Even as offerings of online courses and degree programs continue to expand rapidly at colleges and universities, questions still linger as to the quality of online education and the depth of learning achieved by students in the online environment. This is particularly true for courses and degree programs in science and natural resources as learning and assessments often emphasize hands-on or active techniques. A rich body of literature has compared student learning and satisfaction between the online and face-to-face (F2F) environment previously from a variety of subjects from accounting to biology. No natural resources courses or programs have been subject to such study to date.

A 2009 meta-analysis of published studies comparing the two environments found that online learning is at least similar to that achieved F2F in the traditional classroom overall (see Means et al., 2010). However, other studies have found reduced student learning and satisfaction in the online environment, and critical review of the 2010 meta-analysis found that many of the studies included in that analysis lacked rigor and should have been omitted (Smith Jaggars and Bailey, 2010). The debate continues as to whether online education can produce at least the same, if not better, outcomes than the F2F environment.

In an effort to evaluate whether online education in natural resources can achieve at least similar levels of learning and student satisfaction as traditional F2F courses using a rigorous study design, a one-year study of two introductory wildlife and fisheries undergraduate courses (WL 220—Introduction to Wildlife and Fisheries and WL 230—Wildlife and Fisheries Techniques) was implemented at South Dakota State University. A pseudo-experimental design was used in which students were allowed to enroll freely in either environment, but the instructor, learning materials, and assessments were the same between the environments for the same course.

From IDEA surveys completed by students at the end of the semester, information on student demographics, online course experience, and familiarity with the learning management system, learning styles, time spent on learning (both environments), class attendance (F2F courses only), and potential limitations on time invested into learning was collected to explain any potential differences in learning and satisfaction observed between the environments of the same course. Results were published in the 2013 issue of Natural Sciences Education.

Overall, results were mixed. Course grade distributions were similar between the online and F2F environments of both the WL 220 and 230 classes (Fig. 1). However, performance on certain Bloom's taxonomic categories differed between the online and F2F environments.