ABSTRACT

Learning and utilizing research methodology and statistics for undergraduate research projects that are presented at peer reviewed conferences and published in peer review journals has become increasingly important in preparing students for entrance into strong graduate programs, as well as for critical thinking in the workplace. Our undergraduate program in the past decade has implemented a more intensive focus on the academic and practical aspects of research. This curriculum begins to transform the undergraduate research experience from the first classes that they enroll in, and has led to a high rate of student-led research projects that are presented and published at regional and national conferences.

CURRICULUM

For those planning to attend graduate school, our departmental curriculum includes four research courses in statistics and design as well as required participation in regional, and in some cases national, conferences. We have found that the extended time also gives students longer to understand research and statistics, and to develop research projects which have resulted in more presentations at regional or national conferences.

ASSESSMENT & OUTCOMES

In order to evaluate the effectiveness of this extended program and its focus on a presentable research projects, we have examined a wide variety of data at all levels of research methods development: early self-efficacy scores, publication and presentation data, Senior Exit exam scores in critical thinking, and enrollment and persistence data.

Building Self-Efficacy:

Before and after the first semester of Research Methods, 45 students completed a perception of research skill assessment (Kardash, 2000) and an attitudes towards research scale (Papanstasiou, 2005) that assessed self-perceptions in five areas: usefulness of research for one’s profession, relevance of research to one’s life, positive attitudes towards research, research anxiety, and research difficulty. Students showed decreased perceptions of anxiety and difficulty, increased overall perceptions of skill in research, and showed specific increases in areas, such as question formation and writing, targeted by the introductory components of the research methods sequence.

Overall outcomes over the past five years:

- Forty-two student presentations at professional conferences involving 53 individual students. Eight students have presented multiple times.
- Six award-winning student presentations.
- Nine papers have been published in peer-reviewed journals since 2005 with students and faculty as co-authors; in five of these papers, a student was the lead author.
- Psychology majors have, on average, been in the top third of students nationally on the critical thinking component of the nationally standardized Senior Exit Exam – much higher than the university average.

CONCLUSIONS

Integrating student research with faculty mentoring and research interests has played a major role in our department being the most scholarly productive undergraduate department in our university. By intentionally implementing a multi-step process for learning about social science research in our curriculum we are able to focus on building and assessing research skills and self-efficacy in specific areas. This developmental approach allows students to eventually take ownership of their research at the undergraduate level. Indeed, many students have initiated their own projects, thereby expanding and enriching the departmental research agenda.
A. Workshop: Midwestern Psychological Association
An exposure to a professional association and its standards and norms of research –
- Minimal expectation: students integrate research by writing review papers on topics within the conference, gain exposure to recent research, and to some of the issues facing psychology.
- Preferred expectation: students present their research findings from the research methods sequence and independent research and seek out and critique related research at the conference.

B. Research Methods I: Statistics for the Behavioral Sciences
An introductory course in statistics with focus on –
- Concepts: central tendency, variation, probability, distributions, confidence intervals, significance levels, and Type I and II error.
- Tests: t and z tests, correlation (Pearson’s, Spearman’s, Point-biserial), linear regression, ANOVA, and chi-square.
- Skills: interpreting statistics within professional journals.

C. Research Methods II: Introduction to Research Design and APA Style
An introductory course in research design –
- Concepts: problem and hypothesis formulation, literature reviews, human subjects ethics and IRB review, subject selection, data collection.
- Skills: identifying, reviewing, and critiquing the peer-reviewed literature, writing and revising a theoretical essay, operationalizing variables, designing and conducting a pilot study, using APA style, public presentation and peer review, closing the loop in the research cycle, building self-efficacy for research.

D. Research Methods III: Advanced Research Design – Experimental and Survey
An advanced design class focusing on a student-selected research project –
- Concepts: understanding the theory behind, design of, and process of conducting an experiment and/or survey, reliability and validity, advanced study of topics from introductory courses (C).
- Skills: designing, running, writing up, and defending a research project, analyzing professional journal articles, deliberate practice of skills from RMII.

E. Research Methods IV: Advanced Statistical Analysis and SPSS
A study of advanced parametric and non-parametric techniques –
- Concepts: power, expand concepts of Type II error.
- Skills: SPSS (learn from entry to analysis of each of the tests above and application to advanced methods project [D]), understanding statistics in professional journals.

F. The ability to conduct and critique research allows for and is supported by the integration of primary sources into upper division content courses. In some of these courses, students develop additional research projects that may then be continued as Research Projects (I).

G. The most successful students attend and/or present at regional and national conferences multiple times, allowing them to practice and refine their research, preparation, and presentation skills.

H. Students working on independent research projects either that continue from a research methods class or are developed with a research mentor register for a course that specifically identifies the independent work as a research project.

I. Research Participation: required participation in projects from advanced methods courses (D, E) and senior students’ independent research projects (or appropriate alternative activities) introduce students to departmental research topics and opportunities.

J. Required Attendance or Presentation at a Regional or National Conference
- Minimal expectation: students integrate research by writing review papers on topics within the conference, gain exposure to recent research and to some of the issues facing psychology.
- Preferred expectation: students present their research findings from the research methods sequence and independent research and seek out and critique related research at the conference.

PSYC498 Research Project

Research Approaches in Content Courses

Research Projects in Content Courses

Interaction with Professional Field

Development of Research Agenda