

EVALUATING THE USE OF TWO DIFFERENT MODELS OF COLLABORATIVE
TESTS IN AN ONLINE INTRODUCTORY STATISTICS COURSE

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Audbjorg Bjornsdottir

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Joan Garfield, Adviser
Michelle Everson Co-adviser

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Abstract

The purpose of this study was to explore how collaborative tests could be implemented successfully in online introductory statistics courses. The research questions set forth were (1) What is the impact of using collaborative tests in an online statistics course on students' learning? (2) What is the effect of using collaborative tests on students' attitudes towards statistics? and (3) How does using a required consensus on collaborative tests vs. a nonconsensus approach affect group discussions?

Three collaborative tests were implemented in two online sections of the EPSY-3264 Basic and Applied Statistics course offered at the University of Minnesota. The two sections were identical in terms of the instructor, assignments, assessments, and lecture notes used. The only difference between the two sections was in terms of the format of the collaborative tests that were used. In the consensus section, students worked together in groups and submitted one answer per group. In the nonconsensus section, students worked on the test together in groups but submitted tests individually. Students were randomly assigned to a consensus ($n=32$) or a nonconsensus ($n=27$) section of the course.

The Comprehensive Assessment of Important Outcomes in Statistics (CAOS) test was used to measure students' learning, both at the beginning and at the end of the course. The Survey Of Attitudes Toward Statistics (SATS-36) instrument was used to measure students' change in attitudes towards statistics. Another instrument designed by the instructor to measure students' perspective towards collaborative testing was also used. Students' discussions during the three collaborative tests were reviewed using the Pozzi, Manca, Persico, & Sarti, (2007) framework to evaluate and monitor computer-supported collaborative learning. Discussions were coded using three dimensions,

(Social, Teaching and Cognitive) and their indicators from the framework and then converted to quantitative variables that were used in the data analysis.

No significant relationship was found between different sections and students' scores on the CAOS. There was no significant difference in students' attitudes towards statistics between the two sections. However, for both sections, students' attitudes increased in terms of their intellectual knowledge, skills, and interest towards statistics after taking the three collaborative tests. The effects of using a required consensus on collaborative tests vs. a nonconsensus approach on group discussions did not seem to be significantly different. The two formats of the collaborative tests that were used seemed to support students' discussion more in terms of the Cognitive dimension compared to the Social and Teaching dimensions.

Overall, the results suggest that the difference between using two different formats of collaborative tests is not significant. However, the results support what research on collaborative tests in face-to-face courses have demonstrated before such as an increase in students' attitudes towards learning (e.g., Giraud & Enders, 2000; Ioannou & Artion, 2010). Instructors and researchers should continue to use and experiment with collaborative tests in online introductory statistics courses. The study here is just the beginning in terms of conducting empirical research into what teaching methods and assessments should be used in an effort to create quality and effective online statistics courses.