

TITLE:

Use of Virtual Canine Anatomy Improves Student Outcomes in an Undergraduate Domestic Gross Anatomy Course

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ABSTRACT: 300 word limit (when applicable, please include: purpose & background, methods, results, conclusions/discussion)

Background: Successful students in Colorado State University's (CSU) undergraduate Domestic Animal Gross Anatomy (BMS305) course have higher self-report use of CSU's Virtual Canine Anatomy (VCA) software. To determine if VCA use positively correlates with student course performance, the VCA was embedded into the BMS305 course Learning Management System (LMS). Hypotheses tested were: 1) higher performing (A and B grade) students would have higher total VCA page views as compared to lower performing students (C and D grade) at the end of the semester; and 2) students who used VCA more frequently within the first 3 weeks of the course would perform better on the first laboratory practical examination (week 4).

Materials and Methods: VCA page view and course performance data were exported into Microsoft Excel and immediately scrubbed of all subject identifiers. The studies were considered "exempt" by the Institutional Review Board for human subjects. Correlations were validated with t-tests in Excel, or ANOVA with Tukey's multiple comparisons test in Prism.

Results: Total course VCA page views (n = students, mean \pm SEM) were higher (P=0.04, t-test) among high performing (n = 79, 44.8 \pm 3.4) vs. low performing (n = 22, 30.7 \pm 3.4) students at the end of the course. Student performance on the first laboratory examination was correlated to VCA page views as early as week 1 (R=0.43, P<0.0001) and the sum of VCA page views by week 3 (R=0.46, P<0.0001).

Conclusion: These data support our initial hypotheses, suggesting that early and frequent student use of VCA in undergraduate anatomy is positively correlated with student performance outcomes. This finding demonstrates the value of VCA as an anatomy learning resource and the potential of faculty to use VCA page views use as an instructor intervention tool within the first 3 weeks of a course.