

Teaching Load Among Faculty and Full-Time Instructors of Equine Science at Land-Grant Universities

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Abstract

Recent increases in equine science programming at U.S. land-grant universities have heightened demand for instructional support, especially in lower-level, labor-intensive or specialty courses. Full-time instructors can supplement teaching of tenure track faculty; however, instructional contribution of these educators in equine science programs is undocumented. This study investigated teaching load parameters of 71 faculty and 57 full-time instructors teaching equine science courses at 42 land-grant institutions. On average, full-time instructors taught more total and lower-level courses and recorded more teaching time than faculty colleagues. Full-time instructors were responsible for nearly 60% of teaching time across all courses. No differences were found between faculty and full-time instructors for total credit hours taught per year, implying full-time instructors taught more time-consuming, laboratory-based courses. Only 20% of full-time instructors held a doctoral degree, compared with 100% of faculty. Among faculty, rank or gender had no effect on teaching load, but men were four times more likely to hold the rank of full professor, while women were predominantly associate or assistant professors. No effect of gender or terminal degree was found on teaching load among full-time instructors. Noteworthy differences exist in teaching load between faculty and full-time instructors teaching equine science courses at land-grant universities.

Keywords: animal science, rank, gender

Introduction

Over the last decade, colleges and universities across the United States have witnessed tremendous growth and administrative investment in undergraduate equine science programs (Heird, 2009; Beard and Hassinger, 2009). Student demand for equine-related course content is higher than ever. This comes despite, and perhaps partly in response to, an economic downturn experienced by the nation's horse industry.

Concurrent with equine program growth is a change in undergraduate student profile. The typical undergraduate seeking instruction in the equine area

is increasingly female (Food and Agricultural Education Information System, 2010), from a suburban background and without significant experience in animal agriculture (Greene and Byler, 2004; Buchanan, 2008). These students often have some hands-on experience with horses prior to enrollment, yet most are naïve with respect to the breadth and depth of the equine industry or issues related to enterprise management (Long and Morgan, 2010). Typical of many of today's undergraduates in the agricultural sciences, they also often lack transferrable skills (e.g., critical thinking, problem-solving, communication and leadership capabilities) required for the 21st century workplace (Fields et al., 2003; Mortensen and Vernon, 2009; National Research Council, 2009). In short, undergraduate students enter college less prepared for a career in the equine industry than their counterparts from only a decade ago (King, 2009).

A common approach to meeting the instructional demand in equine science courses, especially in tight economic times, is utilization of full-time, non-tenure track instructors to complement teaching by tenure-track faculty. These personnel often bring significant practical experience to teaching roles, at reduced administrative cost, and can respond to the rising need for targeted instruction in basic and specialty coursework (Cross and Goldenberg, 2003; Giedt, 2010). Full-time instructor numbers have risen in higher education since the 1980s (Schuster, 2003; Jacobe, 2006). Although they have been historically employed in the social sciences or humanities, full-time instructors are increasingly seen in natural science, engineering and agricultural fields (Finley, 2008; Cross and Goldenberg, 2003). Additional benefits to employing full-time instructors include developing or strengthening industry and community contacts which can influence student recruitment, retention, and job placement (Dedman and Pearch, 2004). However, it has been reported (Schuster, 2003) that full-time instructors can be less academically rigorous or scholarly in teaching and assessment methods, less accessible to their students, and less integrated into the campus culture, all of which can detract from the student learning experience.

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Courses in equine science can be time-consuming and/or highly specialized; therefore, the potential for non-tenure track instruction is high. This is especially true at the land-grant university, where tenure-track faculty members are pressed to balance teaching time with that spent on scholarship and university service. However, teaching load parameters of faculty and full-time, non-tenure track instructors in equine science programs has not previously been documented. Therefore, the objectives of this study were to examine teaching load ascribed to faculty and full-time instructors of equine science at the nation's land-grant universities, and investigate fixed effects of gender, rank and terminal degree on teaching load variables.

Materials and Methods

On-line course schedules for the 2010-2011 academic year for each of the United States' 46 land-grant universities were used to generate data on equine-specific courses. Institutions were omitted (n=4) from the study if all available course information was not publicly accessible as of October 31, 2010. Collected data included course name and level (1-4; freshman through senior), semester (or quarter) taught, number of credit hours, time scheduled, instructor name, and institution. Time scheduled included all lecture and/or laboratory sections as an indicator of an instructor's total time commitment in the classroom or laboratory setting for each course. Departmental websites were also consulted to collect demographic information on instructor gender, terminal degree earned, current rank or title, and to check for equine-specific courses taught outside an animal or equine science department. Due to inconsistent reporting across universities relative to variables measured, data from summer sessions, on-line or distance-delivered courses, independent study or study abroad courses were not used. Time allotted for each course was converted to total teaching hours per course, per week, and rounded to the nearest quarter hour. For courses listed with schedules 'to be announced,' total hours per week were conservatively assumed to be equal to total credit hours listed for the course.

Individuals listed on departmental webpages as full professor, associate professor or assistant professor were classified as 'faculty' and assumed to be

tenure-track. 'Full-time instructors' were defined as full-time educators without faculty rank, and assumed not to be on a tenure track. Only those instructors listed as faculty or staff members were counted; part-time, adjunct or graduate student instructors were not included in this study. In cases where individuals had earned both a PhD and DVM, the PhD was considered the higher terminal degree.

Several variables were defined which can be used to indicate annual teaching load. These included total number of classes taught, total credit hours taught and total weekly instructional hours. Parameters for institutions which used a quarter system were converted to a semester basis prior to data analysis. Type of course (lecture vs. laboratory) was a parameter of interest; however, in many cases, it was impossible to determine if a course was primarily lecture- or laboratory-based solely from timetable data. Therefore, the ratio of total hours to credits taught was calculated. This variable remains at unity for single-section, lecture-based classes, but rises with laboratory and/or multiple class sections.

In gathering data from publicly-held sources, there is inherent risk that information may not be current, and therefore, may be inaccurate. For the purpose of analysis, errors of this nature are assumed to be free of systematic bias. Significance of fixed effects on teaching load parameters was tested via analysis of variance using PROC GLM of SAS. Relationships between categorical dependent and independent variables were assessed via PROC CATMOD of SAS. Significance is reported at the $p < 0.05$ level. Institutional Review Board approval was not sought for this study as all data were held in public domain.

Table 1. Summary Statistics for Faculty and Full-Time Instructors of Equine-Specific Courses at Land-Grant Universities¹

	Faculty	Full-time Instructors
Gender		
Men	30	15
Women	41	42
Terminal degree***		
PhD	68	6
DVM	3	6
Master's	0	21
Bachelor's	0	24
Teaching load ²		
Courses taught	2.41 ± 0.19	3.45 ± 0.35**
Credits taught	6.43 ± 0.51	7.22 ± 0.61
Total hr taught/wk	10.07 ± 0.97	16.30 ± 1.83**
Total hr taught/wk : credits taught	1.49 ± 0.06	2.18 ± 0.19***
Average course level taught	3.08 ± 0.08	2.52 ± 0.11***

¹ Gender and terminal degree data reported as counts; teaching load statistics reported as means ± s.e.

² 2010-2011 academic year.

**p<0.01

***p<0.001

Results and Discussion

Summary statistics for faculty and full-time instructors are listed in Table 1. Full-time instructors were responsible for more courses and more total teaching hours per year. In addition, 54% of all courses and 57% of all instructional time dedicated to equine courses were taught by full-time instructors. More than half of all educators were faculty, contrasting with national statistics which indicate nearly 60% of all full-time teaching positions in higher education are non-tenure-track (Jaeger, 2008).

There were no differences between faculty and full-time instructors in total credit hours taught annually. Therefore, full-time instructors had more instructional hours relative to credit hours assigned. This indicates heavier responsibility for laboratory-based or multiple-section courses. It also suggests that while faculty taught fewer total classes, these courses carried more credit hours on a per course basis.

Only 20% of full-time instructors held a doctoral degree, compared to 100% of faculty. Benjamin (2003) noted that in a 1999 survey of natural science instructors at research institutions, 96.5% of tenured faculty held doctoral degrees, while only 62.6% of full-time, non-tenure track instructors held doctoral degrees. On average, full-time instructors also taught at a lower level than faculty. However, terminal degree and designation as faculty or full-time instructor both affected instructional load parameters and average level of courses taught. As both variables are confounded, goodness of fit tests were employed to determine which measure had a larger effect. Terminal degree explained more variability in course level taught than did designation of faculty vs. full-time instructor. On average, instructors who held a PhD or DVM taught at a junior level (3.07 and 3.06, respectively), while instructors with a master's or bachelor's degree delivered course content between a sophomore and junior level (2.32 and 2.46, respectively). No relationship between class level taught and tenure- vs. non-tenure-track status was found in this study. Cross and Goldenburg (2003) noted that within higher education, tenure-track faculty generally teach at a higher level than non-tenure-track instructors, and Schuster (2003) reported a growing willingness for senior tenure-track faculty to 'off-load' lower-division teaching to non-tenure track educators. In equine science programs, lower level courses often have multiple sections of hands-on

laboratories or are basic riding classes. However, it is important to note that full-time instructors in this study also taught a number of upper-level, applied techniques courses (e.g., riding instructor training, advanced horsemanship, event management, farrier science), which presumably take advantage of the strong industry background and technical expertise inherent in these personnel.

There were no significant differences in gender distribution between faculty and non-faculty, although there was a tendency ($p=0.06$) for less representation by men amongst full-time instructors. This is consistent with previous reports (Finley, 2008; Schuster, 2003) which found that full-time instructors are more likely to be women than men. Overall, 64.8% of all educators were female, contrary to national figures in higher education, which reveal only 41.8% of overall faculty are women (U.S. Department of Education, 2008). The disparity grows among animal science faculty, in which reported representation by women drops to less than 20% (Food and Agricultural Education Information System, 2010).

Gender ratios were relatively equal among faculty, although significant differences in rank were found (Table 2). Men were four times more likely to hold the rank of full professor, while women outnumbered men nearly 4-fold in associate and nearly 2-fold in assistant professor positions. The changing demographics of junior faculty may reflect trends in undergraduate enrollment, which reveal that 90% of animal science students with equine concentrations are female (Food and Agricultural Education Information System, 2010). The demographics may also reflect difficulty experienced by female faculty members as they attempt to rise from the rank of associate to full professor (Finley, 2008; Banerji, 2006).

Discrepancies between faculty and full-time instructors may impact curricular development and the student learning experience. Full-time instruc-

Table 2. Gender and instructional load among male and female faculty members teaching equine-specific courses at land-grant universities¹

	Male	Female
Rank***		
Full professor	16	4
Associate professor	6	22
Assistant professor	8	15
Teaching load ²		
Classes taught	2.12 ± 0.85	2.62 ± 0.20
Credits taught	5.72 ± 0.76	6.93 ± 0.60
Total hrs taught/wk	9.31 ± 1.38	10.62 ± 1.30
Total hrs taught/wk : credits taught	1.72 ± 0.09	1.84 ± 0.11
Average course level taught	3.00 ± 0.10	3.19 ± 0.11

¹ Gender and terminal degree data reported as counts; teaching load statistics reported as means ± s.e.

² 2010-2011 academic year.

** $p<0.01$

*** $p<0.001$

tors may have less initiative for faculty development, teach at a less scholarly level, be inadequately credentialed (lack a PhD) or have difficulty with formal assessment of student learning outcomes (Cross and Goldberg, 2003). Yet these instructors can significantly increase program credibility and curricular robustness by increasing capacity for timely, specialized courses, enhancing student competencies, and strengthening links to industry. Further, students can demonstrate greater engagement and motivation to learn when instructors have significant workplace experience and industry expertise with a topic (Wallin, 2004).

Teaching load is expected to be influenced by several factors that were unable to be addressed, given the nature of the data. Years of service may impact faculty rank (Li-Ping Tang and Chamberlain, 2003), and overall faculty workload may involve other activities, such as research, extension, university service, program administration or advising, which could decrease teaching load.

Summary

This study is the first of its kind to investigate instructional contributions of tenure-track vs. full-time instructors in equine science programs at U.S. land-grant universities. Full-time instructors were responsible for more total teaching time during an academic year, and although they taught a greater number of courses, there were no differences in total credit hours taught. Educational background differed between the groups, with relatively few full-time instructors attaining a doctoral degree. Terminal degree held accounted for more variability in course level taught than did designation of instructor type.

Among faculty, there were no differences observed in number of courses taught, credit hours taught or total teaching time relative to rank or gender, but there were significant differences in rank attained between male and female faculty. Among full-time instructors, neither gender nor terminal degree had a significant effect on number or level of classes taught, credit hours carried or total instructional time.

Although this study examined several parameters related to teaching load between faculty and full-time instructors, further research is needed to determine if differences exist between the groups in learning outcomes among undergraduates in equine science programs.

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