Determining Student Connectedness in Agribusiness Asynchronous Courses

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Abstract

From the spring of 2021 through the spring of 2022 the Online Student Connectedness Survey (OSCS) was sent to students in Agribusiness classes at Doane University. The OSCS is known for measuring levels of perceived connectedness in online classes based on four categories of question: comfort, community, facilitation, and interaction and collaboration. Over the course of one year 70 survey responses were collected and analyzed to determine how to improve asynchronous online classes at Doane University. After receiving feedback from the OSCS it was determined that online classes struggle to establish a strong sense of community amongst their online peers. While this research paper fully investigates improving community in online learning it should be taken into consideration that other factors, such as student's residential or nonresidential status when completing the course may affect a students' sense of community. By expanding the thought process to think beyond the online classroom and into student's individual lives, one may be able to create a stronger sense of community online and a more efficient online classroom as a whole.

Introduction

The emergence of the Covid-19 Pandemic in 2020 brought forth an unprecedented shift in learning. In a matter of a few short weeks, in-person learning had switched to online learning.

Today, as the world has begun to transition back to an in-person learning format, it is clear that online education is here to stay. Most students who take online courses do so because of the convenience it provides from being able to complete the course whenever an individual has time (Bickle & Rucker, 2018, pg. 4-5). However, other aspects of online learning must be taken into consideration to ensure that the students are receiving a well-rounded learning experience. Quality of education, social interaction, and access to educational resources, are a few of the many factors that must be taken into account when determining the success of an online course (Muilenburg & Berge, 2005, pg. 29). Subsequent longitudinal studies might find variations in the intensity of student connectedness which could be correlated with the frequency of online course.

Doane University's Agribusiness program is a strictly online learning format that allows students to asynchronously complete online courses to obtain a major or minor degree in Agribusiness. In a pursuit to learn more about students' thoughts and improve the Agribusiness program the Online Student Connectedness Survey (OSCS) was sent out to all students who were enrolled in an agribusiness course at Doane University from fall of 2021 to spring of 2022.The purpose of the OSCS is to measure students perceived level of connectedness in an online degree program (Zimmerman & Nimon, 2017, pg. 25). To measure the perceived

connectedness the survey asks students a total of 25 questions that are divided into four categories: comfort, community, facilitation, and interaction and collaboration. The survey collected data on a 5 point scale. If students answered that they strongly disagree with a question the score would equate to a 1 and if they strongly agreed with a question the score would equate to a 5. The OSCS survey also collected qualitative data that allowed students to share their thoughts on the online course.

From fall 2021 to spring 2022 the Doane Agribusiness college collected a total of 70 responses to the survey which provided detailed insight into the program. As the survey responses were collected, we decided to focus our research on the category within the OSCS survey that received the lowest average score. Community received the lowest average score amongst the four categories with a 3.19. Listed below are the objectives that guided our research.

- Determine the best tool to collect student thoughts on the connectedness to Agribusiness Courses taken online.
- Analyze quantitative data gathered to better understand the various aspects of connectedness that can be used to improve course delivery..
- Analyze qualitative data to determine if there are any patterns or suggestions for improvements among online courses.

Literature Review

The purpose of this literature review is to further understand how students may interpret each of the community questions on the OSCS, to provide insights on how community has been built through the connections of these questions in previous research, and to provide understanding and clarity on other aspects of the research conducted through this study. The methods in this literature review could be added to online courses to increase community proponents of the course. Many of the suggestions in the literature review must be carefully considered for each different online class. While community is a critical aspect of each online classroom, each course may require different adaptations to best meet the needs of the students and professor. However, the best educational and learning experience must be at the forefront of the professor's mind.

Online Student Connectedness Survey

Over the past twenty years online education has taken over the world with its easy accessibility and flexibility in people's personal lives. Specifically in 2008 online education began to reach a record amount of people in the United States. Nearly 4.6 million students were

enrolled to complete an online course and 5.6 million the following year (Bollinger & Inan, 2012, pg. 42). It was this growth in the United States as well as a dramatic increase in online education in Turkey that led Doris Bollinger and Fethi Inan to create the Online Student Connectedness Survey.

While learning more about online education they discovered that while it did have benefits to the student such as convenience, oftentimes online students were experiencing dissatisfaction in their classes. Research conducted by Namin Shin suggested that transactional presence between their peers led to increased course satisfaction and transactional presence between students and instructors led to increased participation and potential learning (Shin, 2003, pg. 81). This research left Bollinger and Inan searching for a way to see if student connectedness could affect online course satisfaction. In 2012 Doris Bollinger and Fethi Inan created the Online Student Connectedness Survey (OSCS). This survey was used to measure the level of connectivity students feel in online classes and online programs. The survey uses 25 questions dispersed over four categories to measure the connectedness students feel in online classes: comfort, community, facilitation, and interaction and collaboration (Bollinger & Inan, 2012, pg. 48).

Question 9: I feel emotionally attached to other students in my online courses.

Community and forming emotional attachments have been in the forefront of conversation when it comes to online classroom communities. Particularly when thinking about Question 9, the type of emotional attachments individuals develop in online classes and how they develop the attachments should be taken into consideration. One theory that could be linked to the importance of developing attachments and learning would be the attachment theory. The attachment theory explains that forming lasting relationships as a child is critical to their emotional development (Sable, 2008, pg. 22). However, we believe this theory can be further extended beyond childhood and into adulthood, specifically in education. Students with stronger emotional attachments to their professors and classmates may feel more inclined to learn. In fact, it has been shown that there is a direct positive correlation between teachers' presence in online learning and their fulfillment of the class. The more presence teachers demonstrate in an online class the more connected and satisfied the students are likely to be (Beckmann & Weber, 2016, pg. 58).

While it is critical to look at the theory behind the importance of forming emotional attachments, it must also be investigated how to form these attachments in an online community. One online platform that has been beneficial in numerous online classes is Voice Thread. Voice Thread is an online space that allows students to collaborate by sending, receiving, and commenting on video messages. This platform allows students to go beyond written communication such as discussion and create a social identity for themselves and their

classmates (Bickle & Rucker, 2018, pg. 3). In turn this collaboration allows students to maintain an asynchronous environment while still being able to create a sense of community in the online classroom.

Other studies have shown that students are able to develop a deeper sense of community outside of the classroom on different platforms, such as Facebook. A study conducted by Dougherty and Andercheck found that classes that utilized Facebook as a means of communication outside of class enhanced students' learning and allowed students to form bonds with one another that they couldn't have otherwise developed in the online course (Yang et al., 2018, pg. 674).

Question 10: I spend a lot of time with my online course peers.

There are many ways in which online peers may spend time with one another in and outside the parameters of an online course. In class, some students may find that they have previous connections, or they might make new connections, that lead to them interacting with each other outside of the class. Within the classroom, there are many ways in which students spend time with each other. For example, while group projects are not widely favored among students they have been shown as a great way to increase community and connections in online courses.

Question 11: My peers have gotten to know me quite well in my online courses.

One aspect of online learning that is critical is incorporating connectivism. Connectivism plays a critical role in the emotional connection and success of a student, it "is founded on individual ideas and opinions, valuing diversity in the perspectives of others, lifelong learning, building relationships, interdisciplinary connections, current information, and risk taking" (Reese, 2015, pg. 580). It is vital that opportunities are provided to students in online classes to get to know one another to create an environment rich in connectivism. Through this practice students not only get to know each other better, but they benefit through their experiences together, and they also learn from each individual's personal experiences. Zoom meetings, online learning partners, Yellowdig, class Facebook groups, and student-facilitated discussion, are all examples of online activities that can help contribute to connectivism in the online classroom, help students to learn, and get to know each other.

Question 12: I feel that students in my online courses depend on me.

In online courses dependency is created by the professor. While some students may have some dependency on specific aspects in the class, dependency among all students is

created and maintained by the professor. According to Oxford Learner's Dictionaries, Dependency is "the state of relying on somebody/something, especially in a way you do not consider right or necessary" (Oxford University Press, n.d.). Even though it may not be necessary for professors to create assignments that make students depend on each other, research has shown that it provides numerous learning benefits as well as increased online community. A study observed by Baran and Correia found online students learned more and felt a stronger sense of online community when peer facilitation was used throughout discussions (Baran & Correia, 2009, pg. 342). Through this method the students felt more inclined to ask questions and could depend more on open conversation in discussions (Baran & Correia, 2009, pg. 342).

Question 13: I can easily make acquaintances in my online courses.

In online courses students are often in classes with numerous other students. While students may be completing the same assignments and participating in the same activities, there are two factors to consider when making acquaintances in online classes. The first factor is if professors are offering opportunities for students to make acquaintances and the second factor is if students are utilizing those opportunities. While it may appear difficult to make acquaintances in asynchronous courses there are certainly opportunities and assignments that can allow students to make connections with individuals in their class.

There has been extensive research on assignments, educational platforms, and opportunities that students can utilize to connect with other individuals through classes. As previously mentioned, the platform Voice Thread has had numerous research conducted on its ability to help build online community and active learning. It has been cited as a huge resource to increase online collaboration and engagement, which in turn is a fundamental way to make acquaintances (Kobayashi, 2013, pg. 234). Another way to connect to individuals outside of class is through social media platforms. Platforms such as Yellowdig have been specifically designed for instructors to bring a social media element to their online classes. Yellowdig acts as a social media outlet for the classroom but still maintains the facilitation of the professor. In Yellowdig students can interact with other students through following, posting, commenting, and contributing to the page itself (Martin et al, 2017, pg. 57). This platform allows students to truly interact with one another outside the confines and formality of a classroom setting.

Many things can be done in the online classroom to ensure that students are engaging and making acquaintances. While group work is not commonly enjoyed by many students, specifically in online classes, (Kellogg & Smith, 2009, pg. 437) it does prove to be beneficial toward the growth of community. Other resources offered to students may also provide a means of making acquaintances such as class discussions, group tutoring services, open zoom

room (not required), group work, and the encouragement of creating social media groups outside of class like a Facebook group.

Question 14: I have gotten to know some of the faculty members and classmates well.

There are many reasons why it is important for students to get to know both their classmates and faculty instructors. However, the success of a student's education may depend on the ability to form positive relationships in the online classroom environment. In fact, the Attachment Theory may play some role in a student's learning. The Attachment Theory promotes that forming emotional attachment allows individuals to experience normal emotional and intellectual development. When professors create relationships with their students, the students learn more and experience a greater satisfaction with the class. Research conducted by Beckman and Weber suggest that students experience high satisfaction with an online class when professors interact with the students and their discussion posts (Beckman & Weber, 2016, pg. 58). The Social Constructivist Theory can also be incorporated into online classes and "is often cited as the theoretical model by which students become the creators of knowledge with the assistance of other students" (Kellogg & Smith, 2009, pg. 435).

Student Background of Residential & Non-Residential Students

One area that will be focused on in this paper but has had very limited research currently is the investigation into the background of online students, specifically if the students are residential or non-residential to campus when they are completing the online course. This is an important factor because residential and non-residential students may feel a completely different sense of community, support, and availability of resources, due to their residency when completing the course. While little to no research has been done on online residential and non-residential students, some research has been done with commuter and residential students who complete in-person classes on campus. Residential and commuter students attending in-person classes will be the focus of background information on residential and non-residential students in online classes since there is little to no information on this subject currently. Later in the paper we will compare how this research shows similarities and differences with the results that were obtained from the OSCS.

While researching this topic one factor that became prevalent between commuter and residential students was that they preferred different learning styles and methods. According to Morrison, a majority of commuter students are "sensate-visual-sequential learners" (Morrison et al, 2003, pg. 211) preferring methods of teaching such as "lectures, weekend school and online forms" (Morrison et al, 2003, pg.211). On the other hand, residential students were found to be very active learners benefiting most from group work and visual learning (Morrison

et al, 2003, pg. 211). A different study that was conducted with nursing students from the University of Hertfordshire showed that "The farther away they (nurses) lived from the university the more likely we were to see dropouts" (Attrition…, 2017, pg. 1). In other words, this means that the nurses in this study who did not live on campus or near campus were much more likely to drop out of the college's nursing program. When looking at the background of commuter students they are most likely first-generation students and can oftentimes be unprepared for college although their academic performance is similar to residential students (Lonn et al., 2011, pg. 643). Whereas residential students tend to be much more involved in collegiate activities and are more likely to form connections with peers and professors (Lonn et al., 2011, pg. 643).

Moving towards the future there is a need for more research regarding residential and non-residential students in online courses. While commuter students may possibly share similar backgrounds and qualities to online non-residential students, this information must be interpreted in a hypothetical context and leaves a door open for potential research.

Methodology

The Doane University Agribusiness Program is an online undergraduate program that allows students to obtain their degree through a series of online courses. In the online Agribusiness courses both residential and non-residential students are enrolled in the same online course together thus completing the same coursework throughout the duration of the class. For this study, residential students are defined as students who live on campus when completing the online course. Non-Residential students are defined as students who do not reside on campus when completing the online course. Online courses can be challenging for students to engage or connect with other students, the instructor, and the content. Upon researching the literature, it was found that work in this area has been conducted, and an instrument to measure student connectedness had been developed and validated, the Online Student Connectedness Survey (OSCS) (Bollinger & Fethi, 2012, pg 55-56). The OSCS consists of 25 questions that measure different areas of student connectedness (Nimon & Zimmerman, 2017, pg. 1-2). The full OSCS questionnaire can be found in the appendix in Table 8. These 25 questions are further subdivided into four categories or areas of student connectedness: 1) comfort, 2) community, 3) facilitation, and 4) interaction and collaboration (Nimon & Zimmerman, 2017, pg. 2). To ensure that each question was free from "opinions, attitudes, or behaviors" a Likert Scale (appendix Table 1) was utilized (Bhandari & Nikolopoulou, 2020).

Table 1: Likert Scale: OSCS Question Format as Seen on the Survey

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Q8					
Q1					
If I need to, I will ask for help from my classmates.	○	○	○	○	○

The OSCS questionnaire was determined to be the best research tool to assist researchers with collecting connectedness data. A request was submitted to the Doane University Institutional Review Board (IRB) to approve the gathering of student information using the survey tool. The IRB granted approval in January of 2021 to researchers. The OSCS, utilizing Qualtrics, was sent to Doane University students across six different agribusiness classes from the 2021 spring semester to the 2022 spring semester. After one year, 70 responses to the survey were collected. In addition to the 25 questions that were asked in the survey, students were given the opportunity to offer qualitative opinions about the course in general. Other information gathered from the student respondents included location of the student - residential or non-residential, course name, and the name of the instructor. In addition, Qualtrics provided the time spent answering the survey questions.

After the 70 student responses were collected, data was analyzed using SPSS statistical software. Using SPSS we were able to construct graphs that would compare the 25 questions of the survey corresponding to the four areas of connectedness, the instructor the student had when completing the survey, the course the student had when they completed the survey, and the students location (residential or non-residential) when completing the survey. Through SPSS we were able to see a clear outlier in the community section questions. The overall average score in the community section (3.2/5) was much lower than the average scores for comfort (4.4/5), facilitation (4.5/5), and interaction and collaboration (4.0/5). With that knowledge in mind, we conducted a One-way Anova on the data to determine the statistical significance of each of the 6 questions in the community portion of the survey.

Throughout this research it was also very important to conduct a literature review to determine what areas could be grown upon and what areas still needed further research. Through this review we were able to further understand the OSCS, discover ways to grow community in online classes, and realize that there is a need for further research for residential and non-residential students taking an online course.

Results

Overall Findings

Throughout the collection of data in the Online Student Connectedness Survey several different qualitative and quantitative factors were recorded. Survey results were collected over the course of a year from the Spring of 2021 to the Spring of 2022. The survey recorded the duration it took to complete, the date the survey was completed, the course that the student was taking when completing the survey, the instructor of the course, the student's location (residential or non-residential to campus) when completing the survey, the scores of the 25 questions (1 lowest - 5 highest), and the student's feedback for the course. The only qualitative factors collected in the survey was the date the student completed the survey and the comments/ feedback students left at the end of the survey. The recorded quantitative factors were the student's scores (1 lowest-5 highest) of each of the 25 survey questions, duration in seconds it took to complete the survey, the date when the student completed the survey, the student's teacher, and the location when taking the course. In total 70 student responses were collected, consisting of students in 6 different online agricultural classes and 4 different teachers. Finally, out of the 70 students, 31 did not mark campus as their residence and 39 students did mark the campus as their main residence when completing the online course. The 25 survey questions are divided into four categories that measure the overall connectedness students feel in online courses: comfort, community, facilitation, and interaction and collaboration.

After the 70 survey responses were collected, we took a closer look at the results in order to organize and analyze the data. While certain pieces of quantitative data such as the instructor and course were compared in Tables 1 and 2 (below) they did not produce any extreme outliers that would result in research dedicated to a specific instructor or course. Analyzing the instructor or courses impact on student connectedness was also limited because of the small number of students in each of the courses, thus affecting the average of the four categories. However, once we took a closer look at the residency of the students when completing the course, it became clear that an outlier was beginning to emerge as shown in Graph 1.
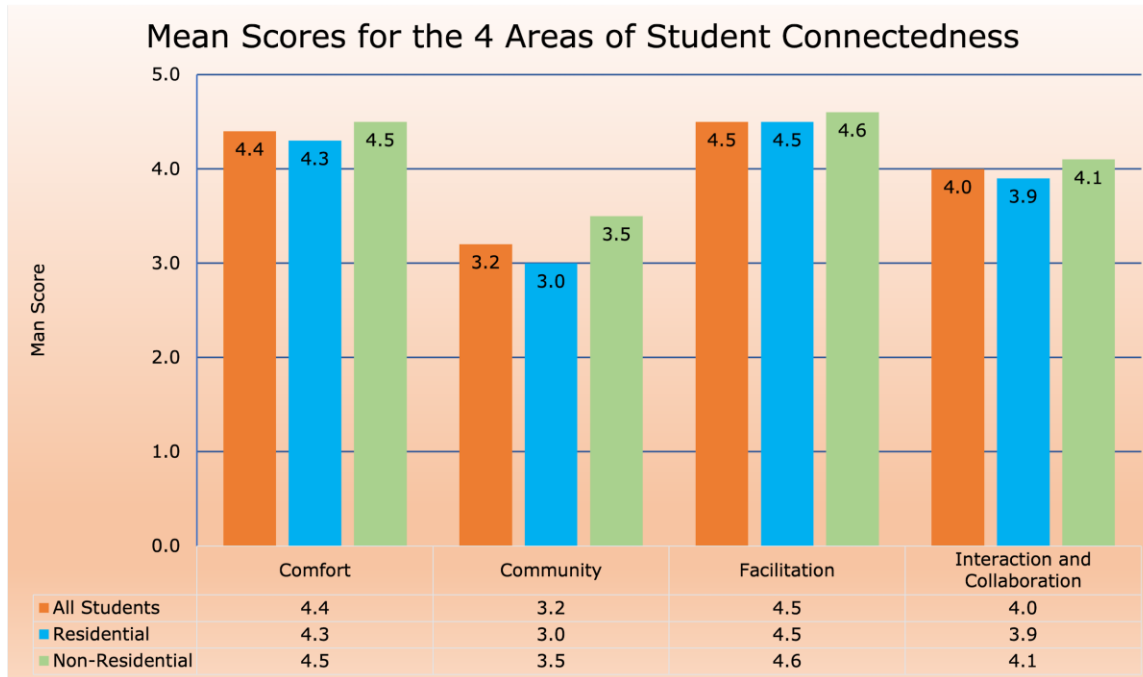
Table 2: Mean Analysis of the Four OSCS Categories of the Student with Each Instructor

Instructor	Respondents	Comfort	Community	Facilitation	Interaction and Collaboration
Instructor A	14	4.3	2.8	4.4	3.7
Instructor B	26	4.5	3.2	4.5	4.1
Instructor C	22	4.5	3.7	4.7	4.4
Instructor D	8	4.1	2.6	4.3	3.6
Grand Total	70	4.4	3.2	4.5	4.0

Table 3: Mean Analysis of the Four OSCS Categories Corresponding with Each Course

Course	Respondents	Comfort	Community	Facilitation	Interaction and Collaboration
AGR 305 - Agricultural Futures and Options	14	4.3	2.8	4.4	3.7
AGR 310 - Agricultural Law and Policy	10	4.4	3.4	4.7	4.2
AGR 315 - Agricultural Technology	21	4.4	3.3	4.5	4.2
AGR 420 - Agricultural Finance	8	4.1	2.6	4.3	3.6
AGR 425 - Agricultural Sustainability	5	4.7	2.9	4.5	3.8
AGR 430 - Advanced Agribusiness Management	12	4.5	3.9	4.8	4.5
Grand Total	70	4.4	3.2	4.5	4.0

Graph 1: Mean Scores for the 4 Areas of Student Connectedness by Student Location

When observing the data, we first looked at averages of the four categories (comfort, community facilitation, and interaction and collaboration) to see if there were any large differences in score. It was immediately clear that the overall community average scored lower, ranging from 0.8 to 1.3 points lower than the other three categories (Graph 1). Thus, improving community became one of the focuses of our research. While comfort, facilitation, and interaction and collaboration are all equally as important categories as community when it comes to maintaining connectedness, we chose to make community the focus of our research for a few reasons. First, the community portion received the lowest score by a large factor. The other three categories were all above a 4.0 and were less than a point away from the same scores for each of the categories. Before we analyzed the data, we also determined that any category that received a 4.0 or higher would be considered an acceptable score and would not be the focus of our research. Therefore, we were left with the community portion receiving the lowest score. Another interesting factor within the community section became noticeable as we analyzed the data. Residential students gave lower scores for the community questions than non-residential students. Although both residential and non-residential students' average scores for community were very low, ranging from 2.64 to 4.13, it was clear that non-resident students still felt a stronger sense of community in online classes than residential students (see tables 5 & 6).

Table 4: Mean Analysis of the Four OSCS Categories Corresponding with Each Instructor and Students' Residency

Instructor	Respondents	Comfort	Community	Facilitation	Interaction and Collaboration
Instructor A	**14**	**4.3**	**2.8**	**4.4**	**3.7**
Residential	9	4.4	2.8	4.5	4.0
Non-Residential	5	4.1	2.7	4.3	3.2
Instructor B	**26**	**4.5**	**3.2**	**4.5**	**4.1**
Residential	18	4.4	3.1	4.6	4.0
Non-Residential	8	4.5	3.5	4.5	4.3
Instructor C	**22**	**4.5**	**3.7**	**4.7**	**4.4**
Residential	8	4.1	3.2	4.5	4.1
Non-Residential	14	4.7	3.9	4.9	4.5
Instructor D	**8**	**4.1**	**2.6**	**4.3**	**3.6**
Residential	4	3.8	2.3	4.3	3.5
Non-Residential	4	4.4	2.9	4.2	3.7
Grand Total	70	4.4	3.2	4.5	4.0

Table 5: Mean Analysis of Community Questions

Community Questions	All Students (n=70)	Residential (n=39)	Non-Residential (n=31)	Significance
Q9: I feel emotionally attached to other students in my online courses?	2.83	2.64	3.06	0.076
Q10: I spend a lot of time with my online course peers?	2.77	2.54	3.06	0.090
Q11: My peers have gotten to know me quite well in my online courses?	3.13	2.82	3.52	0.012
Q12: I feel that students in my online courses depend on me?	2.96	2.69	3.29	0.029
Q13: I can easily make acquaintances in my online courses?	3.56	3.33	3.84	0.058
Q14: I have gotten to know some of the faculty members and classmates well?	3.91	3.74	4.13	0.100

SPSS Oneway ANOVA

Through this statistical analysis of the OSCS data we were able to examine the location of students in online courses in connection to the community portion of the survey. We conducted a One-way ANOVA to compare the student location during their time in the online course to their answers on the community portion of the OSCS survey questions. For question 9 "I feel emotionally attached to other students in my online course", residential students had a mean score of 2.64 while non-residential students' mean was 3.06, the difference between these scores were leading to statistical significance (p<0.08). This could be further validated by a larger data set. For Question 10 "I spent a lot of time with my online course peers", residential students had a mean score of 2.54 while non-residential students had a score of 3.06. The scores for Question 10 were leading to statistical significance (p<0.10). For Question 11 "My peers have gotten to know me quite well in my online courses", the mean score for residential students was 2.82 while the mean score for non-resident students was 3.52. Question 11 proved to be significantly significant (p<0.02). For Question 12 "I feel that students in my online courses depend on me", the mean of residential students was 2.69 and the mean score of non-residential students was 3.29. It was found that Question 12 was statistically significant (p<0.03). The mean score of residential students in Question 13, "I can easily make acquaintances in my online courses," was 3.33 and non-residential students was 3.84. Question 13 was found to be leading to statistical significance as it had a score of .058 (p<0.06). Finally, the mean score of residential students in Question 14, "I have gotten to know some of the faculty members and classmates well," was 3.74 and the non-residential students was 4.13. Question 14 was shown to be leading to statistical significance (p<0.20). A closer look at the results of the statistical analysis can be found in the table 6 below. Question 9, 10, 13, 14 were all found to be leading to statistical significance. To ensure the legitimacy of these results, in the future more survey responses should be gathered to definitively decide if Question 9, 10, 13, and 14 are statistically significant or insignificant.

After determining the statistical significance, we were also able to find the mean score per question between residential and non-residential students. After analyzing the SPSS One–way ANOVA, we were able to determine that residential students' average score for each community question was lower than the average community score for non-residential students. This means that residential students feel less of a sense of community in their online classes than non-residential students.

Table 6: SPSS Oneway Anova Summary

Community Questions	Significance	Summary
Q 9: I feel emotionally attached to other students in my online course?	0.076	Leading to Significance
Q 10: I spend a lot of time with my online course peers?	0.090	Leading to Significance
Q 11: My peers have gotten to know me quite well in my online course?	0.012	Significant
Q 12: I feel that students in my online courses depend on me?	0.029	Significant
Q 13: I can easily make acquaintances in my online courses	0.058	Leading to Significance
Q 14: I have gotten to know some of the faculty members and classmates well?	0.100	Leading to Significance

Qualitative Data Analysis

The OSCS Survey collected qualitative data that students were able to leave in the form of comments/feedback at the end of the survey. The qualitative data was organized into three categories: constructive feedback, positive feedback, other feedback. Constructive feedback gave suggestions for improvement with an online class. Positive feedback highlighted things that students liked about their online class and what should potentially be implemented into other courses in the future. Finally, other feedback contained comments that were either not relevant to the survey or did not provide any suggestions for improvement.

Constructive Feedback Conclusions

Overall, the constructive qualitative data was very beneficial in helping to identify areas of improvement for the online agriculture program at Doane University. It should be noted that this was an asynchronous course that allowed residential and non-residential students to work

together in an online classroom. The residential and non-residents students' feedback also reflects their backgrounds and the opportunities each student is allowed while being residential and nonresidential. One of the first insights that the constructive feedback provided was that residential students would like to be allowed to work on group projects in person. However, nonresidential students did not provide any insight on this issue. Another residential student felt that individuals who did not have a farming background struggled to understand the concepts and consequently did not reach out for help. Both residential and non-residential students felt that some of the assignments were too tedious and repetitive, explaining that they learned better when other methods of teaching were used, such as simulations. Finally, a non-residential student commented on an individual course allowing the answers of a quiz to be seen once it has been completed.

Positive Feedback Conclusions

The positive feedback was also beneficial toward the development of online courses as it reinforced what online courses at Doane University are doing well and should continue to build upon. Both residential and non-residential students appreciated when professors offered the opportunity to meet and Zoom one on one if the students wanted their help. Additionally, both types of students found discussion beneficial showing that it allowed them to connect and share information with other students throughout the course. Non-residential students specifically noted in their responses that they liked the platform Yellowdig. This platform allowed them to facilitate open discussion instead of only participating in graded discussions that are used in Canvas. Both residential and non-residential students valued courses that offered a mixed variety of assignments instead of using one specific assignment format throughout the duration of this class. Simulations were specifically valued among students. Finally, both online and residential students value professors that stay involved during the course and connect with the students. It can be concluded that connection in the form of student-teacher interaction or student-student discussion have a huge effect on the perceived success of an online course.

Other Feedback Conclusions

The other feedback that was received from the qualitative data did not provide any specific feedback that would be beneficial toward the improvement and development of future online courses.

Survey Duration

Another interesting variable that was collected was the duration it took students to complete the survey. The time it took residential and non-residential students to complete the

survey varied greatly. On average residential students completed the survey in about half the time that non-residential students completed the survey. It took non-residential students an average of 11.7 minutes and residential students took an average of 5.8 minutes to complete the survey.

This variable is important because it raises questions about the reasons for the great difference between these two times. For example, some individuals may question the legitimacy of the residential students' answers because they nearly took half the time to complete the survey. Or this information could possibly lead to conclusions like residential students are more used to taking surveys than non-residential students. While none of these insights are conclusive, further research should be done to determine if this is a common pattern and why this occurs between residential and non-resident students.

Table 7: Amount of Time Residential and Non-Residential Students Took to Complete OSCS

Student Type	Time to Complete Survey
All Students	8.4 minutes
Residential Students	5.8 minutes
Non-Residential Students	11.7 minutes

Discussion

After receiving the results from the Online Student Connectedness Survey, it was clear that there were several unique findings. Three out of the four areas in the OSCS did not produce any outlying results and received similar overall scores, however the community portion of the OSCS suggested differing results. The community section of the OSCS produced scores that were much lower than the other three categories. Additionally, the community section showed that residential students in online classes feel a lower sense of community compared to nonresidential students. Differences between residential and non-residential students were not seen in the other three categories. Finally, the data demonstrated that there was a large difference between the time it took residential and non-residential students to complete the survey. These findings along with previous research that has been conducted on this topic can help create a better understanding of how to build a stronger online community.

To begin, the 70 responses gathered from the OSCS suggested a lack of community in online classes. Out of the four categories of the OSCS, community received the lowest average

score with a 3.2 out of 5. The other categories received significantly higher scores with comfort receiving a 4.4, facilitation a 4.5, and interaction and collaboration a 4.0. When looking at these scores it can be clearly seen that there is a low score for community compared to the other three OSCS categories. While seeing this low of a score in the community portion of the survey was not surprising it was still very concerning. Community plays a large role in not only developing soft skills but also in developing meaningful connections with others as well. The five community questions can help shed light on the importance of this section. Question 9: I feel emotionally attached to other students in my online course. Question 10: I spent a lot of time with my online course peers. Question 11: My peers have gotten to know me quite well in my online courses. Question 12: I feel that students in my online courses depend on me. Question 13: I can easily make acquaintances in my online courses. Question 14: I have gotten to know some of the faculty members and classmates well. These questions bring forth the importance of forming attachments in online classes as well as forming connections that may enhance the learning experiences for the students. The importance of upholding and creating a strong sense of online community is vital to the success of students in online learning.

Another unique aspect of the OSCS survey results were the differences between residential and non-residential students' answers in the community portion of the survey. Once the survey was completed and the community portion showed a lower average score than the other three sections of the OSCS we decided to take a closer look into the community questions. In doing this we were able to see that while both residential and non-residential students experience a very low sense of community, residential students experience a lower sense of community (3.0/5) than non-residential students (3.5/5). For an individual to definitively conclude why residential and non-residential students feel a different sense of community is nearly impossible with the lack of concentrated research that has been done on this topic. But, it can be noted that residential students likely have greater experience with in-person classes which they likely compare to online classes. There is a need for more research to be conducted on this topic for the future improvement and success of online classes. Researchers need to take a closer look at the people who make up online classes, specifically students' residency when completing the course, and if these different types of individuals' needs are being met in online courses.

One piece of data that was collected during the survey was the duration it took students to complete the survey. The duration of the survey was measured in seconds and the students' residential or non-residential residence when completing the course was also recorded. While analyzing the data it was noted that on average it took nearly half the time for residential students to complete the survey (approximately 345 seconds) compared to non-residential students (approximately 704 seconds). The correlation between the type of student and how long it took to complete the survey led to two specific trains of thought. First, residential students might not be taking the survey as seriously, which led them to complete the survey in

half the time. Thus, the survey's legitimacy and results should possibly be taken into question. Questions should be raised about how a student's environment may affect the way they learn and even take surveys. For example, the reason that residential students took nearly half the time to take the survey was because they are used to completing surveys more often than non-residential students, thus it took them a shorter amount of time. Further research should be done into this topic to determine the real cause for the survey duration discrepancy between students, however for the purpose of this study this limitation was not large enough to question the legitimacy of the Research.

When looking to the future of online classes and improving online community there has been research which points to solutions for this problem. The scores for Questions 9-14 could all be improved by utilizing the platform Yellowdig. Yellowdig is styled as a social media platform for the classroom and has had numerous research articles written on its success in online classrooms. Additionally, throughout our study we collected qualitative data. This was in the form of students being able to leave written comments or feedback at the end of the survey. The qualitative data that was gathered throughout our study showed only positive feedback on the professors that utilized Yellowdig in the online classroom. Another platform that could also potentially increase the score for the community questions is Voice Thread. Voice Thread allows online students to connect visually while still maintaining an asynchronous online environment. This is done in the form of discussions being recorded as a video and posted to an online classroom. From there students can comment or even record video responses. Finally, group work has also proven to be a very effective approach to creating an online community and may potentially lead to a stronger score in the community section of OSCS. However, professors must take group work a step farther and see what they can do to make this a more active environment for students. A study conducted by Baran and Correia found that it was beneficial for students to even be given the facilitating role in online classes by leading group discussion to develop a greater understanding of the material (Baran & Correia, 2009, 342). If professors were to utilize these strategies in their online classes in the future, it may lead to a stronger sense of community as well as an increased community score in the OSCS.

When looking at this data many different factors should be taken into consideration when creating a successful online course. However, we must also consider what students and faculty are looking for in online courses as well. This may possibly mean that they are not looking for a sense of community in online classes. Or they are taking a class to connect to others and find that sense of community   Additional data and studies examining student and instructor values in online courses may be crucial information in determining why the community portion of the OSCS is drastically lower than comfort, facilitation, and interaction and collaboration. However, there is a definite need for research in determining why residential and non-residential students feel different senses of community in their online courses.

Specifically, why non-residential students feel a stronger sense of online community than residential students. Further research is also needed to determine why it takes residential students nearly half the time to take the OSCS than non-residential students. More definitive research and insight into each of these topics may play an essential in determining how to improve online classes in the future.

Conclusion

As we look towards the future it is clear that online classes are here to stay, however it is our duty to see how to improve these classes so that students may go into the world with skills, experiences, and knowledge that allow them to be successful. Community is critical to the success of students whether that is the shared growth of knowledge or development of professional soft skills such as communication. From this data it can be concluded that there is a need for development of a stronger online community and while some research has been done on this subject there will be a need for more in the future in order for the success of online education. Upon completion of this research it became apparent that students taking online Agribusiness courses are not as comfortable with the community being created in those courses unlike the other three areas: comfort, facilitation, and interaction and collaboration. And within the area of Community, it was statistically determined that a difference exists between students on the residential campus and those students who are non-residential. In order to improve the community scores some thought will need to be given to addressing these differences. In order to determine what action needs to be taken, further research is needed.

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Appendix

Table 1: Likert Scale: OSCS Question Format as Seen on the Survey

Q8					
Q1					
	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
If I need to, I will ask for help from my classmates.	○	○	○	○	○

Table 2: Mean Analysis of the Four OSCS Categories of the Student with Each Instructor

Instructor	Respondents	Comfort	Community	Facilitation	Interaction and Collaboration
Instructor A	14	4.3	2.8	4.4	3.7
Instructor B	26	4.5	3.2	4.5	4.1
Instructor C	22	4.5	3.7	4.7	4.4
Instructor D	8	4.1	2.6	4.3	3.6
Grand Total	70	4.4	3.2	4.5	4.0

Table 3: Mean Analysis of the Four OSCS Categories Corresponding with Each Course

Course	Respondents	Comfort	Community	Facilitation	Interaction and Collaboration
AGR 305 - Agricultural Futures and Options	14	4.3	2.8	4.4	3.7
AGR 310 - Agricultural Law and Policy	10	4.4	3.4	4.7	4.2
AGR 315 - Agricultural Technology	21	4.4	3.3	4.5	4.2
AGR 420 - Agricultural Finance	8	4.1	2.6	4.3	3.6
AGR 425 - Agricultural Sustainability	5	4.7	2.9	4.5	3.8
AGR 430 - Advanced Agribusiness Management	12	4.5	3.9	4.8	4.5
Grand Total	70	4.4	3.2	4.5	4.0

Graph 1: Mean Scores for the 4 Areas of Student Connectedness by Student Location

Mean Scores for the 4 Areas of Student Connectedness

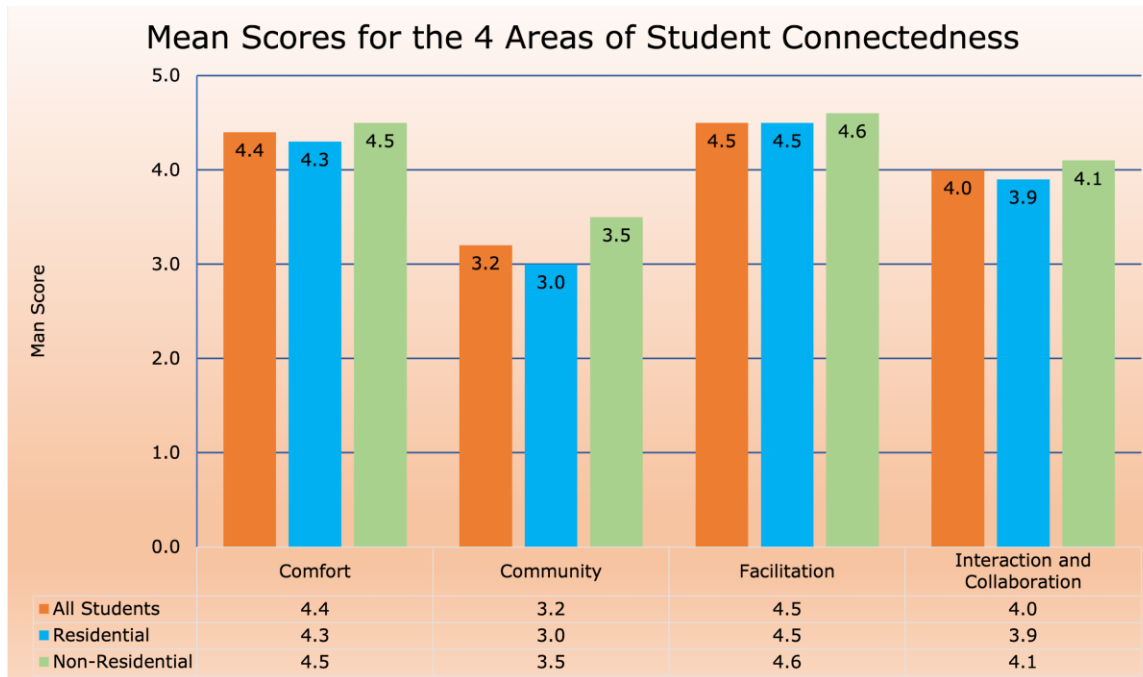|	Comfort	Community	Facilitation	Interaction and Collaboration
All Students	4.4	3.2	4.5	4.0
Residential	4.3	3.0	4.5	3.9
Non-Residential	4.5	3.5	4.6	4.1

Table 4: Mean Analysis of the Four OSCS Categories Corresponding with Each Instructor and Students' Residency

Instructor	Respondents	Comfort	Community	Facilitation	Interaction and Collaboration
Instructor A	**14**	**4.3**	**2.8**	**4.4**	**3.7**
Residential	9	4.4	2.8	4.5	4.0
Non-Residential	5	4.1	2.7	4.3	3.2
Instructor B	**26**	**4.5**	**3.2**	**4.5**	**4.1**
Residential	18	4.4	3.1	4.6	4.0
Non-Residential	8	4.5	3.5	4.5	4.3
Instructor C	**22**	**4.5**	**3.7**	**4.7**	**4.4**
Residential	8	4.1	3.2	4.5	4.1
Non-Residential	14	4.7	3.9	4.9	4.5
Instructor D	**8**	**4.1**	**2.6**	**4.3**	**3.6**
Residential	4	3.8	2.3	4.3	3.5
Non-Residential	4	4.4	2.9	4.2	3.7
Grand Total	70	4.4	3.2	4.5	4.0

Table 5: Mean Analysis of Community Questions

Community Questions	All Students (n=70)	Residential (n=39)	Non-Residential (n=31)	Significance
Q9: I feel emotionally attached to other students in my online courses?	2.83	2.64	3.06	0.076
Q10: I spend a lot of time with my online course peers?	2.77	2.54	3.06	0.090
Q11: My peers have gotten to know me quite well in my online courses?	3.13	2.82	3.52	0.012
Q12: I feel that students in my online courses depend on me?	2.96	2.69	3.29	0.029
Q13: I can easily make acquaintances in my online courses?	3.56	3.33	3.84	0.058
Q14: I have gotten to know some of the faculty members and classmates well?	3.91	3.74	4.13	0.100

Table 6: SPSS Oneway Anova Summary

Community Questions	Significance	Summary
Q 9: I feel emotionally attached to other students in my online course?	0.076	Leading to Significance
Q 10: I spend a lot of time with my online course peers?	0.090	Leading to Significance
Q 11: My peers have gotten to know me quite well in my online course?	0.012	Significant
Q 12: I feel that students in my online courses depend on me?	0.029	Significant
Q 13: I can easily make acquaintances in my online courses	0.058	Leading to Significance
Q 14: I have gotten to know some of the faculty members and classmates well?	0.100	Leading to Significance

Table 7: Amount of Time Residential and Non-Residential Students Took to Complete OSCS

Student Type	Time to Complete Survey
All Students	8.4 minutes
Residential Students	5.8 minutes
Non-Residential Students	11.7 minutes

Table 8: Online Student Connectedness Survey Questionnaire

Online Student Connectedness Survey Questions and Average Scores	Residential Students	Non-Residential Students	Total
Q1 - If I need to, I will ask for help from my classmates.	4.21	4.13	4.17
Q2 - I feel comfortable expressing my opinions and feelings in online courses.	4.36	4.58	4.46
Q3 - I feel comfortable introducing myself in online courses.	4.44	4.55	4.49
Q4 - I can effectively communicate in online courses.	3.95	4.58	4.23
Q5 - I feel comfortable asking other students in online courses for help.	3.87	4.19	4.01
Q6 - I have no difficulties with expressing my thoughts in my online courses.	4.23	4.48	4.34
Q7 - I feel my instructors have created a safe online environment in which I can freely express myself.	4.72	4.77	4.74
Q8 - I feel comfortable in the online learning environment provided by my program.	4.46	4.71	4.57
Q9 - I feel emotionally attached to other students in my online courses.	2.64	3.06	2.83
Q10 - I spend a lot of time with my online course peers.	2.54	3.06	2.77
Q11 - My peers have gotten to know me quite well in my online courses.	2.82	3.52	3.13
Q12 - I feel that students in my online courses depend on me.	2.69	3.29	2.96
Q13 - I can easily make acquaintances in my online courses.	3.33	3.84	3.56
Q14 - I have gotten to know some of the faculty members and classmates well.	3.74	4.13	3.91
Q15 - Instructors integrate collaboration tools (e.g., chat rooms, wikis, and group areas) into online course activities.	4.38	4.58	4.47
Q16 - In my online courses, instructors promote interaction between learners.	4.46	4.61	4.53
Q17 - Instructors promote collaboration between students in my online courses.	4.38	4.61	4.49
Q18 - My online instructors are responsive to my questions.	4.69	4.74	4.71
Q19 - I receive frequent feedback from my online instructors.	4.74	4.61	4.69
Q20 - My instructors participate in online discussions.	4.36	4.42	4.39
Q21 - I relate my work to others' work in my online courses.	3.92	4.03	3.97
Q22 - I discuss my ideas with other students in my online courses.	4.00	4.26	4.11
Q23 - I collaborate with other students in my online courses.	3.97	4.13	4.04
Q24 - I work with others in my online courses.	3.77	4.06	3.90
Q25 - I share information with other students in my online courses.	4.03	4.26	4.13