

# The Effect of Previous Equine Experience on Performance and Effort Required in an Introductory Level Equine Science Class

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## Abstract

This study was designed to determine if previous equine experience and level of interest significantly affected performance in an introductory equine science class. A total of 156 students over two semesters were questioned about their level of horses experience (1 to 10 scale). In a follow-up survey at the end of the semester, students were asked about their cumulative GPA to date (on a 4.0 scale), degree major, and were asked to judge their effort put into the class (on a scale of 1 to 10) and if they believed that previous experience helped or would have helped them perform better in the class (on a scale of 1 to 10). Students in one semester were also asked about their future goals with horses and their reasons for taking the course. Data were analyzed to determine if correlations existed between variables and their performance in the class (final grade). A one-way ANOVA was also performed to determine if there was a difference in performance based on if the student's major, future goals or his/her reasons for taking the course. The student's overall GPA had a significant impact on final grade ( $P < 0.001$ ) and that previous equine experience had no impact on final grade ( $P = 0.590$ ). However, students with previous experience did not appear to have to work as hard in the class ( $P < 0.001$ ). Students in the Department of Animal Science performed better than students outside of the College of Agriculture and Life Science, but students in other College of Agriculture and Life Science majors performed equally well. Students looking for a future with horses performed better than students with no future interest in horses and those students who took the course for a major requirement or general interest in horses performed better than students who simply took the course to meet general education program requirements. These findings of student experience, motivation and performance are of interest to help better prepare both students and faculty for the course expectations.

## Introduction

The face of agricultural science is changing as more and more students are coming to these disciplines from non-rural backgrounds (Dyer et al., 1996; Scofield, 1995). This means that more students are coming into their freshmen college year in fields such

as animal science with potentially little animal science background. While enrollment in animal science is increasing, particularly for students with an interest in companion animal and equine science (McNamara, 2009; Moore et al., 2008), faculty are challenged to provide material in the classroom that is appropriate to the students' needs.

How students perform in the classroom may affect retention in the discipline (Ball et al., 2001), therefore it is of interest to determine what factors impact performance. Self-efficacy refers to an intrinsic motivation to succeed in the classroom and may be influenced by previous experience or general interest and incentive to take a course within a given field (Joo et al., 2000; Schunk, 1995). This concept is common to fields such as computer science in which previous experience significantly impacts performance in introductory computer science classes (Joo et al., 2000; Wilson and Shrock, 2001). Several studies have also indicated that previous agricultural experience has an impact on performance in agricultural programs as well (Ball et al., 2001; Perkins and Andreasen, 2001).

There is increased interest in fields such as equine science within Animal Science Departments (McNamara, 2009; Moore et al., 2008). As expected, these students may have different levels of background prior to taking courses in such disciplines (Lawrence, 1987). An early study of an equine management class found that previous equine experience had no effect on final grade in the class (Lawrence, 1987). However, the same study found that the student's level of interest, particularly with respect to future career goals had an impact on grade performance in the class, such that students who took the course to prepare them for future career possibilities performed better. It is unknown how previous equine experience impacts performance in an introductory level equine science class.

"Introduction to Equine Science" (ANS 110) is offered as an introductory class within the Department of Animal Science at North Carolina State University. This class is also offered as a general education program (GEP) course for students outside of the department to fulfill a natural science elective. The course, which is offered in traditional format in the fall and spring, averages 80 to 120 students per semester, while a summer distance education version

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averages 20 to 30 students per semester. Past course evaluations are strong, though comments from students appear to indicate that the course may be too difficult for students with no previous equine experience and that students with more experience are at an advantage to perform better. These beliefs extend to the professors as well, who find it difficult to determine an ideal pace for such a wide distribution of students.

Therefore, the purpose of this study was to determine if previous equine experience significantly impacts overall performance in an introductory level equine science class. It was hypothesized that students who had extensive horse experience would perform better in the class, and with reduced effort, in comparison to those students with limited horse background. It was also hypothesized that students with an interest in horses (general interest or major) would perform better than those students with no interest in horses.

## Materials and Methods

The course that was examined was a 100-level introductory equine science class; ANS 110, Introduction to Equine Science. The course satisfies the GEP requirements for a natural science course for North Carolina State University, and also serves as a prerequisite for several more advanced equine classes in the Department of Animal Science. Data were collected from students in two semesters taught by the same faculty member; Spring semesters of 2008 and 2009. In 2008, 64 students were represented while in 2009, 92 students were represented.

One the first day of each semester, students were given a survey to complete regarding their equine experience and expectations for the course. Specifically, students were asked to indicate their level of equine experience on a scale of 1 to 10, where a score of 1 indicated no horse experience and a score of 10 indicated extensive equine experience. Students were asked to consider aspects such as riding lessons, horse ownership, work experience (for example as a groom or working with a veterinarian), formal equine background (such as 4H or Pony Club) or previous equine classes. All students were asked for permission to use their results in this study.

In spring 2009, students were also asked to classify their future goals with respect to horses as: 1- Horses as a hobby, 2- Horses as a business, 3- A career with horses such as an equine or mixed-practice veterinarian, 4- Unsure or 5- No horses in their future. Students were asked to select all choices that may apply. These students were also asked to indicate why they were taking the course: 1- Degree requirement (such as a prerequisite for a future course), 2- General interest in horses, 3- Satisfied the GEP requirement but no interest in horses or 4- Satisfied the GEP requirement and an interest in horses.

At the end of the semester, students in both years were given a follow-up survey to complete regarding

their experience in the class. Students were asked to gauge their level of effort (Perceived Effort) for the class on a scale of 1 to 10, where a 1 indicated little to no effort and a 10 indicated extensive effort. Students were asked to consider how much time was spent outside of the classroom regularly and in preparation for exams. Students were also asked to indicate if they thought that having previous equine experience gave students an advantage (Perceived Advantage) in the class, also on a scale of 1 to 10. A 1 indicated that a student thought previous experience served no advantage while a 10 indicated that horse experience gave a significant advantage in the class. Students were also asked to express their thoughts on this subject. In the post-survey, information such as the student's GPA and major and minor (if applicable) was obtained.

The data from the surveys were combined with the students' final grades in the class, which were used to gauge performance. Unpaired T-tests were conducted to determine if there were differences in responses and final grades between the two semesters. There were no significant differences between any of the variables, and so the data for both semesters were combined.

Pearson correlation coefficients were used to determine how variables such as GPA, experience or perceived effort were related to final grades. Relationships between experience and effort were also determined. Finally, the relationship between previous experience and perceived advantage were determined. In addition, one-way analysis of variance was used to determine if performance (final grade) differed between students in the Department of Animal Science, the College of Agriculture and Life Science (CALS; but not Animal Science) or another major. Analysis of variance was also used to determine if there were differences in performance based on the student's future goals or based on their reasons for taking the class. Significance was accepted when  $P < 0.05$ .

## Results

The average final grade in 2008 was  $89.96 \pm 11.09\%$  while in 2009 it was  $85.98 \pm 10.57\%$ , though these were not significantly different (overall average of both semesters was  $87.59 \pm 10.93\%$ ). The overall average GPA was  $3.21 \pm 0.54$  on a 4.0 scale and the average level of horse experience was  $3.98 \pm 2.30$  out of 10 (with 10 being the highest level of experience).

There was a significant relationship between the student's overall GPA to date and the final grade achieved in ANS 110 ( $r=0.610$ ,  $p<0.001$ ; Figure 1). However, there was no significant relationship between a student's previous equine experience and their performance in the class ( $r=0.043$ ;  $P = 0.590$ ; Figure 2). There was a significant negative relationship between previous experience and perceived effort ( $r = -0.441$ ;  $P < 0.001$ ; Figure 3) but no relationship between effort and final grade ( $r=-0.007$ ;

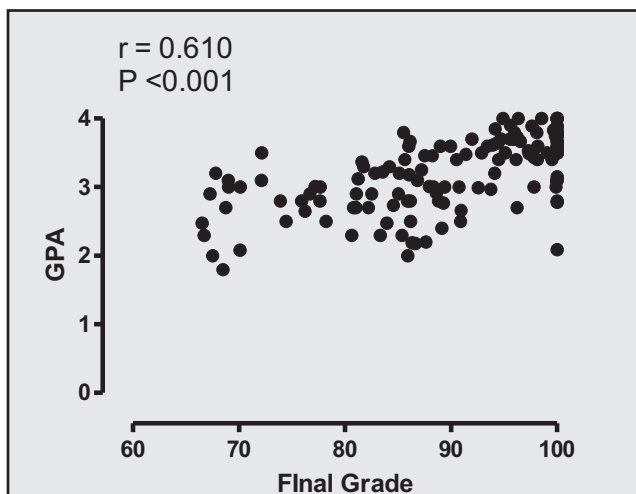


Figure 1. Relationship between the student's overall GPA to date and the final grade in ANS 110, Introduction to Equine Science.

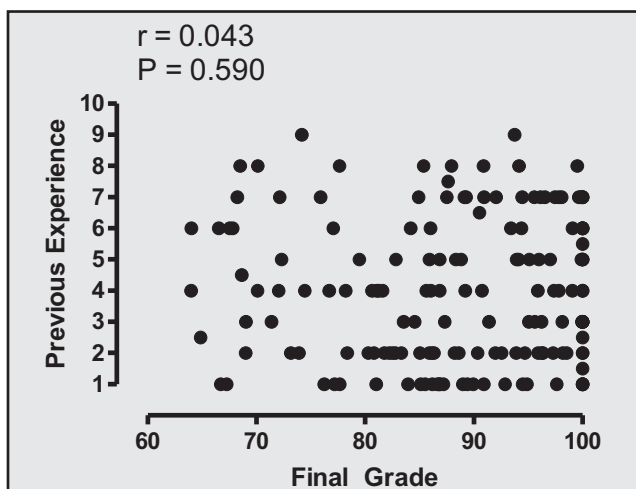


Figure 2. Relationship between the students' previous equine experience and their final grade in the ANS 110, Introduction to Equine Science.

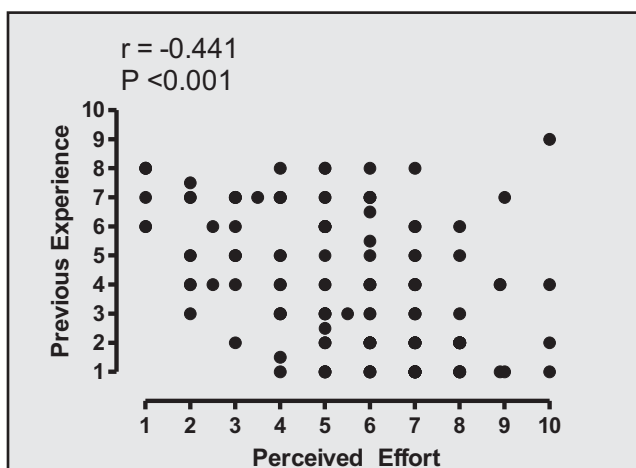


Figure 3. Relationship between the students' previous equine experience and the amount of effort required for the course, ANS 110, Introduction to Equine Science.

$P=0.930$ ; Figure 4). There was a weak but significant relationship between final grade and perceived advantage ( $r=-0.164$ ;  $P=0.047$ ; Figure 5).

Students in the Department of Animal Science performed significantly better than students in departments other than those in the College of Agriculture and Life Science though there was no difference between Animal Science students and other CALS students ( $P=0.023$ ; Figure 6). With respect to future goal data collected in 2009, several students indicated two or more of the following options; horses as a hobby, horses as a business and horses as a career, therefore an additional category was created as “multiple future goals with horses.” Students selecting multiple future goals with horses performed significantly better than students with no future interest in horses ( $P<0.05$ ), though there were no differences between other categories. Students taking the course due to a departmental requirement (major, prerequisite) performed significantly better than students solely taking the course to satisfy their GEP ( $P<0.05$ ). Further, students taking the course to satisfy the GEP requirements but who had an interest in horses, performed better than those taking the course for their GEP but who had no interest in horses ( $P<0.05$ ).

### Discussion

The primary finding of this study was that previous equine experience had no significant effect on final grade outcome in an introductory level equine science class. These findings are similar to another study examining a more hands-on type of equine management course (Lawrence, 1987). There are several reasons to explain this outcome. First, students were asked to gauge their own experience level, and it is possible that students overestimated their background. Second, it is possible that students with extensive experience who hoped to take the upper level equine classes got permission from the instructor to do so without taking the prerequisite, and therefore students with true extensive experience didn't take the course. Third, it is likely that traditional equine experience in the form of horseback riding or horse ownership does not adequately teach students about equine science. The course focuses on elements such as evolution, health management, nutrition and genetics, which are topics that may not be applicable to daily horse care or riding. It is possible that if more precise questions had been asked about horse experience, such as horse ownership vs. programs such as 4-H or Pony Club that are known to cover such topics, an effect on class performance would have been observed. In the future, studies could use a Likert Scale to indicate levels of agreement with more specific statements regarding horse experience.

The most significant factor affecting final grade in this course was overall GPA. It is well established that students who are intrinsically motivated to do

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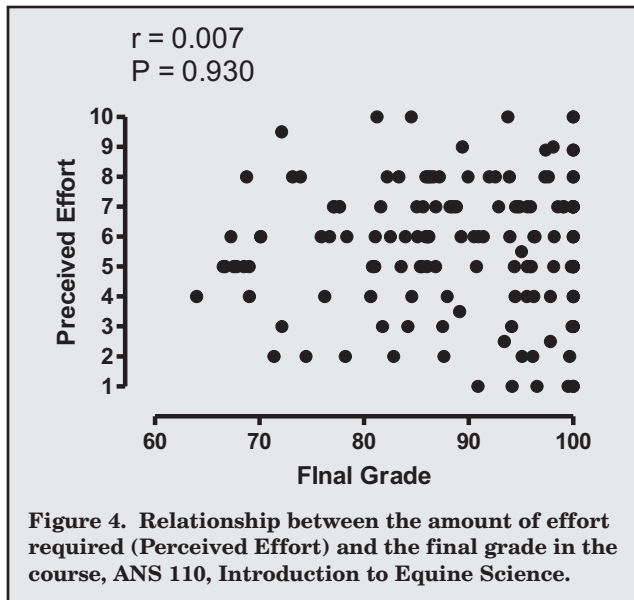


Figure 4. Relationship between the amount of effort required (Perceived Effort) and the final grade in the course, ANS 110, Introduction to Equine Science.

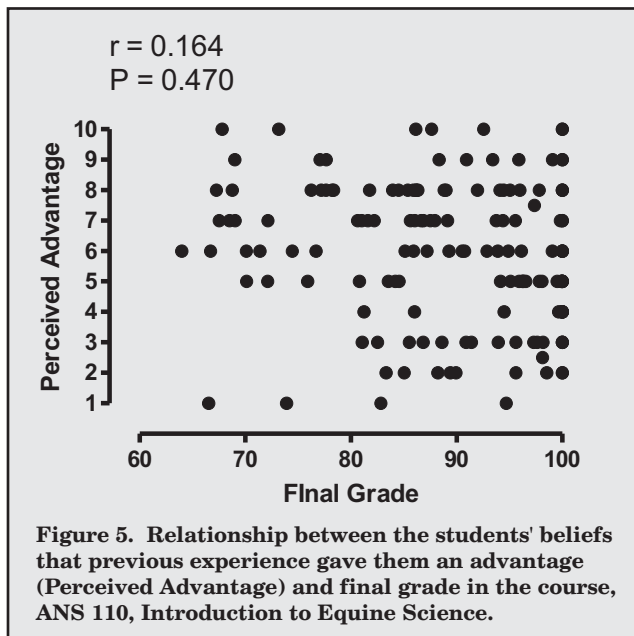


Figure 5. Relationship between the students' beliefs that previous experience gave them an advantage (Perceived Advantage) and final grade in the course, ANS 110, Introduction to Equine Science.

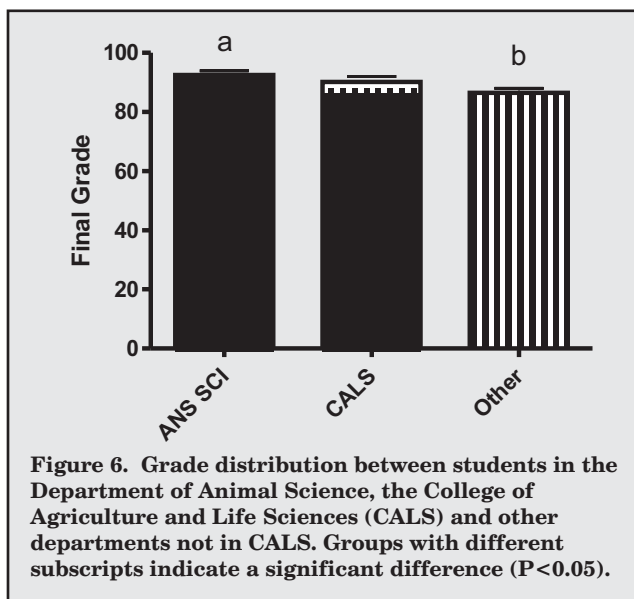


Figure 6. Grade distribution between students in the Department of Animal Science, the College of Agriculture and Life Sciences (CALS) and other departments not in CALS. Groups with different subscripts indicate a significant difference ( $P < 0.05$ ).

well in the classroom perform at a high level, regardless of the subject matter (McKenzie and Schweitzer, 2001). It is likely that students who performed well in their previous university classes have good study habits and high levels of motivation to excel (Devadoss and Foltz, 1996).

Interestingly, there was no significant relationship between perceived effort and performance in the class. Possibly, overestimated their effort, particularly those who did not do very well in the class. Again, more specific questions may have been able to quantify effort more effectively through a less subjective manner. There was, however, a significant negative relationship between effort and previous equine experience, such that students with extensive horse experience did not appear to have to work as hard. Apparently, students with more equine experience do not perform better in the class, but don't have to work as hard to achieve their grades.

Interestingly, students who believed that previous experience was an advantage in the class were also those who had less experience. This may indicate that students with less experience could feel resentment towards students with more experience, or feel that they are at a significant disadvantage compared to students with experience. It was expected that students with more experience would also acknowledge an advantage, though this did not appear to be the case, as even students with extensive experience indicated a lower level of advantage. Some written contributions from students indicated that the class should be split to form a true introductory level class and a class for students with more experience. However, several other students indicated that they enjoyed sharing the class with students with more experience because these students were able to share personal stories and viewpoints on the subject matter.

Apparently, students whose future goals include horses in multiple aspects (for example as a hobby, business or career such as a veterinarian) perform better than students with no future interest in horses. Again, these findings are similar to those of Lawrence with students in an equine management class (Lawrence, 1987). The desire to learn about a topic for future uses likely impacts motivation, which can influence performance. Similarly, students whose only reason for taking the course was fulfillment of the GEP but who had no interest in horses did not perform as well as students taking the course for degree requirements (such as for a prerequisite) or because of a general interest in horses.

## Summary

The findings of this study indicate that previous equine experience does not impact performance in an introductory level equine science course. While surprising, these findings may be encouraging to students considering taking the course who have little experience. The findings indicate that students

of all backgrounds can perform equally well in the classroom, though students with less experience may have to work harder. The reason for taking the course (either due to a future with horses, general interest or degree requirements) also affected performance. The faculty teaching such classes should use the different backgrounds of their students to their advantage, perhaps through the use of peer mentoring or group projects.

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