

Authentic Discovery Projects in Elementary Statistics

We describe two collaborative discovery projects for students in elementary statistics courses for non-mathematics majors. Students work in teams of 3 or 4 to complete these projects, which are designed to engage the students in their own authentic statistical research to apply the major concepts covered in the course. The first project uses linear regression techniques, and the second uses comparison techniques with appropriate t-tests. Both projects simulate the real-world effort of scientists to hypothesize, collect and analyze data, and draw conclusions. Students select their own research topic, craft their own research questions, design surveys, collect their own data, apply the appropriate statistical methods to analyze the data, and report their findings in writing. Students also share their research with their peers in formal class presentations. We highlight strategies for organizing and implementing such projects, and we offer keys for success in project design, implementation, and assessment. A curriculum development effort based on these projects is supported by a grant from the National Science Foundation; web-based materials that have been developed as part of this grant will be shared. The NSF grant also supports analysis of the impact of such teaching methods on students' comprehension and attitudes toward statistics; preliminary results of these analyses will be shared as well.