb, 2015; Nilson, 2016). "Education must be conceived as a continuing reconstruction of experience; the process and goal of education are one and the same thing" (Dewey, 1897, p. 79). Kolb (2015) proposed experiential learning theory as an integrative perspective on combining experience, perception, cognition, and behavior into a learning experience. Learning is a continuous process built around experiences, reflection, conceptualization, and application of findings (Kolb, 2015). Allowing students to have concrete experiences, like those facilitated in a capstone course, provides students the ability to test their perceptions and ideas. People naturally create meaning from their experiences through

conversations and interactions with others (Vygotsky, 1978). Interacting with those who have varying life experiences, values, and perspectives can enhance learning experiences (Kolb & Kolb, 2005). A visual model of the experiential learning process is presented in Figure 1.

Figure 1

Model of the Experiential Learning Process



Note. From Coleman et al. 2024.

The experiential learning cycle can begin with the learner having a concrete experience, meaning the learner is actively engaged in the task whether it has happened before or is a new experience (Coleman et al., 2024; Kolb, 1984). Next, the learner reflects on their experience and draws conclusions by connecting prior knowledge and new ideas, also known as abstract conceptualization (Kolb, 1984). The last step in Kolb's (1984) cycle is active experimentation, where the learner(s) put their new knowledge into action. The experiential learning process is cyclical; a learner can enter at any stage in the cycle. However, learners must complete all the stages in the cycle for an experience to be educative (Coleman et al., 2024; Kolb & Kolb, 2005; Roberts, 2006).

One teaching method for implementing the experiential learning process is PBL (Helle et al., 2006). PBL is an important part of agricultural education programs as it allows for real-world application of concepts learned in class (Roberts & Harlin, 2007). Students are better prepared for careers when they can demonstrate what they have learned by putting their knowledge into action (Martinich et al., 2006). PBL challenges students to think critically, work through real-world applications, practice effective communication, collaborate, and engage in interdisciplinary learning (Lattimer & Riordan, 2011; Nilson, 2016). Individual and group projects are found to be beneficial to students' learning. A teacher should facilitate these projects, rather than teach, and encourage learners to connect experience(s) to learning (Roberts & Harlin, 2007). Kuh (1995) opined undergraduate students who were tasked with planning,

decision making, and communicating were encouraged to interact with people outside their groups and with different backgrounds. Out-of-class experiences provide unique social and personal challenges and encourage students to integrate different views, social challenges, and other matters into their formal academic program (Kuh, 1995).

Post-secondary education can use the tenants of PBL to facilitate a real-world experience and encourage students to think critically to progress in the learning process (Helle et al., 2006; Roberts & Harlin, 2007). Helle et al. (2006) concluded the following tenants while researching PBL in post-secondary education:

> PBL can provide a student with (1) a very concrete and holistic experience regarding a certain process; (2) the integration of subject material and the ability to apply it as circumstances dictate [and] (3) a method of guided discovery learning with the intention of promoting self-regulated deep-level learning. (p. 308)

Students enrolled in post-secondary education are also more attractive to prospective employers if they have experienced realistic events during their educational careers (Dunnington et al., 2007). These experiences provide students an opportunity to develop practical knowledge and skills, which exceed the expectations in a typical lecture-based course. Using PBL in the classroom can provide students with an introduction to a certain field of study or a transition to working life (Helle et al., 2006).

As educators continue to seek ways to provide practical learning experiences in post-secondary education, Gibson et al. (2018) discussed a need for facilitating a more creative environment for students in agricultural communications. Research has been conducted on capstone and project-based approaches to agricultural communications courses (Hall et al., 2009; Kelemen et al., 2009; Kennedy et al., 2017; Loizzo et al., 2016; Loizzo et al., 2018; Loizzo et al., 2019; Loizzo & Lillard, 2015; Rushing et al., 2014). Researchers have found such courses need intentional and organized planning and facilitation, instructors should balance student voice and choice, and course assignments should mimic industry environments (Loizzo et al., 2018; Loizzo & Lillard, 2015). Students often exit such courses with collaboration and teamwork skills and the ability to apply technical communication skills in real-world environments (Keleman et al., 2009; Kennedy et al., 2017; Loizzo et al., 2016; Rushing et al., 2014).

However, within the literature on agricultural communications capstone and PBL courses, studies have been conducted that summarize the approach and products of such courses (Hall et al., 2009), examine non-print media courses (Kelemen et al., 2009; Kennedy et al., 2017; Loizzo et al., 2016; Loizzo et al., 2018; Loizzo et al., 2019; Loizzo & Lillard, 2015), or focus on experiential and service learning (Kelemen et al., 2009; Kennedy et al., 2017; Rushing et al., 2014). Fewer studies have explicitly focused on PBL (Loizzo et al., 2016; Loizzo et al., 2018; Loizzo et al., 2019; Loizzo & Lillard, 2015), and only one, non-PBL-framed study was conducted in a print-media (i.e., magazine) course (Rushing et al., 2014). Therefore, a gap exists in studying PBL and its implications in undergraduate, agricultural communications, print-media courses.

Purpose and Questions

The purpose of this study was to explore students' perceptions and experiences of PBL and career preparedness in an agricultural communications capstone course. This study was guided by one research objective and two research questions.

Objective:

1. Describe student perceptions of a project-based, agricultural communications, capstone course using a quantitative student survey of instruction.

Questions:

1. How did students perceive the structure of a project-based, agricultural communications, capstone course?
2. To what extent did students perceive an agricultural communications capstone course prepared them for their future?

Context of the Study

In 1927, Oklahoma State University first offered agricultural journalism as an academic major, which has since been renamed to agricultural communications. The program itself has grown to be one of the largest and most respected agricultural communications programs in the nation (Miller et al., 2015). By combining hands-on instruction with real-world experience, graduates of Oklahoma State University's agricultural communications degree program are prepared to face the challenges in their career path. Students enrolled in the course *AGCM 4413: Agricultural Communications Capstone* engaged in a semester-long project. The *Cowboy Journal* is a magazine designed and published by students during their capstone course as seniors in agricultural communications. This project emphasized practical application of writing, editing, design skills, and software application. The course objectives were to (a) apply skills and knowledge in journalism, graphic design, marketing/sales, and photography gained through prior coursework to a publication; and (b) enhance skills in gathering, writing, and editing agricultural news features; selling, designing, and creating sponsorships; producing effective layout and design; and gaining experience working as a team member.

The instructor of the course incorporated various aspects of PBL as outlined by Helle et al. (2006). Grounded in experiential learning theory, this approach involves integrating and applying existing knowledge and skills to new tasks, addressing real-world scenarios, and culminating in the creation of a physical product by the end of the course (Kolb, 2015).

Methodology

A convergent mixed-methods design (Creswell & Plano-Clark, 2018) was used to conduct this study. This comprehensive approach involved collecting and analyzing both the qualitative and quantitative data concurrently, allowing researchers to triangulate findings and enhance the overall reliability of the study (Creswell & Plano-Clark, 2018). A convergent design

was used for this study because it allowed researchers to explore a research question from multiple perspectives. Having quantitative and qualitative data created a broader perspective of students' perceptions and experiences, enabling researchers to validate findings across both data sets (Creswell & Plano-Clark, 2018; Schoonenboom & Johnson, 2017).

Participants

A nonrandom, convenience sample was identified, which included all students enrolled in *AGCM 4413: Agricultural Communications Capstone* in the 2023 spring semester. The course had 22 students enrolled: three males and 18 females. Students enrolled in the course were seniors working toward obtaining their bachelor's degrees. Of the 22 students, nine participated in the anonymous, university-distributed, survey of instruction. Eighteen (82%) students participated in the focus groups, including the three males. The focus groups were conducted during the class final exam period in May 2023. Upon arrival, student participants received a printed copy of the consent form approved by the Institutional Review Board. The form was then read aloud to the class, and consent was obtained before students participated in the study. No incentive was provided to participants' aside from describing the potential benefits this research may have on future iterations of the course and to the profession.

Quantitative Instrumentation and Data Collection

The Student Survey of Instruction instrument was administered by Oklahoma State University's Assessment and Testing department via students' learning management system account. The existing survey data were retrieved from the course instructor and analyzed to provide insight on students' perspectives on the course and instructional style. Of the 22 students enrolled in the course, nine (41%) completed this evaluation process. Ten rating questions and two discussion questions were included in the instrument. The questionnaire included items related to the course structure, instructional methods, and the overall learning experience. Items were ranked on a Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Descriptive statistics (means and frequencies) were provided by University Testing and Assessment and are visualized below. The quantitative course evaluation was developed and implemented by University Testing and Assessment, which left no opportunity for it to be tailored by the researchers for this study. This is a limitation of the study.

Qualitative Focus Groups and Data Collection Protocol

The qualitative inquiry was undergirded with a phenomenological approach, in which our goal was to capture the essence of participants' perspectives of their experience (Creswell & Poth, 2025). The focus group protocol was guided by our research questions, the theoretical tenants of experiential learning, and PBL (Kolb, 1984, 2015), and the course objectives. The semi-structured focus group guide included five overall questions, eight project-based learning questions, and nine questions for perceptions on academic and career preparedness. The focus group protocol questions are listed in Table 1.

Table 1

Qualitative Focus Group Protocol Questions

Overall Course Questions

1. Reflecting on the course this semester, what are your overall impressions of the course?
2. In general, what things from this course will you always remember or think you might use in the future?
3. When comparing this to other college courses you have taken, what, if anything, has made this course different?
4. When thinking about the assignments and activities of this course, which do you feel have been the most impactful and why?
5. If you could change one thing about this course, what would it be?

Project Based Learning Related Questions

1. How did the assignments and structure of this course affect your learning?
2. What are your thoughts on the project-based approach of this course? Did some aspects of the course work better than others?
3. What type(s) of feedback did you receive?
4. How did you apply that feedback to improve your work?
5. To what extent did you feel you had freedom to express your creativity in this course?
6. Talk to me about a time during this course where you felt challenged and had to think critically to overcome the situation?
7. How did you overcome the situation?
8. Talk to me about how you feel knowing your work will be published in the *Cowboy Journal*?

Perceptions on Academic and Career Preparedness

1. This is considered one of the capstone courses for agricultural communications, knowing that, describe your experiences with the assignments?
2. In your opinion, which aspect of the course was the most difficult and why?
3. What soft skills did you use in this course and how did you apply them?
4. In your opinion, was this course effective in providing a practical learning experience?
5. After completing this course do you feel more confident in your skills and abilities, and has it affected your career decisions after graduation?
6. Was there anything from this course and project process you didn't expect to learn? (i.e. things that were not necessarily related to the course content of agricultural communications; things your instructor would be surprised about)
7. What are some examples of how you will use the information and skills learned in this course to other courses or your career?
8. What do you feel you gained the most in this course?
9. How did you measure your success in the course? Is that measurement different than in courses you've previously taken?

The focus groups were moderated by three graduate teaching assistants in the Department of Agricultural Education, Communications and Leadership who were not involved with the course. I, the lead researcher, was a moderator. The two other moderators were non-author volunteers. To ensure uniformity across the three focus groups, a meeting was conducted with the moderators before conducting the focus groups to review the protocol. We discussed best practices for conducting semi-structured, focus group interviews. The moderators were directed to foster a neutral and supportive environment during the sessions, employing audio-recording to capture participant responses and maintain accuracy in recording findings. Students were then randomly organized into three focus groups, and the interviews lasted approximately 30 to 45 minutes. Focus group transcriptions were verified by the lead researcher.

Additional qualitative data were obtained through feedback provided by students in the two open-ended response questions in the course survey of instruction. The focus group was used as the primary source of qualitative data, and the course evaluation questions were used for data triangulation. The data were analyzed using the constant comparative method to identify similarities and differences and emerging patterns or themes in the data (Glaser & Strauss, 1967; Saldaña, 2021). Glaser and Strauss (1967) discussed three rounds of analyzing data called open, axial, and selective coding. The initial, or open coding phase, was conducted by the lead researcher. This phase included reading through the data inductively to identify concepts and assigning labels or codes to these concepts. The next stage was axial coding, where the lead researcher and one additional researcher began identifying themes or categories emerging from the open coding. Lastly, a team of three researchers met to negotiate and selectively code the qualitative data. This final step resulted in two overarching themes and eight sub-themes (Glaser & Strauss, 1967; Saldaña, 2021).

Rigor and Trustworthiness

Maintaining the rigor and trustworthiness of the data collection was a priority to uphold the credibility and reliability of the findings (Tracy, 2010). Several practices contributed to this, including methodological transparency with participants in the focus group, data triangulation, acknowledgement of the researcher's reflexivity, and maintaining consistent data collection procedures (Tracy, 2010). Moderators of the focus groups were transparent with participants by clearly communicating the research objectives, methods, and potential biases, thereby fostering trust and ensuring the integrity of data collected (Schoonenboom & Johnson, 2017; Tracy, 2010). The data collected was triangulated, which involved using multiple data sources or methods to validate findings to enhance the credibility of the interpretations (Lincoln & Guba, 1985). The protocol was reviewed by three faculty experts familiar with focus groups, and minor edits were made for content and clarity. Implementing these practices ensured the rigor and trustworthiness of the data collected, allowing for insightful and meaningful interpretations to be built upon the qualitative data.

Reflexivity Statement, Narrated by the Lead Researcher

As a graduate student conducting research within my program area, it is important to acknowledge and reflect on my positionality and potential biases throughout the research process. My background, experiences, and pre-existing knowledge in agriculture and education

shape my perspectives and may influence how I approach and interpret the data. Being cognizant of my own subjectivity is crucial for maintaining transparency and rigor in the research. I am a graduate assistant within the agricultural communications program at Oklahoma State University; however, I was not an instructor of this course. The additional researchers are faculty from the same department, and one researcher was the instructor of the course but did not collect data directly. We recognize our positions within the agricultural communications program at Oklahoma State University may impact the interactions with participants and our analysis of the data. We have attempted to check our biases, when possible, especially though researcher negotiation and bracketing.

I am mindful of the potential impact of power dynamics, considering the hierarchical structure inherent in academia. The graduate students and I who facilitated the focus groups understand we hold a certain level of authority in the research context, and this may influence the dynamics of participant interactions. We created a respectful and equitable research environment for participants. Throughout the research journey, I committed to continuous self-reflection, seeking feedback from advisers to enhance the rigor and trustworthiness of the study.

Results

This study investigated the perceptions and experiences of students in a PBL capstone course. Through an end-of-course evaluation questionnaire and focus group discussions, participants shared their insights regarding the project-based capstone course. Quantitative, descriptive results from the course questionnaire are presented. Qualitatively, two overarching themes emerged: (a) project-based learning: "I can do this. I did this," and (b) realistic application: an invaluable foundation. The first theme, PBL, included four sub-themes: (a) critical thinking: "trial by fire," (b) feedback … "is really critical," (c) pride and effort: "we're making a freaking magazine," and (d) project fatigue: "it's hard to not have an attitude." The second theme, realistic application: an invaluable foundation, included two sub-themes: (a) collaboration: balancing "so many personalities," and (b) burnout and stress: "a million little things."

Quantitative Results

Results from the questionnaire showed an overall mean of 4.33 for the agricultural communications capstone course. Item means ranged from 3.89 to 4.78. The highest scored item, *I was satisfied with the level and quality of communication I had with the instructor*, resulted in a mean of 4.78. However, when asked if *the course helped me develop a deeper appreciation for the subject*, the mean was 3.89, the lowest of the survey results. Participants' responses to the survey items assessing the course and its context are summarized in Table 2. The Likert scale ranged from 1 (strongly disagree) to 5 (strongly agree) with frequencies and percentages presented for each item, respectively.

Table 2

*Student Survey of Instruction Results (*n = *9)*

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean
	f(%)	*f*(%)	*f*(%)	*f*(%)	*f*(%)	
The course helped me develop a deeper appreciation for the subject.	1(11.1)	2(22.2)	0	0	6(66.7)	3.89
Presentation of course content enhanced my learning of the subject.	0	2(22.2)	1(11.1)	0	6(66.7)	4.11
I would describe this as an excellent course.	0	2(22.2)	1(11.1)	0	6(66.7)	4.11
The course was organized in a clear and effective manner.	0	2(22.2)	0	1(11.1)	6(66.7)	4.22
I would recommend this course to others.	0	1(11.1)	2(22.2)	0	6(66.7)	4.22
I would describe the instructor as respectful and inclusive toward all students.	0	2(22.2)	0	0	7(77.8)	4.33
Evaluation and testing procedures were aligned to instruction	0	0	2(22.2)	1(11.1)	6(66.7)	4.44
I would describe this instructor as an excellent teacher	0	0	2(22.2)	0	7(77.8)	4.56
The course reflected the plans outlined in the syllabus	0	0	1(11.1)	1(11.1)	7(77.8)	4.67
I was satisfied with the level and quality of communication I had with the instructor	0	0	1(11.1)	0	8(88.9)	4.78

Note. 1 = Strongly disagree; 5 = Strongly agree

Qualitative Data

Theme One – Project-Based Learning: "I Can Do This. I Did This."

Throughout the focus group interviews, participants frequently discussed PBL and some tenants of the pedagogical approach. Many participants discussed one or several of the sub-themes when responding to questions surrounding PBL. Participants expressed a profound appreciation for PBL, citing its effectiveness in honing critical thinking skills and fostering collaboration. One participant described the course's integration of their educational journey, stating "I can actually do this, and I'm able to take those different skills into everything I've been involved in." This sentiment was echoed by another participant who emphasized the realization of their capabilities, stating, "I had all these skills coming into this class, but this was the first time I've [applied them] and realized I can do this. I did this."

Critical Thinking: "Trial by Fire." As a capstone course, this course is designed to combine the last several years of instruction into a final product. Many students described feelings of being challenged but also appreciated how the course encompassed the cumulative curriculum from their major-specific coursework in agricultural communications. One student described the course by stating: "It was cool to be able to take this course and be able to put all the things we've learned throughout our time here together and realize that I can actually do this." Moreover, participants highlighted the challenge of independently learning new concepts, describing it as a "trial by fire" where they had to persevere until assistance was available.

Students encountered additional hurdles. Among these challenges was navigating through software programs included in the curriculum. One student discussed "just relearning all that software some of us learned one or two years ago was extremely hard." Multiple students brought up the challenge of working with the computer programs, including InDesign and Illustrator, and the effort necessary to re-learn these applications. Another student reflecting on the course stated, "It was a lot of self-teaching, doing other research, and having to go back to other magazines [to see if] this is how this is supposed to be." Students noted much of the material involved further research and independent learning to accomplish tasks within the course.

In addition to academic challenges, students were encouraged to think beyond their program to complete their assigned story. Reflecting on their industry-specific magazine story, one student shared "I learned a lot, but it's definitely challenging to learn all this different vocabulary." The articles featured in the *Cowboy Journal* spanned topics from the Ferguson College of Agriculture and beyond. Going beyond their agricultural communications degree, one student reflected on their exploration of an agriculturally focused industry, stating "I wrote a story on [specific agricultural industry], and I got to learn all about it, and I never would have thought it's fascinating." Another student discussed "learning a lot more about the diversity of agriculture" through this course.

Feedback … "is Really Critical." Feedback played a pivotal role in shaping students' learning experiences in the course. "I think that feedback is really critical … from an editor's perspective, everybody has a different opinion on this story, and everybody has a different

viewpoint," said one participant. Another student talked about feedback, noting "it was really helpful because you can see something that you didn't think of and just fix it." Continuous feedback throughout the semester enabled students to consider their work from various angles, offering insights they may have otherwise overlooked.

Some students expressed apprehension toward peer feedback. For example, one participant stated they "had more apprehension from my peers' feedback … I don't know if I found those as insightful." Others found the feedback process insightful and beneficial saying, "peer edits got you opinions and a different perspective." Participants emphasized the need to critically evaluate their work using the feedback they received. One student stated, "we had to take the confidence in what we know and combat it with the feedback that we got," leveraging their own knowledge and experience to enhance their work.

Pride and Effort: "We're Making a Freaking Magazine." Students in the focus group were asked to describe how they felt knowing their work would be published in the biannual edition of the *Cowboy Journal*. It was observed in two of the three focus groups students smiled and waited eagerly to express their thoughts. In all three groups, students described how proud they were to have a published, tangible product to show off their work to their friends, family, and potential employers. One student stated, "It's just really cool to be holding the finished product in your hand and say I created this, or I was part of this."

Others spoke of the rigorous standards set by their professors, acknowledging the transformative impact of being held to industry standards with their work. "[The professors] hold us to such a high standard. They're pushing us so hard that once we go out into the industry, we're setting the industry standard really … we have the ethics and passion to create these pieces that have impact."

One student smiled and excitedly stated, "We're going to make a freaking magazine." Others were proud to have a tangible creation to showcase their efforts by saying "I like that it was something tangible … I had something that I just created, and I can take this item and show it to people versus [just taking] a test." Yet, beyond the individual achievements, students embraced a sense of camaraderie and community, celebrating not only their own successes but also those of their classmates and the program. One student described their level of pride in being on the project by stating,

> I've seen some other schools' magazines, and [I think], 'this doesn't measure up, not even a little bit.' And so, I think it's really cool to be a part of ag comm at Oklahoma State because we definitely take the standard completely different here.

Participants discussed a commitment to excellence, and many described how the project reaffirmed their dedication to setting a new standard within the field.

Project Fatigue: "It's Hard to Not Have an Attitude." Students discussed a primary challenge with PBL and this course was balancing between collaboration and individual well-being. These insights provided valuable reflections on the holistic nature of this academic approach. As students reflected on their experiences with PBL, they highlighted positive aspects of the course alongside the challenges encountered. Students discussed the realities of burnout and stress that accompanied working with such a large-scale project. One student highlighted the

difficulty of maintaining a positive atmosphere within a large group by stating, “It’s hard to keep a room full of 30 kids to not have an attitude or get stressed out and upset.”

The project-based course design also had its own set of challenges. Some students struggled with the relentless rounds of revisions and edits, often leading to project fatigue. “It’s hard to keep trying to edit the same stuff you’ve been editing for an entire semester,” confessed one student. “I feel like you get a little bit of burnout,” they added, highlighting the challenge of being engaged with the same material all semester.

Theme Two – Realistic Application: An Invaluable Foundation

Participants in the focus group discussed how the course was designed to mirror the realities of the workforce. The sub-themes emerged when students responded to questions surrounding perceptions of academic and career preparedness.

Participants reflected on the practical implications of their learning experiences, particularly in terms of academic and career preparedness. Many recognized the alignment between the skills acquired in the course and the demands of their future careers. As one participant articulated, “The job that I [will have] after I graduate is basically going to be exactly what we did in here. So, to me, I'm glad that I took the course and the courses offered.” Students also felt the course was realistic of the expectations found in industry.

As senior students nearing the completion of their bachelor’s degrees prepare for graduation and the transition into their respective careers, many reflected on the relevance of the skills acquired in the course beyond academia. “The foundation that I’ve gained from ag comm, I’ll definitely use that in any career that I choose moving on,” remarked one student, emphasizing the transferability of knowledge and skills. Students also expressed confidence in their abilities, thanks to the course's experiences. “We have the confidence that we can produce something of this magnitude,” noted another student, showcasing the transformative impact of their academic journey on their self-assurance and confidence in their capabilities.

Furthermore, participants acknowledged the broader applicability of the skills acquired, transcending specific career paths. Even those not pursuing careers in agricultural communications acknowledged the value of the course stating, “I’m not going into ag comm, but I think [this course] is something that’s invaluable that will benefit me for whatever career field I’ll go into.”

Collaboration: Balancing “So Many Personalities.” Collaboration emerged as a cornerstone of the learning experience, mirroring real-world scenarios and emphasizing teamwork in achieving collective goals. One participant stated, “When one person starts falling behind a little bit, you’re not just holding up your grade or assignment, you’re holding up the magazine.” Students discussed the transformative impact of collaborative effects in the course. They noted the unique opportunity to collaborate with peers toward a common goal, emphasizing the significance of collective achievements. Reflecting on their experiences, one student remarked,

> This is the first class we've had that you're literally working with 21 other students to get one product, and I think that makes a huge difference [between] 'I'm at college [to take] classes,' and 'I'm at college to prepare myself for the real world.'

This realization resonated deeply, highlighting the shift from individual pursuits to collective endeavors in their academic journey.

Students expressed the value of collaborating and engaging with peers. One participant shared, "I wish we kind of met more as a team," revealing a desire for more opportunities to work as a group within the course framework. The appeal of collaboration was emphasized by several students who appreciated its reflection of real-world dynamics. They recognized the value of collaboration in a professional setting. As one student observed, "It's very collaborative, and I do like that because in the real world, there are a lot of people that collaborate." Such insights revealed the relevance of collaborative learning experiences in preparing students for the challenges of the real-world.

Students also learned the challenges of navigating a team environment and the diversity of different personalities, strengths, and weaknesses. "A big skill for this one [course] was the teamwork aspect and learning how to [balance] so many personalities," remarked one student, acknowledging the multifaceted nature of interpersonal interactions. Some students welcomed the trials of collaboration, while others found themselves challenged. One student recounted a conversation with a classmate who struggled to keep pace and failed to meet shared expectations. The students addressed their concerns directly, stating their frustrations. However, the student proposed a solution, seeking to find common ground by asking "How can I help support you so we can as a group get this done?" This exemplified their ability to navigate through conflicts constructively and foster collaboration in a professional setting.

Burnout and Stress: "A Million Little Things." When sharing their perceptions on career preparedness, burnout was brought up by multiple participants in the focus groups. Beyond the demands of the capstone and additional coursework, senior students acknowledged the multitude of challenges awaiting them beyond academia. "Not only did we have this big project going on, but we had a million other little things going on," noted one student, showcasing the overwhelming nature of their senior year. Another student mentioned "it was a stressful semester to me outside of class with work and [preparing] for after college." This was a common theme in the focus groups, as students focus on finishing the *Cowboy Journal* magazine while preparing for their next steps after graduation.

One student advocated for a proactive approach, emphasizing the importance of staying positive and supporting one another. "Keep the morale up and tell someone they're doing a great job," they advised, highlighting the significance of creating a supportive classroom. In acknowledging the risk of burnout, the same student emphasized the importance of checking in with classmates to ensure their well-being. "Just to make sure they're doing okay," they added, showing the value of empathy in a stressful environment.

Additional qualitative data was obtained through feedback provided by students in the course. Participants said "the course was confusing" or the instructor "needs to have all the

folders ready that could possibly be needed" to ensure students receive more direction and do not become overwhelmed from assignments and expectations.

Conclusions, Discussion, and Recommendations

This convergent mixed-methods design investigated students' perceptions and experiences in an agricultural communications capstone course. Through the student survey and in-depth focus group discussions, participants provided valuable insights into their experiences with the PBL approach. The findings of this study further support the use of PBL and its practical application in higher education. By integrating theoretical knowledge with real-world experiences, students develop critical skills essential for success in both academic and professional endeavors (Coleman et al., 2024; Gibson et al., 2018; Helle et al., 2006). These insights provide valuable implications for curriculum design and pedagogical approaches aimed at fostering holistic learning experiences in higher education.

The theme of PBL was prominent, with students expressing an appreciation for creating a physical product encompassing their knowledge and skills developed through the program. Through participating in real-world learning experiences, students felt prepared to enter the AFNR workforce, which aligns with the higher education needs outlined by NASEM (2021). Students highlighted the realistic application of course materials and its relativity to the workplace, which is congruent with the findings of Loizzo and Lillard (2015). The course provided preparation for post-graduation endeavors, with students expressing confidence in their abilities and recognizing the transferability of skills across career paths.

Loizzo et al. (2018) noted students can become overwhelmed when the learning environment reflects a real-world setting. Students in our course acknowledged challenges such as project fatigue, burnout, and stress, particularly when navigating the large-scale project and working with an entire class of peers. A certain level of pressure can simulate an authentic workplace setting; however, it is crucial for instructors to find a balance between pressure and burnout, allowing students to concentrate on learning (Loizzo et al., 2018). Instructors can mitigate student burnout and stress by establishing expectations at the beginning of the course, providing a tentative schedule and deadlines, and being readily available for assistance when needed. It is essential for instructors to act as facilitators rather than teachers, encouraging students to relate their experiences to the task or project at hand (Roberts & Harlin, 2007).

This study provided valuable insight into PBL in higher education, including its benefits and challenges. By using these findings, educators can better support students' learning and prepare them for success in academia and professional endeavors. Incorporating PBL methods into a capstone course offers numerous benefits for student engagement and real-world skill development (Helle et al., 2006; Loizzo & Lillard, 2015; Nilson, 2016). Several recommendations emerged from the research to enhance the effectiveness of such courses. Instructors should design authentic projects mirroring industry scenarios, prompting students to apply their knowledge, skills, and creativity to develop innovative solutions or overcome challenges (Kennedy et al., 2017). When possible, classrooms should simulate authentic settings by employing team dynamics, project timelines, and interactions with industry professionals. Students immersed in these environments can develop essential employability, or "soft," skills

sought by employers (Dunlap, 2005; Dunnington et al., 2007). Regular checkpoints, such as presentations, progress reports, or feedback, are important to effective experiential and PBL approaches (Coleman et al., 2024; Kolb, 1984; Rushing et al., 2014). These checkpoints facilitate monitoring student progress, delivering timely feedback, and instilling accountability within the learning process. By adhering to experience-oriented, PBL principles, educators can foster a collaborative and reflective learning environment to enhance student success (Coleman et al., 2024; Kolb, 1984).

Instructors should prioritize clear delineation of objectives and expected outcomes of the capstone project. By providing students with a transparent understanding of the project's purpose, instructors can create a sense of direction and purpose among students. This emphasis on real-world application and problem-solving aligns with the foundational principles of PBL (Dunlap, 2005; Kolb & Kolb, 2005; Roberts & Harlin, 2007). Furthermore, organizing the course into clearly defined phases mirrors the structure found in real-world settings. This approach enhances the authenticity of the learning experience and facilitates students' progress through a project. By breaking down the project into manageable stages, instructors can scaffold student learning and promote a deeper understanding of the subject matter.

Incorporating a project-based capstone course into post-secondary programs enhances the learning experience by integrating curriculum knowledge with real-world experiences. This holistic approach offers students a realistic experience to better equip them for the challenges of the workforce, as suggested by Helle et al. (2006). By adopting these recommendations, instructors can enhance student engagement, promote real-world skill development, and foster meaningful learning experiences.

Capstone projects serve a pivotal role in higher education, providing students with opportunities to synthesize knowledge, practice skills, and demonstrate comprehension in their field of study (Gibson et al., 2018; Kuh, 1995). However, a need exists for continued research surrounding PBL and career preparedness in post-secondary agricultural communications settings. It is necessary for both the program and its instructors to equip students with the skills and knowledge necessary for success in their chosen career paths. With further research, educational programs and instructors can better implement PBL to prepare students for the AFNR workforce.

Future research should evaluate student performance and success in a capstone course implementing PBL compared to traditional approaches. Using a convergent mixed-methods design like this study, researchers can explore and compare student academic performance, skill acquisition, retention of knowledge, and post-graduation outcomes to the different learning styles (Helle et al., 2006; Roberts & Harlin, 2007). Qualitative assessments can also assess student perceptions and experiences to provide a comprehensive understanding of traditional courses versus PBL. If conducted, such research would inform curriculum development, instructional practices, and institutional policies aimed at optimizing and advancing student learning outcomes.

Additional research should also focus on evaluating the employability outcomes of students who have completed a PBL capstone course in their respective career fields. By

comparing the employability of students who have undergone PBL capstone experiences with those who have not, researchers can assess the impact of educational approaches on students' readiness for the workforce. Qualitative data could additionally explore employee and employer perspectives on the value of PBL in enhancing graduates' employability skills such as teamwork, problem-solving, communication, and adaptability (Dunnington et al., 2007). These findings could help bridge the gap between academia and the workforce while better preparing students for post-graduation.

The gap in research concerning the application of PBL in post-secondary education has implications for agricultural communications programs. Additional research is needed to offer deeper insights and empirical evidence regarding student learning outcomes within capstone projects. Furthermore, understanding employers' expectations and facilitating real-world exposure can enhance students' attractiveness to potential employers upon graduation.

References

Arum, R. & Roska, J. (2011). *Academically adrift: Limited learning on college campuses.* University of Chicago Press.

Coleman, B., Bunch, J., & Roberts, T. G. (2024). Experiential learning in agricultural education: A philosophical discussion. *Journal of Agricultural Education*, *65*(1), 283–302. https://doi.org/10.5032/jae.v65i1.2479

Creswell, J. W., & Plano Clark, V. L. (2018). Designing and conducting mixed methods research. SAGE Publications. https://doi.org/10.1177/1937586719832223

Creswell, J. W., & Poth, C. N. (2025). *Qualitative inquiry and research design: Choosing among five approaches* (5th ed.). SAGE Publications.

Delialioglu, O. (2012). Student engagement in blended learning environments with lecture-based and problem-based instructional approaches. *Journal of Educational Technology & Society*, *15*(3), 310–322. http://www.jstor.org/stable/jeductechsoci.15.3.310

Dewey, J. (1897) My pedagogic creed. *The School Journal*, *54*, 77–80.

Dunlap, J. C. (2005). Problem-based learning and self-efficacy: How a capstone course prepares students for a profession. *Educational Technology Research and Development*, *53*(1), 65–85. http://www.jstor.org/stable/30220418

Dunnington, E. A., Eversole, D. E., & Umberger, P. (2007). University livestock sale provides an exceptional teaching tool and effective program support. *NACTA Journal*, *51*(2), 34–39.

Gibson, C. Hancock, H., Irlbeck, E., & Meyers, C. (2018). Cultivating creativity: Faculty conceptions of creativity in agricultural communications students. *Journal of Applied Communications*, *102*(1). https://doi.org/10.4148/1051-0834.1753

Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Aldine Publishing Co.

Hall, K., Rhoades, E., & Agunga, R. (2009). Student publications' place in the agricultural communication curricula. *Journal of Applied Communications, 93*(1). https://doi.org/10.4148/1051-0834.1202

Helle, L., Tynjälä, P., & Olkinuora, E. (2006). Project-based learning in post-secondary education: Theory, practice and rubber sling shots. *Higher Education*, *51*(2), 287–314. http://www.jstor.org/stable/29734978

Kelemen, D. B., Cartmell II, D. D., & Sitton, S. P. (2009). Service learning: A case study in an agricultural communications course. *Journal of Applied Communications, 93*(3). https://doi.org/10.4148/1051-0834.1195

Kennedy, L. W., Akers, C., & Jackson, R. B. (2017). Using an experiential learning design to teach photography in agricultural communications. *Journal of Applied Communications, 101*(4). https://doi.org/10.4148/1051-0834.1222

Kolb, D. A. (2015). *Experiential learning: Experience as the source of learning and development.* Pearson Education.

Kolb, A. Y., & Kolb, D. A. (2005). Learning styles and learning spaces: Enhancing experiential learning in higher education. *Academy of Management Learning & Education*, *4*(2), 193–212. http://www.jstor.org/stable/40214287

Kolb, D.A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice Hall.

Kuh, G. D. (1995). The other curriculum: Out-of-class experiences associated with student learning and personal development. *The Journal of Higher Education*, *66*(2), 123–155. https://doi.org/10.2307/2943909

Lattimer, H., & Riordan, R. (2011). Project-based learning engages students in meaningful work. *Middle School Journal*, *43*(2), 18–23. https://doi.org/10.1080/00940771.2011.11461797

Lincoln, Y.S., & Guba, E.G. (1985). *Naturalistic inquiry*. Sage.

Loizzo, J., Borron, A., Gee, A., & Ertmer, P. A. (2016). Teaching convergence in 21st century undergraduate agricultural communication: A pilot study of backpack multimedia kits in a blended, project-based learning course. *Journal of Applied Communications, 100*(2). https://doi.org/10.4148/1051-0834.1033

Loizzo, J., Conner, N. W., & Cannon, K. J. (2018). Project-based learning for developing digital literacy in undergraduate science communication. *NACTA Journal, 62*(2), 142–150.

Loizzo, J., Harner, M. J., Weitzenkamp, D. J., & Kent, K. (2019). Electronic field trips for science engagement: The streaming science model. *Journal of Applied Communications, 103*(4). https://doi.org/10.4148/1051-0834.2275

Loizzo, J., & Lillard, P. (2015). In the field: Increasing undergraduate students' awareness of Extension through a blended project-based multimedia production course. *The Journal of Extension, 53*(1), Article 27. https://doi.org/10.34068/joe.53.01.27

Martinich, J. A, Solarz, S. L., & Lyons, J. R. (2006). Preparing students for conservation careers through project-based learning. *Conservation Biology, 20*(6), 1579–1583. http://www.jstor.org/stable/4124684

Miller, J. D., Large, M. M., Rucker, K. J., Shoulders, K., & Buck, E. (2015). Characteristics of U.S. agricultural communications undergraduate programs. *Journal of Applied Communications, 99*(4). https://doi.org/10.4148/1051-0834.1063

National Academies of Science, Engineering, and Medicine. (2021). *Creating the future workforce in food, agriculture, and natural resources: Proceedings of a workshop.* The National Academies Press. https://doi.org/10.17226/26065

Nilson, L. B. (2016). *Teaching at its best: A research-based resource for college instructors* (4th ed.). Jossey-Bass.

Roberts, T. G., Harlin, J. F. (2007) The project method in agricultural education: Then and now. *Journal of Agricultural Education, 48*(3), pp. 46–56. https://doi.org/10.5032/jae.2007.03046

Roberts T. G. (2006). A philosophical examination of experiential learning theory for agricultural educators. *Journal of Agricultural Education, 47*(1), pp. 17–29. https://doi.org/10.5032/jae.2006.01017

Rushing, T., Miller, J. D., Edgar, L. D., & Cox, C. (2014). Finding the five R's in exemplary agricultural publication capstone courses. *Journal of Applied Communications, 98*(2). https://doi.org/10.4148/1051-0834.1070

Saldaña, J. (2021). *The coding manual for qualitative researchers* (4th ed.). SAGE Publications.

Schachter, D. R., & Schwartz, D. (2009). The value of capstone projects to participating client agencies. *Journal of Public Affairs Education, 15*(4), 445–461. http://www.jstor.org/stable/25703147

Schoonenboom, J., & Johnson, R. B. (2017). How to construct a mixed methods research design. *Kolner Zeitschrift fur Soziologie und Sozialpsychologie, 69*(2), 107–131. https://doi.org/10.1007/s11577-017-0454-1

Strong, R., Dooley, K., Murphrey, T., Strong, J., Elbert, C., & Baker, M. (2021). The EVAL framework: Developing impact evaluation scholars. *Advancements in Agricultural Development*, *2*(3), 1–13. https://doi.org/10.37433/aad.v2i3.139

Tracy, S. J. (2010). Qualitative quality: Eight "big-tent" criteria for excellent qualitative research. *Qualitative Inquiry*, *16*(10), 837–851. https://doi.org/10.1177/1077800410383121

Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes* (M. Cole, V. Jolm-Steiner, S. Scribner, & E. Souberman, Eds.). Harvard University Press. https://doi.org/10.2307/j.ctvjf9vz4