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Implementation of discovery projects in statistics.

J. Stat. Educ. 21, No. 3, 24 p., electronic only (2013).

Summary: Researchers and statistics educators consistently suggest that students will learn statistics more effectively by conducting projects through which they actively engage in a broad spectrum of tasks integral to statistical inquiry, in the authentic context of a real-world application. In keeping with these findings, we share an implementation of discovery projects for students in elementary statistics classes. We delineate the purpose and scope of two types of projects – one covering linear regression analysis and the other covering comparisons with basic t -tests (matched pairs or two independent samples). We describe a set of curriculum materials developed to help instructors facilitate such projects and share access to these materials. We give examples of how the curriculum materials guide each stage of project implementation. We detail the requirements and student activities during each phase of the student-directed projects: Students select their own research topic, define their own variables, and devise and carry out their own data collection plan before analyzing and interpreting their data. Students then articulate their results, both in a written report and in a brief formal presentation delivered to the class. We give examples of specific projects that students have conducted. Finally, we discuss the potential benefits of such projects, including possible factors mediating those benefits.

Classification: K75 K85 D85 D45

Keywords: stochastics; university teaching; teaching methods; discovery learning; statistical inquiry; elementary statistics course; linear regression; comparison of means; t -test; hypothesis testing; student-centered instruction; experiential learning; research into practice; student activities; project method; teaching units; experience reports

<http://ww2.amstat.org/publications/jse/v21n3/bailey.pdf>