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Undergraduate Success in Animal Science Courses Based on Demographics, Motivation, and Online Courses

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by

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UNDERGRADUATE SUCCESS IN ANIMAL SCIENCE COURSES BASED ON DEMOGRAPHICS, MOTIVATION, AND ONLINE COURSES.

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A deeper understanding of student demographics, motivation, and outlook of online vs. face to face courses in Animal Science is needed to allow educators to facilitate greater student success. The purpose of this study was to investigate student factors which effected their final grades. The following courses were surveyed at the University of Nebraska- Lincoln Animal Science Department: Animal Products (ASCI 210), Anatomy and Physiology of Domestic Animals (ASCI 240), Introduction to Companion Animals (ASCI 251), Companion Animal Behavior (ASCI 271), Companion Animal Nutrition (ASCI 321), Equine. Nutrition (ASCI 322), Equine Reproduction (ASCI 342), Animal Welfare (ASCI 370), Processed Meats (ASCI 410), (n=139). The survey utilized a 5 part likert-type scale; (1) *strongly disagree*, (2) *disagree*, (3) *don't know*, (4) *agree*, (5) *strongly agree* with questions measuring student motivation in scales of *intrinsic motivation, self-determination, self-efficacy, career motivation, and grade motivation.* Additional questions relating student demographics (gender, ethnicity, experience, area of study, e.g.) were included. Focus groups were then conducted with participating students to analyze student insight on factors affecting their overall final course grade after participation in the survey.

Survey analyses and student final grades were analyzed by Spearman Correlation Coefficients to observe correlations and p-values of student demographics, motivation, and online vs. face to face student success. Students with increased motivation in self-efficiency, self-determination, and grade motivation showed a tendency of higher final grades. No significant correlations were found in student demographics with final grades. The method delivery, face to face (n=101) or online (n=38) had no difference in final course letter grades. Focus group results concluded students were more successful in Animal Science courses when they were equally motivated intrinsically and extrinsically. The greatest factor effecting student motivation was instructor motivation and enthusiasm presented toward students. These data indicate student final grades appeared to be influenced greater by certain motivations, rather than demographics or methods of delivery. The results of this study will allow educators to identify motivators, to increased success in student learning in Animal Science.

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Chapter I

Introduction

Animal Science courses across the nation have seen a steady climb in number of undergraduate students (Peffer, 2011). Animal Science educator's top priority is student success, however the growth in animal science student number has posed as a challenge for Animal Science instructors on how they can meet each student needs to learn. With the rise in student numbers, the diversity of student background and educational needs are becoming more diverse. In addition, the expansion of new technology has allowed opportunities for different approaches and possibilities to education including online Animal Science courses. With the growth of higher education in the Animal Science field, adaption to students needs of learning are necessary for instructors to ensure success of their students.

Purpose and Objectives

The purpose of this study is to identify motivating factors in undergraduate Animal Science students across demographics and teaching mediums to provide faculty with specific actions for triggering student motivation to increase student success. Specifically to this study the objectives are to:

1. Identify motivational factors in Animal Science students in correlation with academic success.
2. Develop recommendations for Animal Science instructors to increase student motivation.
3. Determine whether students majoring in Animal Science motivation is correlated with student demographics.
4. Analyze online Animal Science student success in relation to traditional face to face Animal Science courses.

Limitations

The principle investigator conducting the study was directly involved with multiple courses in the study as their teaching assistant, which could introduce a potential source of bias from students. Another limitation is that this study only took place at the University of Nebraska-Lincoln (UNL). Ten of the undergraduate classes in Animal Science at UNL were surveyed, creating a smaller population that could skew demographics. Ideally an increase in the participating population of online students would be desired. Possible skewed demographics would be due to surveying more classes in a specific area in Animal Science (e.g. companion animal) rather than all Animal Science courses. Related classes surveyed could have repeating students that could sway results to the subject of the course being taught. Unfortunately, focus groups only referenced a small sample of the higher and middle range of the motived population and not the entirety of all participant in the research. Due to lack of interest from low motivated students they did not participate in qualitative research. Altogether, only 12 students participated in the two separate FG from the quantitative data. The lack of participation from low motivated students and small sample size is a limitation to this research.

Assumptions

It is assumed during the study; all respondents answer all survey/focus group questions honestly and to the best of their ability. With the focus of this study revolving around undergraduate Animal Science students it is assumed all students have some interest in Animal Science. It is also assumed all students participating in the study will contribute in a positive manner towards the betterment of Animal Science Courses.

Organization of Study

Each chapter of this study presents and explains the developmental process of undergraduate courses in Animal Science. Chapter 1 presents the introduction, purpose and objective, limitations and assumptions of study. Chapter 2 address a review of literature and research relevant to the social cognitive theory and Animal Science students recorded factors of success thus far. Chapter 3 presents the methodology and procedures used to gather data. Results of analysis of data and further findings from the study will be included in Chapter 4. In the final, Chapter 5, findings and discussion, and conclusion will be presented.

CHAPTER II

Literature Review

Introduction

In the educational sector, there is a demand to understand the success of students in undergraduate Animal Science courses. To achieve this, certain goals need to be met such as: a deeper knowledge of student motivation to learn, demographics of student background that could affect success, and differences in online versus in class lectures in Animal Science (Harrelson and Harrelson, 2016; Chumbley et al., 2015; Kusurkar, et al., 2013). Animal Science educators need to recognize what students require to be successful in their course in order to reach a greater understanding of curriculum, by being willing to adapt when needed, to help students acquire critical information to learn (Chumbley et al., 2015). Understanding student demographics, motivation, and online vs. face to face success will allow educators to make changes that will increase academic success of students in Animal Science (Kusurkar, et al., 2013; Linnenbrink and Pinrich, 2002). Final grades for students in Animal Science course are defined by academic success (Zajacova, Lynch and Espenshade, 2005).

Social Cognitive Theory

The theoretical framework for motivation begins with the social cognitive theory. "Motivation is defined in social cognitive theory as an internal state that arouses, directs, and sustains goal-orientated behavior" (Chumbley et al., 2015). First developed in the 1960s by Albert Bandura (Bandura and Wood, 1989), the social cognitive theory has been continuously modified by others (Glynee et al., 2011). The social cognitive theory emphasizes the social reinforcement of intrinsic and extrinsic motivation. Reciprocal interactions (e.g. communication) that could influence a person's motivation, is dependent on the social interactions of the person with others,

their environment, and personal interactions (Glynee et al., 2011). These interactions play a key factor on an individuals' personal motivation to be academically successful. Academic success has been attributed to motivation based on behaviors students present in learning the material they feel will allow them to succeed. Different reasons for motivation such as career, grade and lecture methods have been researched over the years to show why students feel the need to be motivated to learn (Zajacova, Lynch and Espenshade, 2005). Educators have concluded that the social cognitive theory best devises the explanation of motivation (Bandura and Wood, 1989). Motivational measurements are commonly constructed into five specific categories for students. In 2006, a survey was created measuring student motivation in learning science by Glynn and Koballa (Glynn et al., 2011). The Science Motivation Questionnaire was developed based on the social cognitive theory in order to observe intrinsic motivation, self-determination, self-efficacy, career motivation, and grade motivation. The Science Motivation Questionnaire has shown to have high validity across a multitude of research projects (Glynn et al., 2011). Intrinsic motivation means individuals are motivated for individual satisfaction in oneself. Self-determination refers to the control students believe they have over their learning of science (e.g., Mazlo et al., 2002). Self-efficacy is a student's belief that they can achieve a task (Zajacova, Lynch and Espenshade, 2005). Extrinsic motivation is motivation based on reward, such as getting a good grade or career opportunity. Combining these effects determines the purpose behind one's motivation to complete a task.

Extrinsic and Intrinsic Motivation

Extrinsic Motivation (EM) and Intrinsic Motivation (IM) have been defined as key components of motivation. Extrinsic Motivation relies on outlying motivation that leads to success such as grades and career opportunities (Kusurkar et al., 2012). Intrinsic motivation is more reliant

on a student's inner interest to learn and curiosity of knowing information (Linnenbrink and Pinrich, 2002). A combination of both EM and IM can be present in an individual's overall motivation to learn.

Quantity Versus Quality of Motivation

Both quantity and quality of motivation affect students' success. Quantity of motivation describes a student's persistence, concentration, and effect of studying (Grund, 2013). Student quality of motivation relies heavily on student focus of studying and useful methodology while studying. Quality motivation is perceived to have a greater influence than quantity of motivation according to the Self-Determination Theory (SDT) (Ryan and Deci, 2000). However, there has been limited research on this theory. There are two types of motivation used to measure quality of motivation: autonomous motivation (AM) which is consistent with intrinsic motivation and controlled motivation, consistent with extrinsic motivation (CM) (Grund, A. 2013). Autonomous motivation is developed within an individual, while controlled motivation is composed of sources externally affecting an individual (Kusurkar et al., 2012). Little research between quality and quantity of motivation has been conducted due to the difficulties of measurement. A study with medical students found Good Study Strategy (GSS) (quality) and effort were found to positively increase student success in grade point averages (Kusurkar et al., 2012). Researchers predicted quality of motivation overlapped with GSS, noting that the "Self-determination Theory (SDT) of motivation considers quality of motivation to be more important than quantity and describes a continuum for quality of motivation" (Ryan and Deci, 2000). Ryan and Deci (2001) developed SDT to describe the theory of motivation based on human tendencies to present themselves effectively. To achieve classroom goals, their theories align with others that quality of motivation greatly outsources quantity motivation. When it comes to measuring success regarding studying,

it is how well students study compared to how long they study. In this case, quality of studying would be how they study, and quantity would be how long they study, thus, making quality more important than quantity.

Demographics

Animal Science students come from diverse backgrounds that directly affect their interests in the classroom due to the experiences they incur on a regular basis. These experiences have helped them be successful in Animal Science courses because the students are able to relate the information, they learn in class with real-life situations back home. Perception of Animal Science students in the past has been for farm and ranch kids (Harrelson and Harrelson, 2016). Recent analyses show an increase of non-traditional and non-agricultural backgrounds in Animal Science students proving change is happening in student demographics (Sterle and Tyler, 2016). Analyses of 2,105 incoming freshman at Iowa State University in 2016 found 42% identified themselves as growing up in "rual/farm" area, 32% in "Small Town/City (under 100,000 population)", and 26% accounting for growing up in "Urban/City" (Sterle and Tyler, 2016). The correlation between undergraduate students' background and education in Animal Science, to their success within these classes is yet to be determined. Over the last decade, there has been an increasingly number of female Animal Science undergraduates (Peffer, 2011). In 2011, Peffer found cumulative grade point averages to be the same between female and male students. Students taking a course in Animal Science, but not majoring in Animal Science, were found to have a lower final grade (Peffer, 2011). A study conducted at Morehead State University accessed the introductory Animal Science undergraduate's demographics. Sixty-eight students were surveyed finding 85.3% of Animal Science students were female and 15.7% male (Peffer, 2011). Harrelson and Harrelson (2016), also found in their study that 61.2% of students grew up in a rural setting, and 95.5%

reported white ethnicity (Harrelson et al., 2016). In addition, 52.2% of undergraduate Animal Science students were involved in 4-H, and 56.7% were active in FFA. Students in Animal Science were found to have experience with different species; beef cattle– 16.4%, equine– 13.4% , poultry– 10.4%, goat– 8.9%, swine– 3%, dairy cattle– 1.5%, and sheep– 0%, (Harrelson et al., 2016). These demographics allow educators to better understand students, and in turn, modify curriculum to student background.

Distance Education in Animal Science

Distance education has been a growing component in higher education the last few decades. Research by North Carolina State University in 2017 found that 90% of students in the College of Agriculture and Life Science took online classes (Jayaratne and Moore, 2018). Concerns have arisen by educators of student motivation to learn material and apply it to their careers in online courses. “To some, distance education represents a deviation from conventional education (Simonson and Seepersaud, 2018).” Some educator’s hedge on the idea that students may not be as engaged in online verses in a traditional classroom (Dommeyer et al., 2004). This results in decreased success in the classroom and carries on to when the students continue into their career in the Animal Science field. Science educators specifically question if online teaching of the class room material and labs are as beneficial as face to face. One thing educators can agree on is learning is dependent on individual student’s motivation to learn the material. A study by Rovai, Ponton, Wightin and Baker (2007) found student motivation was higher in IM in online courses verses face to face, while there was no difference in EM found in the same situations. In another study by Chumbley, Haynes, and Stofer, revealed that students in agriscience courses had the highest motivation in self-efficiency and EM (grades). In agriscience courses they found the lowest motivator was self-determination. Across online course research, the greatest factor seen in

students to predict motivation has been self-efficacy (Britner and Pajares, 2006). There is a concern by some educators because of a decrease in overall motivation in online courses. The question becomes how can they help students become more self-efficient without a physical classroom? Certain data contradicts the theory that students are less motivated in online courses (Dommeyer et al,. 2004). In fact, some research shows that student motivation in online courses are equally motivated if not motivated at a higher level.

Apprehension of online Animal Science classes without hands on experience with animals is a concern (Columbaro, Norina et al., 2008). Students that major in Animal Science are highly motivated by their passion for animals. Labs in the Animal Science field are particularly challenging because of the lack of hands-on experience (Dommeyer et al., 2004). This type of experience has proven to increase student learning capability and taking away animal handling experience, is an additional concern for students going out into the field. The debate, however, is that distance education reaches a larger population. More Animal Science courses will become available online in this era due to ease of access to a larger population (Dommeyer et al., 2004). Understanding student's motivation levels that allows students to be successful is essential to future success of students in online classes. Looking past classroom education, employers want high achieving students to employ. Certain employers sway from hiring online students with the belief they are not as educated (Columbaro, Norina et al., 2008). This concern needs addressed before the next generation of graduates have even a larger number of online course work. If educators can improve online courses to keep students more motivated it will show a larger success in students learning while reaching a greater population. Successful graduate students who have completed online courses that were beneficial will enter the workforce showing employers that these kinds of classes can be just as useful as first-hand classrooms.

An interview with Dr. Golick, Distant Education Specialist from University of Nebraska-Lincoln, emphasized that student motivation is based on Holmerg's Theory of Interaction and Communication (Golick, 2018). If students have more influence in a course, the more motivated they will be (Golick, 2018). Dr. Golick accentuates "Strong student motivation facilitates learning, if you are motivated you are going to want and be able to learn more on that subject, if you are not, it's going to be more difficult" (Golick, 2018). Holmbert describes the Distance Education Theory in relation to student interaction. "The distance education theory that states that the value of the teaching is related to the student's feeling of comfort and belonging and course discourse, including questions, answers, and debates" (Holmbert, 1987). Interaction with students including questions and debates can engage students creating a feeling of comfort and belonging. Engaging students can increase their motivation to learn material. In correspondence distance education, educators need to be aware of these theories. To stop the questioning of distance education and science specific courses, educators need to make online courses interactive for students to increase motivation and success (Wallace, 2010). Keegan an establisher of distance education concluded:

> "that distance education is a distinct field of education, parallel to and a complement of conventional education. Shale (1988) countered that all of what constitutes the process of education when teacher and student are able to meet face-to-face also constitutes the process of education when the teacher and student are physical separated (Simonson and Seepersaud, 2018, p. 14)"

Online courses being as equally beneficial as face to face courses is one of those education processes that will continue forever due to its influence on perspective (Wallace, 2010). Distance education courses are only recently becoming more popular and there is a lot to be learned about

how to continue improve these courses (Wallace, 2010). Increasing motivation in online courses is a first step in improving success and proving the beneficial factors of distance education.

Study Time and Activities Effect

Student time spent out of class on course work has been found to show an increase in student success in the classroom (Kuh, 2001). Academic participation in various activities has also shown to improve student grades (Stinebrickner and Stinebrickner, 2001). Research in these areas by educators have been sought after for years. The time educators expect students to spend for studying varies but generally, students should put in 2-3 hours of studying per week for each credit of class taken (Brint and Cantwell, 2010). On average, student's study 3.42 hours a day and 28.2 hours in a week to cover all the credits they are enrolled in (T. Stinebrickner and R. Stinebrickner, 2001). It is recommended for every credit hour students should spend 2-3 hours of studying per week. However, in 2003, Babcock and Marks recorded students spending as little as 14 hours a week studying. This revealed a huge decrease in study time since 1961 at 24 hours per week. In 2006, Brint and Cantwel found that study time correlated strongly with overall higher-grade point averages and academic conscientiousness. Interestingly, an additional positive relationship between students involved with physical exercise and volunteering had greater levels of academic conscientiousness (Brint and Cantwell, 2010). However, activities and volunteering did not parallel with student grade point average (Brint and Cantwell, 2010). Little research has been done on the study time and technique differences that may be present in face to face vs. online courses. "Without knowing how students spend their time, it's almost impossible to link student learning outcomes to the educational activities and processes associated with them (Kuh, 2001)." Specifically, in Animal Science, educators yearn for more information on student study methods, quantity, and quality of time spent on courses.

CHAPTER III

Methodology

Design

The design of this study was focused on measuring the motivational factors and demographics of Animal Science undergraduates in relation to academic success in courses. After approval from the Institutional Research Board (IRB), quantitative and qualitative research was conducted in attempt to draw a clear conclusion on the effects of motivation, demographics, and online course differences on student success in Animal Science undergraduate courses. Quantitative research included students participating in a survey given in ten out of twenty-seven Animal Science courses at the University of Nebraska- Lincoln. A list of all Animal Science courses provided at UNL in the Spring and Summer of 2018 was gathered based on instructor approval. Educators that participated in the study provided a link to their students to complete in order to gain the needed information. Numerical data from the survey was recorded and then compared to the overall final grade of the student to measure their motivational level in relation to success. Qualitative research was conducted in the form of FG with participating students in the surveys. Open discussion on motivational questions were discussed in relation to student opinions. The methodology was formed to gain deeper insight into student factors for greater learning in Animal Science courses. This allows educators to adapt material to aid student success in courses.

Mixed Methods

For the purpose of this study mixed method research were used. Mixed methods of research are used in social science research methods to reinforce findings and explore

explanations of findings (Jick, 1979). Multiple method's of research are used in mixed methods to validate research which is referred to as triangulation (Jick, 1979). Triangulation is defined as "the combination of methodologies in the study of the same phenomenon (Denzin, 1978)." Social science research can be approached into two separate categories; quantitative and qualitative research. "Quantitative Research is used to quantify the problem by way of generating numerical data or data that can be transformed into usable statistics (DeFranzo, 2011)." Surveys are the most common type of quantitative research including structured questions and answers for participants (Pascarella, et al., 2010). Surveys are used to gather information from a large population to observe specific variables, opinions, and attitudes toward a subject (DeFranzo, 2011). Qualitative research is defined predominantly as exploratory research (DeFranzo, 2011). Focus groups were used in this research as qualitative research. Focus groups have a smaller sample size (6-12) in research projects with open discussion about specific ideas and questions. Focus Groups were developed to assist in filling the shortcomings that can be presented in quantitative data. Qualitative research utilizing FG allow elaboration on data represented by numbers. They allow researchers to analyze what participants are thinking and their rationale in their decisions in quantitative data (Jick, 1979). Surveys allocate individual specific responses given, but participation in FG yield the reasoning behind the responses (Krueger and Casey, 2009). From an educational research perspective, FG "Elicit student voice rather than merely reflecting the concerns and assessment criteria of these responsible for designing, delivery, and evaluation of curriculum" (Barbour, 2005). For the purpose triangulation in results from this study mixed methods of quantitative and qualitative research were used in the form of a survey and FG.

Institutional Review Board

Preceding the study, the principle investigator and committee completed the training program for human subjects and became certified by the Collaborative Institutional Training Initiative (CITI). Approval by the University of Nebraska- Lincoln's Institutional Review Board (IRB) ahead of the study was granted to insure safe and informed research (IRB 20180318043). Student consent forms were collected from each student participating in the research project. Identification numbers were assigned to each student when data was entered, and then used to identify participants data throughout the project.

Population

The study was focused on undergraduate students at the University of Nebraska-Lincoln in Animal Science courses. Courses that were surveyed face to face and online were: Equine Nutrition (ASCI 322), Equine Reproduction (ASCI 342), Introduction to Companion Animals (ASCI 251), Companion Animal Behavior (ASCI 271), Companion Animal Nutrition (ASCI 321), Animal Products (ASCI 210), Processed Meats (ASCI 410), Animal Welfare (ASCI 370), Anatomy and Physiology of Domestic Animals (ASCI 240). A total of 139 students were surveyed in face to face courses (n=101) and 38 students in online courses (n=38). Focus groups consisted of 12 students in two different groups. In focus group one six out of 15 of the highest motivated students from the questionnaire participated in the collaboration. The second focus group consisted of participants chosen at random ranging in the mean range of motivational levels from the surveys.

Quantitative Research

Survey

The instrument used to survey was a modified version of The Science Motivation Questionnaire II (SMQ II) (Appendix B and C) (Glynn, Brickman, Armstrong and Taasoobshirazi, 2011). Over all motivation scores could be measured from a low of 20 to a high of 120. The questions in the survey were designed to be a positive motivator in order to gain the best responses from students. The instrument consisted of 24 questions measuring student motivation in scales of *intrinsic motivation, self-determination, self-efficacy, career motivation, and grade motivation.* Revisions previously made to the instrument allowed to distinguish the difference between grade and career motivation. Measurement of motivation on the survey was based on a likert type scale modified from the original survey presenting; (1) *strongly disagree*, (2) *disagree*, (3) *don't know*, (4) *agree*, (5) *strongly agree.* Total motivational score could range from a low of 20 (highly unmotivated) to 120 (highly motivated). The Science Motivation Questionnaire II (SMQ II) was developed to be used in a wide variety of science fields (Glynn et al., 2011). By modifying the survey, responses could be applied to specific science fields. In this study, the word "science" was replaced with "Animal Science." Glyn, et al., 2011 reported reliability for the Science Motivation Questionnaire II (SMQ II) at 0.92 with Cronbach's Alpha Coefficient. Individually scales were measure for reliability: career motivation (0.92), intrinsic motivation (0.89), self-determination (0.88), self-efficacy (0.83), and grade motivation (0.81) (Chumbley, Steven Boot, et al. 2015).

In addition, the survey included questions centered around student demographics and outlook of online vs. face to face Animal Science courses. A separate version of the survey was given to students in online courses with an additional 7 questions on student preferences and

experience with online courses. The face to face survey totaled 39 questions, while the online survey totaled 46 questions. Together the complete survey took 10-15 minutes for students to complete. All the questions included on the survey are presented in on appendix B (face to face class version) and appendix C (online class version).

Data Analysis

Survey data was analyzed by the University of Nebraska- Lincoln's Statistical Department. Each question in the survey was analyzed to determine what percentage of students answered a, b, c, or d. This determined student differentiation on each question on the survey. Normal distribution could not be seen with the variables represented in the data. Due to fewer restrictions Spearman correlations was used to compare grades and motivation level. Correlations and p-values were gathered to analyze final survey results. Demographic variables with only two levels (e.g. Gender) were compared to motivational level by t-test. Multiple levels of demographic variables (e.g. Major) were compared to motivation levels by analysis of variance (ANOVA). P-values $< .05$ were considered significant in the analysis of demographics increasing motivation in students.

Qualitative Research

Focus Groups

Focus Groups were analyzed using basic qualitative methodology. Focus group data was used to reinforce the analysis of the surveys conducted, and to gain a deeper understanding into student reasoning. Basic methodology of qualitative research includes summarizing the description, interpretation, and understanding of patterns, themes, and categories presented by participants in the data (Merriam, 1998). This approach allowed for a deeper understanding of participants mindset of the phenomena by repeatedly highlighting themes that recurred

(Merriam, 1998; Conner, 2014). A phenomenon is defined as “a fact, occurrence, or circumstance observed or observable” (www.dictionary.com, 2019). To better understand the phenomenon in this study, FG were conducted using the qualitative paradigm to gain participant interpretation (Denzin and Lincoln, 1994).

Subjectivity Statement

Researchers involved in analyzing FG included three professors of Animal Science, one professor of Agriculture Leadership Education and Communication (ALEC), and a master’s graduate student of Animal Science. Four out of five of the researchers were highly experienced in postsecondary education in Animal Science and agriculture education. The ALEC professor specialized in qualitative research; retaining, facilitating, and transcribing FG. The remaining investigator was a teaching assistant (TA) for courses that were analyzed.

Data Collection

Focus groups consisted of 6 students in two separate groups, both conducted during hour sessions. Group 1 involved participants out of the top twenty highly motivated students with a total motivational score above 114 from The Science Motivation Questionnaire II (SMQ II). Group 2 was chosen at random with total motivational score on The Science Motivation Questionnaire II (SMQ II) between 88 and 113. Focus groups were facilitated by the principle investigator. Seven questions related to motivation, study habits, and student perception online vs. face to face Animal Science courses were presented for open discussion. Original FG questions can be viewed in appendix E. Students portrayed their opinion in a design of socialized constructivism. The mediator recorded and took notes on the discussion as students socialized on the topics presented. During this discussion, the participants developed additional supplemental

questions that applied to the topic of the study. Audio recording of FG were transcribed by a third-party transcriptionist not associated with the study.

Data Analysis

Line by line coding, axial coding and selective coding was done by hand to analyze content (Tesch, 1995; Conner, Nathan W, et al., 2014). Key themes that were evident in the analyze were highlighted for further observation. Initially the data was analyzed individually by the investigator. Then investigator met with participating researchers to present categories, themes, and findings. Together the researchers analyzed the data and came to a consensus of the findings presented. For the purpose of this study participants were identified by FG, and speaker. For example in FG 2, speaker 4, statement is referred to as (G2, S4) in the literature.

Epistemological Perspective

Crotty defines epistemology as follows: "theory of knowledge embedded in the theoretical perspective and thereby in the methodology" (Crotty. 2003, p. 3). Epistemology of this study included participants constructing their own meaning of the phenomenon using social constructivism (Crotty, 2003). The purpose and design allowed for a philosophical view, characterized from the epistemological perspective so "it allows us our insight and our blindness, and on a primary level cuts our research into what is acceptable and unacceptable" (Tennis, 2008).

Trustworthiness

Trustworthiness of the study was established through credibility. Credibility was achieved examining prolonged engagements, persistent observation, triangulation, referential adequacy materials, peer debriefing and member checks (Erlandson et. al., 1992: Lincoln and

Guba, 1990; Dooley 2007). The principle investigator engaged over two years observing participants obtaining in-depth data and understanding of phenomena. Persistences was obtained through multiple observations of different groups of students in several courses. Archival data, documents, and multiple researchers were used to triangulate findings and aid in referential adequacy of material (Dooley, 2007). Triangulation of data specifically refers to the use of multiple researchers to review the FG data to cross reference results to prove trustworthiness. Student participants in FG continuously checked their statements throughout the discussion to make sure their statements were accurate. Social constructivism allowed for peer review throughout the entirety of the FG. Thick description of the setting and detailed data on participants was collected prior to the qualitative research to ensure readers could defy transferability (Erlandson et al., 1992; Dooley, 2007).

CHAPTER IV

Survey Results

Student Demographics

There were 139 participants from nine Animal Science courses in the study from the University of Nebraska- Lincoln undergraduate program. Table 1 represents demographics of undergraduate students who completed the survey. Female students made up 77.7% of the study and 22.3% of student's were male. Ethnicity of students swayed in the study to Caucasian students at 93.5%, 3.6% Hispanic or Latino and 2.9% Asian. Among all the students 10.1% were freshman, 31.9% sophomores, 34.1% juniors, 20.3% seniors, and 3.6% second year seniors. A large diversity was shown in student demographics of home town size; 24.5% raised on a farm or ranch greater than 200 acres, and 22.3% in a city with more than 50,000 people, with lower population of students in between (Table 1).

Table 1

Frequency and Percentage of Gender, Ethnicity, Year in College, and Home Town Size

Individual demographic	Frequency	Percent
Gender*		
Female	108	77.7
Male	31	22.3
Ethnicity*		
White	130	93.5
Other	5	3.6
Native American/ American Indian	4	2.9
Year in College**		
Junior	47	34.1
Sophomore	44	31.9
Senior	28	20.3
Freshman	14	10.1
Senior +	5	3.6
Home Town Size*		
On a farm/ ranch greater than 200 acres	34	24.5
In a city with more than 50,000 people	31	22.3
In the country but not on a farm/ ranch (acreage)	24	17.4
In a city of 10,000 to 50,000 people	18	12.9
In a town with less than 10,000 people	18	12.9
On a farm/ ranch less than 200 acres	14	10.0

*n=138, **n=139

Educational Statistics of Participants

The majority of participant's were Animal Science majors' (n=70.8%) as seen in Table 2. The distribution of Animal Science option in this study were 33.6% in companion animal, 23.6% food animal production, 16.4% in equine science, 17% veterinary Animal Science, 8.2% business and communications, 1.8% meat science, and 0.9% animal biology and biotechnology (Table 2). In comparison to the entire University of Nebraska- Lincolns Animal Science graduating class in 2018, distribution of Animal Science option were 16.9% in companion animal, 32.0% production and management, 11.0% in equine science, 27.1% veterinary Animal Science, 5.2% business and communications, 2.2% meat science, and 5.5% animal biology and biotechnology. A preponderance of participants were involved with extracurricular activities with 73% of students involved, however only 8.6% felt their extracurricular activity influenced their grades (Table 2). 46.4% of students intended to work in an Animal Science field, 12.3% farming or ranching, 16.8% expected to continue their education to graduate school, 11.6% to professional school, with only 13.0% of students expected occupation to be unrelated to Animal Science (Table 2).

Table 2

Major, Animal Science Area of Study, Extracurricular Activities, and Intended Occupation of Students in Study

Student educational statistics	Frequency	Percent
Major*		
Animal Science	97	70.8
Other	40	29.2
Animal Science Option**		
Companion Animal Science	37	35.2
Food Animal Production	26	24.8
Equine Science	18	17.1
Veterinary Animal Science	11	10.5
Business and Communications	9	8.6
Meat Science	2	1.9
Animal Biology and Biotechnology	2	1.9
Extracurricular Activities*		
None	37	27
Competitive teams (equestrian, rodeo, etc.)	27	19.7
Clubs	26	19
Other	24	17.5
Judging Teams	15	11
Undergraduate research	4	2.9
Sorority/ Fraternity	4	2.9
Intended Occupation***		
Work in animal science field	64	46.4
Go to graduate school	23	16.7
Work in a field unrelated to animal science	18	13.0
Farming/ Ranching	17	12.3
Go to professional school	16	11.6

*n=137, **n=105, ***n=138

Student's applied animal handling experience was analyzed and recorded. Students self-evaluated their animal handling experience in this study. Almost half of students responded they has a great deal of animals handling experience at 45.3% and only 0.7% had none (Table 3). Species experience was surveyed finding majority of students had both large and small animal experience (48.2%), followed by 28.5% with large animals and only 23.7% with small animals (Table 3).

Table 3

Student Animal Handling and Area of Experience

Student animal experience	**Frequency**	**Percentage**
Animal Handing Experience*		
A great deal	63	45.3
A lot	36	25.9
A moderate amount	24	17.3
A little	15	10.8
None at all	1	0.7
Area of Experience**		
Both large and small animals	66	48.2
Large animals	39	28.5
Small animals	32	23.3
Not applicable	0	0

*n=139, **n=137

Student Study Time

The majority of students (46.8%) estimated spending 2-3 hours a week studying per course (Table 4). Only 5.8% of students spent as little as 0-1 hour a week studying per course

(Table 4). Over 50% of students did not study each day, however based their studying times on when quizzes, test, and due dates were forth coming (Table 4).

Table 4

Student Scheduling of Study Time and Amount

Student study schedule*	Frequency	Percentage
How students schedule study time		
Do not study everyday, but I pay attention to due dates	71	51
Try to study everyday, depending on what is due	46	33.1
Set aside a scheduled time everyday to study	11	7.9
Study whenever I can	11	7.9
Study time per course per week		
2-3 hours	65	46.7
1-2 hours	31	22.3
3-4 hours	27	19.4
0-1 hours	8	5.8
4-5 hours	8	5.8

*n=138

Student Online Demographics

Of the one hundred one students that participated in the study were in face to face courses and thirty-eight participants were in online courses. Online students in Animal Science courses were evaluated and asked about their reasoning for taking online courses (Table 5). All but one student had taken previous online courses and 39.4% of students took between 3 to 1 online course (Table 5). A third of students took their first online course in high school and two thirds beginning their sophomore year of college. The primary reason student indicated for taking an

online course was convince (54%) while none indicated they felt more successful online (Table 5).

Table 5

Student History of Taking Online Course

Online lecture	**Frequency**	**Percent**
Course Lecture Method*		
Face to Face	101	72.7
Online	38	27.3
Is this the students first online course**		
No	36	97.3
Yes	1	2.7
Number of online courses taken***		
5+	13	34.2
4	10	26.3
3	8	21.1
2	6	15.8
1	1	2.6
When students took there first online course**		
College Freshman	14	37.8
Highschool	12	32.4
College Sophomore	11	29.7
College Junior	0	0
College Senior	0	0
Reasons for taking online courses**		
Convenient	20	54
Course only offered online	7	18.9
Another reason	7	18.9
Distance education student	3	8.2
I feel more successful online	0	0

*n = 139, **n = 37, ***n = 38

Online students were split evenly on the preference of taking Animal Science courses online and 84.2% said they would take another online Animal Science course (Table 6). Students taking online Animal Science courses did tend to study differently than for face to face Animal Science courses (Table 6).

Table 6

Online Students Preference and study habits in Online vs. Face to Face Courses

Online student preference*	**Frequency**	**Percentage**
Would online students prefer taking course face to face		
Yes	19	50.0
No	19	50.0
Would online students take another online course		
Yes	32	84.2
No	6	15.8
Did online students study differently online vs. face to face		
Yes	23	60.5
No	15	39.5

*n=38

Motivational Levels

The student questionnaire survey (appendix B and C) recorded student levels of motivation based on type of motivation. IM, SE, SD, and GM possible range of 5-25 based on the sum of student responses to each question. CM was scored on a mean scale range between 4-20, resulting from fewer questions. Questions in the study corresponding to each type of

motivation can be seen in Appendix A and B. Overall mean motivational level for all students in each motivational category were reported; IM-21.6, SE-20.3, SD-19.7, GM-20.7, CM-17.3. CM showed the highest motivation level from student followed by IM, and least motivational category SD. Overall mean motivational level of all categories was measured at 99.5 with a range 24-120 (Table 7). Most student's overall motivation in animal science courses were moderately high.

Table 7

Student Average Motivation for Animal Science Courses (n=139)

Type of Motivation	Mean	Std Dev
Intrinsic Motivation*	21.58	4.14
Grade Motivation*	20.70	4.23
Self-efficiency*	20.30	3.98
Self- determination*	19.67	4.19
Career Motivation**	17.27	3.35
Total Motivation***	99.53	17.27

Scores of components *range 5-25, ** range 4-20, *** range 24-120

IM, SE, SD, GM range 5-25, CM range 4-20, TM range 24-120

Motivation Levels Correlating to Overall Focus Groups

Analysis showed increased student motivation tended to increase overall final grades. While correlation was weak, self-determination, self-efficacy, and grade motivation approached significance between motivation and grade (Table 8). The following p-values correlated individual motivation categories to overall final grades; IM (0.1448), SE (0.0137), SD (0.0154), GM (0.0009), CM (0.9292), resulting in a total significant p-value of (0.0122) (Table 8). Significance in p-values exhibit student with higher end of the year final grades were more motivated (Table 8). Meaning students with that performed more successfully in courses were highly motivated.

Table 8

Effects of Student Motivation on Overall Course Grade (n=139)

Type of Motivation	Correlation	P-value[a]
Intrinsic Motivation	0.1248	0.1448
Self-Efficiency	0.2093	0.0137
Self- determination	0.2059	0.0154
Grade Motivation	0.2788	0.0009
Career Motivation	0.0076	0.9292
Total Motivation	0.2129	0.0122

[a]P-values < .05 are significant

Demographic Variable vs. Overall Grade or Motivation

Demographic variables were analyzed to overall student final grades resulting in no significant findings (Table 9). Demographic variables with only two levels (e.g. gender) were compared to motivational level by t-test. Multiple levels of demographic variables (e.g. major) were compared to motivation levels by analysis of variance (ANOVA). P-values < .05 were considered significant in the analysis of demographics increasing motivation in students. Analysis indicates there is no significant correlation from student demographics to their overall final grades (Table 9). However, a trend in in area of childhood and expected occupation was seen to impact course overall grade (Table 9).

Table 9

Overall Course Grade based on Demographic Variable (n=139)

Variable	P-value[a]
Gender*	0.2330
Ethnicity**	0.1925
Major*	0.1959
Year in school**	0.5345
Area of childhood**	0.080
Expected occupation**	0.0738
Animal handling experience**	0.4997
Species experience**	0.3451

[a]P-values < .05 are significant, * T-Test, ** ANOVA

Students that grew up in the country, but not on a farm or ranch appeared to have higher overall final grade average at 82.1%. In comparison, students that grew up in the city on average had a 2.9% decrease in overall final grade, averaging a 79.2% in Animals Science courses (Table 10). Student expected occupation also showed a trend in having an effect on overall final grade. Students that expected to go to professional school appeared to have the highest overall final grades, averaging an 84.7%. Following, students intending to go to graduate school appeared to have an average final grade of 82.7%. The lowest grade point average of student intended occupation was farming or ranching at 75.9% (Table 11).

Table 10

Overall Course Grade based on Student Area of Childhood (n=139)

Area of Childhood	Course Grade
In the country but not on a farm/ ranch	82.1%
On a farm	80.5%
In the city of 10,000 to 50,000 people	79.2%

Table 11

Overall Average Course Grade based on Students Intended Occupation (n=139)

Intended Occupation	Course Grade
Go to professional school	84.7%
Go to graduate school	82.8%
Work in a field in unrelated to animal science	80.3%
Work in animal science field	80.1%
Farming/ranching	75.9%

Results concluded significant values in correlation of overall student motivation in demographic variables on student intended occupation (0.0092) (Table 12), and gender (0.0007) (Table 14). Students intending to work in an Animal Science related field had the highest overall motivational score at 103.9 and lowest motivational level at 90.4 for students intending to work in a field unrelated to Animal Science (Table 13). Student gender had the greatest effect on increasing student overall motivation (0.0007) (Table 14). Students whose childhood was on a farm and students that intended to go to professional school had the highest grades (Table 10 and 11). Motivational levels were significantly greater based on student intended occupation (Table 12) and gender (Table 14).

Table 12

Intended Occupation Correlated to Student Motivation (n=139)	
Type of Motivation	P-value[a]
Intrinsic Motivation	0.0416
Self- Efficiency	0.2427
Self– Determination	0.0041
Grade Motivation	0.0513
Career Motivation	0.0014
Total Motivation	0.0092

[a]P-values < .05 are significant

Table 13

Overall Motivation based on Students Intended Occupation (n=139)	
Intended Occupation	Mean Motivation
Work in an animal science field	103.9
Go to professional school	101.7
Go to graduate school	98.8
Farming/ranching	91.3
Work in a field in unrelated to animal science	90.4

Table 14

Female Student Motivation Correlated to Male Student Motivation (n=139)	
Type of Motivation	P-value[a]
Intrinsic Motivation	0.0056
Self- Efficiency	0.0005
Self– Determination	0.0003
Grade Motivation	0.0013
Career Motivation	0.0080
Total Motivation	0.0007

[a]P-values < .05 are significant

Face to face vs. Online Motivation and Grades

All courses that were taught both online and face to face were analyzed to compare student motivation and grade differences. Motivation level of students in face to face courses versus online did not show a significant difference (Table 15). A significant difference in grades was only presented in ASCI 271 (Companion Animal Behavior) in face to face vs. online courses (Table 15). Student mean difference in overall grade between taking ASCI 271 face to face vs. online was 21.09% higher with a P-value <0.0001.

Table 15

Grade difference Online vs. Face to Face in Surveyed Courses

Animal Science Course	Mean Difference (lecture-online)	P-value Difference (lecture-online)
ASCI 240	-1.80	0.7682
ASCI 271	21.10	<.0001
ASCI 321	4.75	0.3215
ASCI 342	-0.82	0.6408

P-values < .05 are significant

Focus Group Results

Two focus group were conducted with participants from this study. The first focus group consisted of six students that scored in the top 15 most highly motivated participants, identified in the survey analysis. The second focus group consisted of participants chosen at random ranging in the mean range of motivational levels from the survey. Themes that emerged from FG are as followed; student definition of motivation, professor impact on motivation, do's and don'ts of testing to effect student motivation, classroom environment, quality vs. quantity, study habits in Animal Science courses, effect of student backgrounds on success in Animal Science courses, and online vs. face to face Animal Science courses.

Motivation Defined by Success

Students participating in FG repeatedly described both intrinsic and extrinsic motivation when asked about their motivation to learn in the classroom. Intrinsic and extrinsic motivation by

one student was expressed as “I think with the intrinsic motivation, it's like some of it is way more enjoyable to you. With extrinsic, it's stressful motivation. Like I have to do this or else” (G1, S5). Most reiterated by students involving motivation in both discussions was the priority of being successful (G1, S2) (G1,S4). Extrinsically students expressed that their grades, future career opportunities, and goals defined their motivation to be successful in Animal Science classes (G1, S3) (G1, S3) (G1, S2) (G2, S3). Intrinsic motivation was defined by student’s individual interest in certain subjects (G1, S3) (G1, S1). Analysis showed that currently students not only related good grades to success, but also found that students are motivated to learn so they can become successful in the future (G1, S1) (G1, S5) (G1, S3) (G1, S4) (G2, S4) (G2, S1). Additionally, students in the highly motivated focus group stated that they were generally people pleasers, and this correlated to wanting to please their professors (G1, S5) (G2, S5) (G2, S3) (G2, S1).

Professor Impact on Student Motivation

Throughout the entirety of the FG, students described one of the greatest factors on their motivation and success was based centrally around the professor (G2, S5) (G2, S3) (G2, S1). Students expressed how their motivation and success depended on the following characteristics: how professors acted toward students, how passionate they were about the subject, how they set up the class, the expectations the professor had for the student, and the environment of the professor’s classroom (G2, S5) (G2, S3) (G2, S1) (G2, S6) (G1, S5) (G1, S2). Students expressed delivery method in a course determined their motivation (G1, S2) (G2, S4) (G2, S1). Students preferred when professors were interactive in the classroom, engaged in discussions, and provided explanations that were not available elsewhere, such as on power points online (G1, S2) (G2, S4) (G2, S1) (G1, S6). Students found power points were helpful, but classes that based teaching only on slides presented in class were useless to attend when the information

could be obtained online (G1, S4). Animal Science professors that showed their own motivation and passion for a subject produced more highly motivated students (G2, S5) (G2, S3) (G2, S1) (G2, S6). Students expressed how they could tell when professors were more engaged when teaching compared to a less interested professor (G2, S3) (G2, S4) (G1, S3). "You can tell the difference off of lectures professors present, if they just read off a power point or actually are having you process things and understand it" (G1, S3).

Do's and Don'ts of Testing to Effect Student Motivation

Students reiterated course testing influenced how they were motivated to learn. Exams that were deemed extremely difficult and resulted in most of the class failing caused a decrease in student motivation (G1, S2) (G1, S4) (G1, S2). Frustration was expressed from the highly motivated students in the FG due to extreme effort put in to their work did not show on their exams (G2, S4) (G1, S2) (G1, S4) (G2, S1). Because of this, they became unmotivated and put their effort elsewhere (other classes). On the contrary, they felt exams they studied rigorously for that were easy, contributed to the decrease in their motivation to study on following exams in that subject (G1, S5). Students expressed that a challenging, yet achievable, exam and quiz motivated them to learn continuously throughout the class. Students explained that repetition of multiple quizzes and exams not only decreased motivation, but also decreased their overall learning (G1, S3) (G1, S4) (G2, S4). "Busy work for me is an automatic decrease in motivation and interest in the class when it's just quiz after quiz. You have to remember that you're supposed to do a five-point quiz and multiple assignments every week. You spend more time trying to remember what you have to do than you actually learning in my opinion" (G2, S5). Students stated that comprehensive quizzes resulted in studying exact answers, rather than understanding the concept (G2, S5) (G2, S4) (G1, S4) (G1, S5). This negatively affects their ability to learn

information to be used in the future. Motivation decreased when an overload of difficult classes was being taken by a student because of exams being given close together (G1, S5). It was discussed in both FG that students would ideally have core Animal Science course exams spread out. This would require instructors of core Animal Science courses to communicate and plan their exam dates together.

Classroom Environment

Other facts student's felt effected their motivation were class size, environment (lighting, tables, desks, decorations, etc.) and the ability for professors to get to know them on a personal basis (G2, S4) (G2, S3) (G1, S6) (G1, S2). Students in both focus group expressed that smaller class sizes increased their attention in the classroom due to less distractions (G1, S3). They also stated that they felt more compelled to ask questions in these smaller settings (G1, S5) (G1, S6) (G1, S2) (G2, S5). Repeatedly it was discussed that professors who students felt tried to engage in knowing them personally substantially increased their motivation to learn (G1, S1) (G2, S4) (G2, S3). In addition, students were more comfortable asking questions and approaching their professor for help.

Quality vs. Quantity

Quality vs. quantity of material in class and studying habits were discussed in both FG. Students perceived that the quality (how they study) of studying overweighed quantity (length of study) (G2, S4) (G1, S3) (G1, S6). "I definitely think that quality shows in grades and long-term memorization" (G2, S4). Courses heavily loaded with assignments decreased student motivation and resulted in the students feeling that they never truly understood the concept they were assigned (G1, S4) (G2, S4). Quality work in studying and understanding concepts in and out of the

classroom held a more beneficial reputation than quantity. Students also shared that their peers increased their quality of studying greatly (G1, S2) (G1, S5) (G1, S3) (G2, S4) (G2, S3). One of the greatest effect's students felt professors gave them was the feedback they received on assignments and exams (G1, S5) (G1, S3) (G1, S4). Feedback increased their motivation to correct their work and understand the material more (G1, S5) (G1, S3) (G1, S4). Reviews were another popular topic in the conducted FG (G2, S3) (G2, S1) (G2, S6) (G1, S4) (G1, S6). Students indicated the courses which spent time reviewing information increased their quality of their studying, and allowed for a great understanding of key information (G2, S3) (G2, S1) (G2, S6) (G1, S4) (G1, S6).

Study Habits in Animal Science Courses

Animal Science students participating in the group explained that they studied differently in their Animal Science courses compared to other courses (G1, S1). "I study differently yes, because Animal Science classes are something that I'm going to use for the rest of my life. So, I study to understand, rather than to pass the test" (G1, S5). Animal Science students put forth more motivation and effort to studying Animal Science courses than their core requirements (G2, S3) (G2, S1) (G1, S3). They explained that it was due to their interest and priority of knowing the information for future careers (intrinsic and extrinsic motivation) (G2, S6) (G1, S5).

Effect of Student Backgrounds on success in Animal Science Courses

Diverse backgrounds (gender, ethnicity, animal handling experience, area of childhood, ect.) were present in FG, allowing for insight into how students felt their Animal Science background effected their success in the classroom. Experience in the Animal Science industry

came as a helpful tool expressed by those in the FG, however, did not determine their success in the classroom (G1, S2) (G2, S1) (G2, S4) (. Students agreed that success in Animal Science classes are determined by “how you value your education” (G2, S4). To go along with this, it was stated that, “how passion driven you are about your interests and how you take advantage of it” (G2, S4).

Online vs. Face to Face Animal Science Courses

Motivation and study habits in online versus face to face courses in Animal Science varied according to students. Overall, students preferred taking Animal Science classes face to face (G2, S6) (G2, S1) (G1, S1) (G1, S3). The structure that was presented in the classroom by attending class, motivated them to work (G2, S4) (G1, S1). Hands on activities were noted to be beneficial, specifically, the Animal Science labs (G1, S3) (G1, S6). “I've gotten more out of the labs honestly than I have the classes” (G1, S1). Students expressed that they were easily distracted during online lecture requiring greater self-control. Additionally, students communicated their concern that they could not ask questions or for more clarity in their online classes (G2, S4) (G1, S1). Online classes lacked the teacher student interaction and this led to decreasing motivation to learn (G1, S6). On the other hand, the freedom for students to re-watch lectures online was positively described as the greatest tool from all students (G1, S4). As a solution, students in the highly motivated FG recommended hybrid Animal Science courses consisting of online tools and hands on labs (G1, S4) (G1, S2) (G1, S5).

Summary

Focus group analysis resulted in the conclusion that students are equally intrinsically and extrinsically motivated in Animal Science courses. Most influential motivators for student were

grades, personal goals, career opportunities and self- success. Personal interaction with passionate professors increases student interaction and motivation, resulting in greater success. Preferably, students find smaller class sizes beneficial to their learning. Reviews with professor reiterating material was found to increase student success. Animal Science students benefit more from face to face courses where interaction can occur then online classes with limited interaction. Focus groups resulted in the understanding that Animal Science professor had the greatest impact on student motivation.

CHAPTER V

Findings and Discussion

Results show undergraduate Animal Science students have motivational factors correlating to their academic success in overall final course grades. Due to a large diversity of students, academic success and motivation varied from student to student. The majority of students were Caucasian females and were completing their sophomore year of Animal Science. This data supports the conclusion to Peffer's study that there was a large increase in the number of female Animal Science student in 2011 (Peffer, 2011). To go along with this information, Harrelson and Harrelson (2016) reported that the majority of Animal Science students were of Caucasian race. While students came from a variety of different home town sizes, the majority of students had animal handling experience with both large and small animals. The data shows what Sterle and Tyler (2016) concluded that Animal Science students are raised in diverse backgrounds and are not necessarily only from farm and ranch backgrounds (Harrelson and Harlson, 2016). This goes against the bias ideas that Animal Science students are only comprised of typical farm and ranch raised youth. Past studies have focused on researching student's Animal Science livestock options of choice (Harrelson and Harlson, 2016). Animal Science programs throughout Universitys differ based on location, specialties, and student interest. Animal Science departments tend to cater to the needs of their student population and surrounding areas (Peffer, 2011; Harrelson and Harlson, 2016). This creates an assortment of universities to choose from, which makes it challenging to have a complete picture of the Animal Science programs across the country. At UNL, a large majority of students choose companion animal (n=37) and food animal production option (n=26) in Animal Science.

According to this study, three quarters of students that attend UNL participate in extracurricular activities. Most Animal Science students intend to work in an Animal Science field position, with a little over 15% wanting to go to graduate school or vet school. These statistics emphasize the success of retaining and preparing students at UNL in the Animal Science program. The demographics of the students that participated in this study are similar to other research (Harrelson and Harrelson, 2016; Peffer, 2011; Sterle and Tyler, 2016).

While it is recommended that students' study 2-3 hours per credit hour, the research showed that in fact students were only studying 2-3 hours per course throughout a week's time (Stinebrickner and Stinebrickner, 2001). The amount of study time for students was found to be based on course due dates, rather than a set time during the week. This data correlates with Babcock and Cantwell's conclusion that student study time has been decreasing substantially (Babcock and Marks, 2003). To go along with this, 60% of online students stated they studied differently in online course than face to face. Students enrolled at UNL in the Animal Science program are taking more online classes as a whole. These data support a study conducted at North Caroline State University in 2017 found that a significant number of students took online courses (Freitas, Sara Isabella De, et al. 2015). The online course experience in Animal Science has presented students with the opportunity to work and study differently than the traditional face to face courses. While online Animal Science students did not prefer one method over the other between online course and a face to face course, the majority agreed they would take another Animal Science course online. The main reason that students choose to take online courses is due to convenience. Contradicting the theory from Animal Science professors that students are less engaged online, students in face to face course did not have a different overall final grade than

students participating in online courses (Freitas et al., 2015). Students seem to be equally motivated and successful in traditional courses vs. online Animal Science courses.

To measure student overall motivation, motivation was broken down into different categories to determine how it had an effect on the student. In terms of motivation, students were most driven by career motivation, followed by intrinsic motivation, and finally, grade motivation. This contradicts Chumbley and others study (2015), that student success could be predicted by self-efficiency (Chumbley, 2015). There appears to be an emphasis on career path as the reason to be motivated in Animal Science courses. This is in agreement with the theory that professors feel learning is dependent on individual student motivation defined as intrinsic motivation. Accordingly, the other desire students had to succeed in the classes were their overall final grade. The grading system has proven to be one of the key factors in the students need to be successful. Highly motivated students had correspondingly higher overall final grades in Animal Science courses. Common factors that greatly affected overall final grades were self-determination, self-efficacy, and grade motivation. Surprisingly, student's intrinsic motivation and career motivation did not affect their overall final grades. While these factors display the idea that students are more motivated intrinsically, in fact it is the extrinsic factors that helps students be more successful in final grades based on this study.

From our findings, most demographic variables had little to no effect on student overall final grades. Surprisingly, the hometown size of student's childhood and expected occupation did have a slight impact on overall final grades. The explanation of such a finding can be contributed to the fact that farm kids that have a background in Animal Science had greater success in this specific field. Student background was considered an advantage, but not a determining factor of success in AS courses. Motivation, desire, and interest were considered what it took to be

successful, rather than student background (Linnenbrink and Pinrich, 2002). The majority of students in the study intended to work in an Animal Science field, explaining why student intended occupation had an effect on overall final grades.

Demographic factors that affected motivation were only found in female vs. male students and intended occupation. This data confirms Peffer's (2011) findings that female and male student grade point averages were similar (Peffer, 2011). However, this study shows that female students had a higher motivation level compared to males.

Focus groups went on to solidify the findings of the survey results with a more in-depth explanation from students. They described their success in Animal Science courses as dependent on their motivation to learn. The standard of success was determined by students by achieving good grades and having a desire for future success in their career after completion of the program. The factors influencing student motivation in a course was greatly influenced by the instructor. Interactive, personal, and engaging instructors were considered better motivators for students. Instructors' willingness to get to know students individually, along with their own personal desire to help students learn greatly increased student motivation. Pupils preferred instructors that engaged with students in the classroom with discussion and activities. Desire to learn material was greatly based on the instructor's own motivation and passion about the course subject. To increase student motivation, instructors should use discussions and activities to keep students engaged and motivated.

Teaching method and course material had an increased effect on student motivation and performance. Repetitive methods of teaching, such as power point lectures, were reported as a decrease in motivation. Students felt these lecture methods were dull, and not worth coming to class for when they could access the information online.

Course testing was another factor associated with student motivation. Students explained they were in need of a challenging exam to stay motivated to actually study and learn the material. On the other hand, overbearing exams in Animal Science courses made some students feel defeated before even taking an exam. Students noted that this decreased their motivation and lead to lower grades because they expected failure. This expectation of failure resulted in a lack of effort in the first place by the students. On the topic of class projects, students felt encouraged by large projects, and unengaged in smaller projects. These assignments students referred to as busy work, and decreased their motivation to learn by only having a desire to finish the assignment rather than learning the material. Numerous quiz's fell within this category as students explained they were more prone to study for the exact answer rather than understanding the lesson. Instructors that facilitated assignments and projects that challenged students to look at all the material increased the students overall learning. Students majoring in Animal Science had a deeper desire to study for their Animal Science courses than others courses due to their interest and need for knowledge in their future career. The survey analysis supported this by participants stating that career motivation was a significant factor. The quality of the studying was deemed more valuable than the quantity of studying. Students felt shorter, more productive study sessions were more useful than the amount of time spent studying. These findings were concurrent with previous studies that found students with higher quality of studying habits were more productive and had less internal conflict in studying material (Grund, A. 2013). One of the most useful tools students felt professors could provide them with was informative feedback. This was especially true on assignments and projects. In fact, this actually encouraged students to do better on the next assignment and class as a whole.

Research analysis showed no difference in student success and motivation in the two class styles, however, students expressed that they felt less motivated in online courses without the structure of going to class. Online lectures were seen as both a positive and negative experience. Students liked online lectures due to the fact they could repeat lectures to absorb more information. However, they also expressed that without the classroom structure, they were distracted by the environment they chose to watch the lectures in. These distractions affected their retention of information presented in the online courses. Students preferred both online tools and hands on labs to create more motivation and gain more knowledge. Lack of student interaction was one of the frustrations students expressed in online courses. Since questions had to be emailed to professors in online classes, students felt the speed of responses were inconsistent or inefficient.

Conclusion

These data indicate student final grades appeared to be influenced more by different motivations, rather than different demographics or methods of delivery. Due to these findings, Animal Science instructors should incorporate more student motivational factors in their courses. Motivational factors such as: emphasizing career opportunities, assignments related to scenarios in the workforce for students, and potential opportunities to improve grades. Overall, motivation has a large effect on student success, specifically in self-determination, self-efficacy, and grade motivation (Linnenbrink and Pinrich, 2002). These particular motivations have the greatest effect on student overall final grades. Factors effecting motivation include both gender and intended occupation. Results showed that female students on average have a higher motivation to learn Animal Science than male students in the same courses. Students that wanted to pursue an

Animal Science career also portrayed a higher desire to learn the material. Experience in the field of Animal Science did not appear to have an effect on student motivation or grades.

Teaching methods and forms of evaluation such as testing had a large factor on student motivation in these results. Repetitive teaching method and quiz's decreased student motivation to learn. Results from FG show including mixed methods such as discussions, hands on activities and labs increase student learning. In addition, exams and projects that incorporate the entirety of the course in these results were described as an advantage for students being able to fully understand course content. This advantage of understanding the course was referred to as being more suitable for students to transfer into an Animal Science career and be successful.

The results from the study show evidence that there should be no concern by instructors that students are retaining the same information in face to face vs. online Animal Science courses. Success by students was defined as having an increase in motivation to learn to go along with passing grades. Student motivation was greatly dependent on instructor interaction and lecture method. Because of this, instructors should include more hands-on activities that contribute to learning about the entire subject rather than specific topics. Additionally, instructors should also show their own motivation to learn Animal Science to help motivate their students. Increasing student motivation will result in greater success and a higher final grades in Animal Science courses.

Recommendations for Future Research

In the future, more research needs to be done on a global scale at Universities offering Animal Science programs. To understand student background in relation to student academic success in Animal Science, a larger population needs to be researched. In addition, student

animal handling experience in future studies may need to be analyzed further on a measurable scale created by professionals to determine its effect on student success. Further research into demographic factors such as student area of childhood and expected occupation is recommended to determine their effects on student's academic success. Student study habits in Animal Science such as study time and quality need to be further analyzed in correlation to student success. Future studies should define student learning ability in Animal Science for a deeper understanding of student academic success.

Implications

Animal Science instructors have a significant impact on the academic success of Animal Science students. In addition, student motivation is a prominent factor on student academic success, and should be taken into consideration by instructors. This research highlights career motivation for students as a key factor in motivating students. With this information it allows instructors the advantage to use career opportunities and activities to increase their student success. Including assignments, case study discussions, projects, and guest speakers related to Animal Science careers and scenarios could motivate students. Engaging activities, laboratories, and field visits in Animal Science may also encourage student success in courses.

Student evaluation by instructors may be another large factor in student success. Repetitive quizzes, assignments, and lecture methods decreased student motivation in this research. Students expressed not only decreased motivation by repetition, but described how they were focused on answering the specific questions on a quiz rather than understanding the concepts taught in the course. Larger projects, including application of information learned from the entire course, increased their motivation by providing them the opportunity to relate all the materials taught in the course. This allowed for students to visualize how a course could apply to

their career. The difficulty of exams largely effected student motivation. Students described extremely challenging exams decreased their motivation because they expected to fail. Difficult, yet achievable exams are recommended to test student knowledge to increase motivation to learn. In addition, it is recommended that instructors provide informative feedback on all assignments. Findings in FG's showed feedback significantly increases student motivation to improve quality of work put forth on future assignments. Review sessions in FG's were frequently brought up by students as a large contribution as a helpful tool in Animal Science courses and is recommended to Animal Science instructors.

The combination of survey results on student demographics and motivation, along with the elaboration of FG's, show many factors that could influence student academic success in Animal Science courses. Instructors should be motivated and enthusiastic about course subjects to greatly impact student's own motivation in learning material in the course. Also, the instructor's own motivation was described in FG's to encourage students to ask question and elaborate on subjects. Bottomline findings show that faculty should decrease number of individual assignments and quiz's focused on specific lessons in a course. Instead AS instructors should incorporate projects that focus on the entirety of the course and the relation the course could have on their career. Findings conclude instructors should show enthusiasm and motivation in course subjects and incorporate mixed methods of teaching with hands on activities to motivate students resulting. These modifications could increase student academic success of Animal Science students.

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Appendix A

Face to Face Survey Instrument

Face to Face Survey

Animal Science Course and Motivation Evaluation Survey

Name_____

Class_____

By checking the box below that you agree in the participation of analyzing the comparison of your survey to your final grade. (This will not affect your grade, and your name will be changed to a participate number once matched for confidentiality.)

☐

Are you:

Male Female

Please specify your ethnicity

a. White
b. Hispanic or Latino
c. Black or African American
d. Native American or American Indian
e. Asian / Pacific Islander
f. Other

What is your year in school?

Freshman Sophomore Junior Senior Second Year Senior

What your current major?

Animal Science Other (please indicate) _____

If majoring in Animal Science what is your option for area of study?

a. Animal Biology and Biotechnology
b. Business and Communications
c. Companion Animal Science
d. Equine Science
e. Meat Science
f. Food Animal Production
g. Veterinary Animal Science

Where did you grow up?

a. On a farm/ ranch less than 200 acres
b. On a farm/ranch greater than 200 acres

c. In the country but not on a farm/ ranch (acreage)
d. In a town with less than 10,000 people
e. In a city of 10,000 to 50,000 people
f. In a city with more than 50,000 people

What is your expected occupation upon graduation?

a. Farming/ ranching
b. Work in an animal science field
c. Go to professional school
d. Go to graduate school
e. Work in a field in unrelated field to animals science

How much animal handling experience have you had?

a. A great deal
b. A lot
c. A moderate amount
d. A little
e. None at all

What area is your animal experience relevant to?

a. Large animals
b. Small animals
c. Both large and small animals
d. Not applicable

Were you involved in extracurricular activities involving animals before college?

a. 4-h
b. FFA
c. Livestock showing
d. Horse showing
e. Other
f. None

Are you involved in activities with the Animal Science Department if so what?

a. Judging teams
b. Competitive teams (equestrian, rodeo, etc.)
c. Clubs
d. Sorority/ Fraternity
e. Undergraduate research
f. Other
g. None

If you are involved in animal science activities though UNL do they influence your grades?

a. None
b. Some amount
c. Moderate amount
d. Extensive amount
e. Not applicable

How much time do you set aside for this course?

a. 0-1 hours
b. 1-2 hours
c. 2-3 hours
d. 3-4 hours
e. 4-5 hours

How do you schedule your study time?

a. I set aside a scheduled time every day to study
b. I try to study every day, depending on what is due
c. I don't study every day, but I pay attention to due dates
d. I'm really busy, so I just study whenever I can

What is your expected grade in this course?

A B C D F

Please answer the following statement below based on your current Animal Science course on a scale of 1-5, with 1 being Strongly disagree and 5 being Strongly agree.

	Strongly Disagree (1)	Disagree (2)	Don't Know (3)	Agree (4)	Strongly Agree (5)
Learning animal science is interesting.					
I enjoy learning animal science.					
The animal science I learn is relevant to my life.					
I am curious about discoveries in animal science.					
Learning animal science makes my life more meaningful.					
I believe I can earn an "A" in animal science courses.					
I am sure I can understand animal science.					

I am confident I will do well on animal science labs.					
I believe I can master animal science knowledge and skills.					
I am confident I will do well on animal science tests.					
I put enough effort into learning animal science.					
I use strategies to learn animal science well.					
I spend a lot of time learning animal science.					
I study hard in animal science classes.					
I prepare well for animal science tests and labs.					
It is important that I get an “A” in animal science courses.					
Getting a good grade in animal science is important to me.					
Scoring high on animal science tests and labs matters to me.					
I like to do better than other students on animal science tests.					
I think about the grade I will get in animal science courses.					
Learning animal science will help me get a good job.					
Knowing animal science will give me a career advantage.					

Understanding animal science will benefit me in my career					
My career will involve animal science.					

Appendix B

Online Survey Instrument

Online Animal Science Course Evaluation Survey

Name_____

Class_____

By checking the box below that you agree in the participation of analyzing the comparison of your survey to your final grade. (This will not affect your grade, and your name will be changed to a participate number once matched for confidentiality.)

☐

Are you:

Male Female

Please specify your ethnicity

g. White
h. Black or African American
i. American Indian or Alaska Native
j. Asian
k. Native Hawaiian or Pacific Islander
l. Hispanic or Latino
m. Other

What your current major?

Animal Science Other (please indicate) _____

What is your year in school?

Freshman Sophomore Junior Senior Second Year Senior

If majoring in Animal Science what is your option for area of study?

h. Animal Biology and Biotechnology
i. Business and Communications
j. Companion Animal Science
k. Equine Science
l. Meat Science
m. Food Animal Production
n. Veterinary Animal Science

Where did you grow up?

g. On a farm/ ranch less than 200 acres
h. On a farm/ ranch greater than 200 acres
i. In the country but not on a farm/ ranch (acreage)
j. In a town with less than 10,000 people
k. In a city of 10,000 to 50,000 people
l. In a city with more than 50,000 people

What is your expected occupation upon graduation?

f. Farming/ Ranching
g. Work in an Animal Science field
h. Go to professional school
i. Go to graduate school
j. Work in a field in unrelated field to animals science

How much animal handling experience have you had?

f. A great deal
g. A lot
h. A moderate amount
i. A little
j. None at all

What area is your animal experience relevant to?

e. Large animals
f. Small animals
g. Both large and small animals
h. Not applicable

Are you involved in activities with the Animal Science Department?

h. Judging teams
i. Competitive teams (equestrian, rodeo, etc.)
j. Clubs
k. Sorority/ Fraternity
l. Undergraduate research
m. Other
n. None

If you are involved in animal science activities though UNL do they influence your grades?

f. Extensive amount
g. Moderate amount
h. Some amount
i. None

j. Not applicable

Which of the following best describes your reason for taking an online course?

a. The course is only offered online.
b. I am a distant education student.
c. I feel more successful online.
d. Online classes are more convenient.
e. Another reason (please specify)

How much time do you set aside for this course?

f. 0-1 hours
g. 1-2 hours
h. 2-3 hours
i. 3-4 hours
j. 4-5 hours

How do you schedule your study time?

e. I set aside a scheduled time every day to study
f. I try to study every day, depending on what is due
g. I don't study every day, but I pay attention to due dates
h. I'm really busy, so I just study whenever I can

Is this your first online course?

Yes No

When did you take your first online course?

a. In high school
b. As a college freshman
c. As a college sophomore
d. As a college junior
e. As a college senior

How many online course have you taken?

1 2 3 4 5 or more

Would you have preferred to take this Animal Science course face to face?

Yes No

Would you take another online Animal Science course?

Yes No

Do you study differently for your online course compared to face to face?

Yes No

What is your expected grade in this course?

A B C D F

Please answer the following statement below based on your current online Animal Science course on a scale of 1-5, with 1 being Strongly disagree and 5 being Strongly agree.

	Strongly Disagree (1)	Disagree (2)	Don't Know (3)	Agree (4)	Strongly Agree (5)
Learning animal science is interesting.					
I enjoy learning animal science.					
The animal science I learn is relevant to my life.					
I am curious about discoveries in animal science.					
Learning animal science makes my life more meaningful.					
I believe I can earn an "A" in animal science courses.					
I am sure I can understand animal science.					

I am confident I will do well on animal science labs.					
I believe I can master animal science knowledge and skills.					
I am confident I will do well on animal science tests.					
I put enough effort into learning animal science.					
I use strategies to learn animal science well.					
I spend a lot of time learning animal science.					
I study hard in animal science classes.					
I prepare well for animal science tests and labs.					
It is important that I get an “A” in animal science courses.					
Getting a good grade in animal science is important to me.					
Scoring high on animal science tests and labs matters to me.					
I like to do better than other students on animal science tests.					
I think about the grade I will get in animal science courses.					
Learning animal science will help me get a good job.					
Knowing animal science will give me a career advantage.					
Understanding animal science will benefit me in my career					

My career will involve animal science.					

Appendix C

Focus Group Questions

Focus Group Questions

1. What do you consider the definition of motivation?
2. What motivates you to learn course material?
3. Do you believe you are more motivated by interest and curiosity (Intrinsic motivation) of learning or motivated by your final grade and career opportunities available (e extrinsic motivation) Please justify your answer.
4. What makes you less motivated in a course over others? (e.g. professor, material, course difficulty)
5. Why does your motivation decrease?
6. Do you feel there is a difference in quality verses quantity of studying when it comes to learning material? Please justify you answer.
7. How do your peers (fellow students in your courses) influence your motivation to learn course material?
8. How does your professor's influence your motivation to learn course material?

Appendix D

Factors Influencing Student Success in a Senior Level Horse Management Course

Factors Influencing Student Success in a Senior Level Horse Management Course

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Abstract

Undergraduate equine courses tend to attract students of diverse backgrounds and experiences with a common desire to increase their horse knowledge. Furthermore students from various majors take equine courses and may or may not have had previous Animal Science courses. Thus, this study was conducted to evaluate factors which may influence student's success in a senior level Animal Science Horse Management course. The 128 students who enrolled in ASCI 450 between 2011–2018 completed a questionnaire at the beginning of the course. In addition to basic demographic data, the survey gathered information on student's previous horse management experiences (HME, 0 to 5 or more experiences) such as trimming hooves, foaling, breeding mares, balancing rations, restraint, facilities, and illnesses. Also students identified general horse experiences (GHE, ranging from 0 to five) they have had such as recreation, showing, lessons, ranch work, feedlots, breeding farms, and others. They indicated which previous Animal Science courses they had taken (AS, 0 to 6 or more courses). For each student, the number of HME and GHE, as well as the number of previous Animal Science courses taken were included in the statistical model to determine any relationship with final grade (FG). General horse experience and AS were not related with final grade. However, the HME relationship with FG approached significance ($p=0.0568$). Students with no HME averaged 4.4 points higher on their FG than students with 1 or more HME. Students with less horse

experience earned higher grades than students with horse experience. Due to their lack of prior horse knowledge, inexperienced students appear to be more highly motivated to study new material presented. This reverse correlation trend of less horse experience and course success may encourage students with horse interests across all majors to enroll. Other programs may consider marketing their equine courses throughout their institution to increase enrollment and broaden their reach.

Introduction

Equine courses must accommodate changing backgrounds and demographics of students interested in equine science. Animal Science students interested in taking equine science courses has been on the rise (McNamara, 2009; Moore et al., 2008). This increase in student numbers is promising to equine instructors but a concern to instructors, is making sure such a large group of students with different backgrounds are successful. Student backgrounds entering Horse Management at the University of Nebraska- Lincoln match these studies having a diverse group of students in each class. The senior level horse management course is open to all students and has shown a great variety in student background. Successfully teaching such a diverse group of students with a similar desire to increase their equine knowledge is a challenge for equine instructors everywhere (Pratt-Phillips and Schmitt, 2009; Rossana and Burk, 2013). Previous research on student success in introductory equine science courses showed previous equine experience had no significance on course success (Rossano and Burk, 2013). However, in 2009 it was found students without horse experience put forth fourth greater effort into equine science courses than, student with horse experience (Pratt-Phillips and Schmitt, 2009). Therefore the purpose of this study was to determine the factors that affect student success on upper level horse management course. This could help predict if students with little to no horse background have

the potential to be successful in senior level Horse Management. Success of students with little background would allow educators to recruit more students to participate in equine courses.

Material and Methods

Animal Science Horse Management (ASCI 450) is a 3-credit course taught in the fall semester at the University of Nebraska- Lincoln. The course is 2 hours of lecture and 1 hour of lab each week. Material is presented in two fifty-minute lectures and one ninety- minute laboratory. Material in the course included horse anatomy, physiology of the hoof and foot, conformation evaluation, nutrition, reproduction, health care, genetics, welfare, barn management, and equine insurance. The 128 students who enrolled in ASCI 450 between 2011–2018 completed a questionnaire at the beginning of the course. In addition to basic demographic data such as gender and major, the survey gathered information on student's previous HMEs (0 to 5 or more experiences) such as trimming hooves, foaling, breeding mares, balancing rations, restraint, facilities, and illnesses. Also, students identified GHE (ranging from 0 to 5 or more) they have had such as recreation, showing, lessons, ranch work, feedlots, breeding farms, and others. In addition, they indicated which previous AS courses they had taken (0 to 7 or more courses). At the end of each semester, overall FG's were recorded to correlate to the variables in the study by statistical analysis. A demographic summary of student gender, major, and AS option was taken to identify demographic variables among students. Students at the University of Nebraska-Lincoln are to choose an option in AS to focus their study. Options in AS include animal biology, business, companion animal, production management, veterinarian science, and equine science. Second a linear model was created to evaluate the sum of GHE, HME, and previous AS courses taken. This linear model expressed the relationship between student

experience and FG. This study was deemed exempt by University of Nebraska Institutional Review Board.

Results and Discussion

In the Horse Management course, the primary population was female at 94% and males 5.5% (Table 1). As expected, senior level students were the primary classification in this senior level course (77.9%) (Table 1). Demographics and majors of students were similar to previous research (Bormann and Kouba, 2013; Rossana and Burk, 2013).

Table 1

Student Demographics in Horse Management Course (n=127)

Variable		Frequency	Percent
Gender			
	Female	120	94.5
	Male	7	5.5
Year in College			
	Senior	99	77.9
	Junior	25	19.7
	Sophomore	3	2.4
	Freshman	0	0.0

The majority of students enrolled in Horse Management were Animal Science majors, (87%) (Figure 1). Demographics and majors of students were similar to previous research on student enrolled in equine courses (Bormann and Kouba, 2013; Rossana and Burk, 2013). At the University of Nebraska- Lincoln students choose an option in their AS major by their junior year. Forty six percent of students that took Horse Management were equine science option, followed by veterinary animal science (22%), production and management (13%), business and

communications (12%), and companion animal science, animal biology, and meat science (1%) (Figure 1).

Figure 1

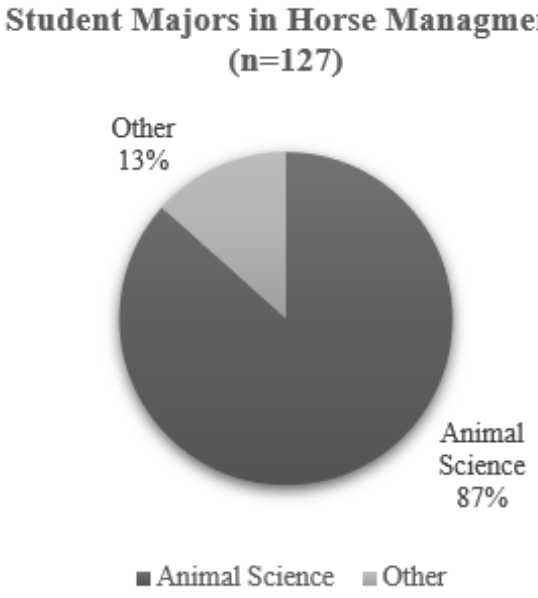
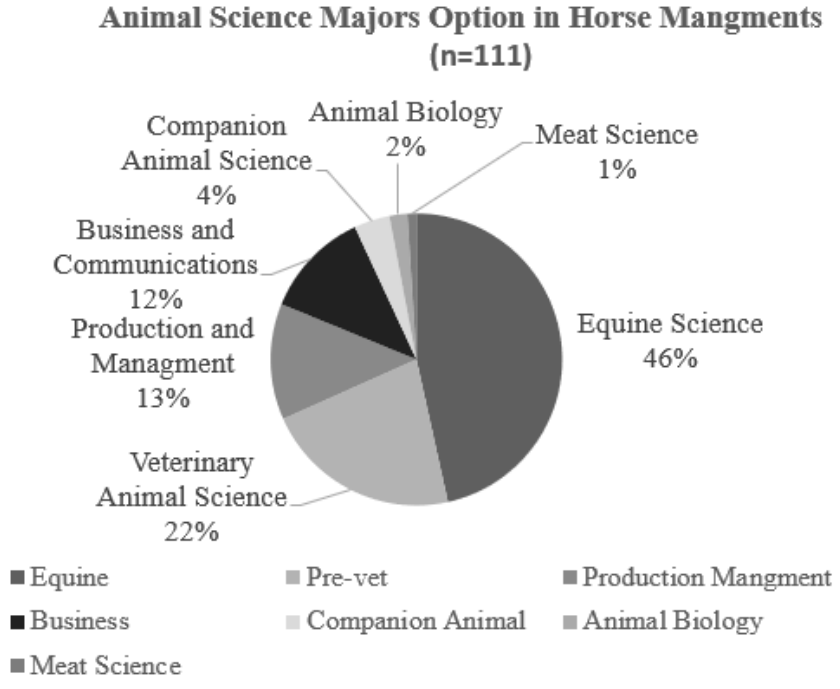


Figure 2



Previous AS courses taken by students in Horse Management were measured to determine if this could be a factor on success. Horse Management students had previously taken between 0-6 AS courses. Students with no previous AS courses through six AS courses had similar FG in Horse Management. The number of previous AS courses taken by students in Horse Management had no effect on student overall FG (Table 2). Additionally, student amount of GHE ranging from 1-5 had no effect on overall FG. Determining in this study that student GHE did not significantly change student FG (Table 3). However, students amount of HME was measured from 0-5+ experiences and showed an effect on FG. The results showed a significant difference on student's overall FG in Horse Management depended on their HME. Students with no HME had an increase in overall FG than student with any HME experience (Table 4).

Table 2

Student Previous Animal Science Courses (n=128)

Previous Animal Science Courses	Average Grade	Standard Error
0	85.6	1.77
1	83.5	1.99
2	84.9	1.44
3	84.7	1.8
4	86.2	1.48
5	84.9	1.65
6	84.7	1.87

Table 3

Student General Horse Experience Least Square Means of Final Grade (n=128)		
General Horse Experience	Average Grade	Standard Error
0	83.6	1.42
1	85.6	1.01
2	85.2	1.24
3	87.6	1.60
4	87.6	1.60
5	85.5	2.80

Table 4

Student Horse Management Experience Least Square Means of Final Grade (n=128)		
Horse Management Experience	Average Grade	Standard Error
0	89.2	1.50
1	86.4	1.65
2	83.1	1.53
3	85.8	1.23
4	85.5	1.70
5+	83.0	1.94

The primary results of this study showed students with no HME had a higher FG in a senior level Horse Management Course than students with HME ($P < 0.0056$; Table 5). Students

with no HME on average had a 4.4% higher FG (Table 6). Student GHE (P> 0.4589) and previous AS courses (P> 0.6348) did not have an effect on their overall FG in horse management (Table 5). These findings are similar to other studies that concluded students without horse experience are capable of being successful in equine introductory courses (Pratt and Phillips, 2009).

Table 5

The Effect of Student Experience on Overall Final Grade (n=128)

Experience	P-value
Horse Management Experience	0.0056
General Horse Experience	0.4589
Previous Animal Science Courses	0.6348

[a]P>.05 Students with horse management experience had a significant difference in overall final FG.

Table 6

Students without Horse Experience vs. Students with Horse Experience Difference in Final Grade (n=128)

Variable	Difference	Adj P
Horse Management Experience	4.4	0.0056

[a]P>.05 Student without horse experience had an increase in overall FG by 4.4%.

The reasoning behind these results is unknown, however a few theories of reasonings can be explored. First, students with little to no equine management experiences may have had a higher desire to learn material in the course. Second, the reasoning behind these results could be

that students with HME entered Horse Management with the mindset of already knowing the information taught in Horse Management (Pratt and Phillips, 2009). Also, experienced equine students may have been more hesitant to accept new information and may have had a decrease in student perception of the importance of studying material (Pratt and Phillips, 2009). The desire to study by students without HME and decrease in drive to study with students with HME could explain these results. Additionally, students were able to self- assess their equine experience which could have resulted in students overestimated their horse experience. A small portion of students were given permission from the instructor to enter the course without prerequisite courses based on their horse experience. These students could have had lower overall FG due to their lack of previous AS courses. Finally, this leads to the discussion that prior practices such as horse ownership and horseback riding are not essential in teaching a broad base of equine science material.

Summary

In this study student demographics, GHE, and previous AS courses had no effect on student FG in senior level Horse Management Course. However, students without HME revealed they were successful, having higher FGs than students with HME. In conclusion this study shows students without horse experience can be successful in upper level equine course. With these results, an increase in student recruitment for senior level Horse Management Course can be continued without the concern of student background effecting their success. With this an increase enrollment of student and broader reach in equine science can be met.

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