Using Key Courses in the Psychology Curriculum as the Basis for an Undergraduate Research Program

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Abstract

The Bennett College Psychology curriculum was updated in 2009 to place a greater emphasis on research in order to improve performance in core courses, promote transfer of knowledge and skills to upper-level courses, and to enhance student preparedness for internships, career entry, and post-baccalaureate study. First exposure to the value of acquiring research skills and experience occurs during the first year of matriculation in the Orientation to Psychology and General Psychology courses. Subsequently, the curriculum mandates a two-semester sequence of co-requisite laboratory-based research methods and statistics courses, providing multiple opportunities for reinforcement of concepts across these courses. The statistics/methods course sequence emphasizes the development of information literacy skills, ethical research practices, data collection techniques, proficiency with SPSS, and preparation of APA-style documents and presentations; the sequence also serves as a pipeline for each student to develop a research proposal that may be implemented as a senior thesis project, independent study, or as a component of selected upper-level courses. For example, the newly revised Tests & Measurements course, an elective recommended to students interested in research or in pursuing graduate degrees, leverages skills and knowledge acquired in the statistics/methods course sequence. Tests & Measurements students work collectively on projects involving theory development, research design, the IRB approval process, data collection, statistical analysis, and present their work at a campus-wide Interdisciplinary Research Day. These curricular changes are discussed with regard to observed impact and need for further improvement. Non-curricular strategies supporting the research focus, such as field trips to research conferences and utilization of peers and alumnae as role models, are also discussed.

Curriculum pattern excerpt for the BA degree in Psychology showing ideal sequence of courses emphasizing research competencies.

First Year

PS 300 (1) Orientation to Psychology
PS 101 (3) General Psychology

Second Year

Fall Semester

PS 254 Descriptive Statistics (3)
PS 274 Descriptive Research (3)

Spring Semester

PS 255 Inferential Statistics (3)
PS 275 Experimental Research (3)

Third or Fourth Year Electives

PS 436 Tests and Measurements (3)
PS 457 Senior Thesis* (3)
PS 459 Independent Study (3)

Note: As of 2012-2013 academic year, to be admitted into the Psychology major students must 1) have a minimum 2.5 cumulative overall GPA and 2) pass the following courses with a minimum grade of C (minimum of 13 credits) and 3) have an average 2.5 GPA in these major courses.

*BS degree requirements add 2 semesters of Calculus, 2 semesters of Chemistry, and PS 457 Senior Thesis (3)

Table 1

Learning Goals and Emphasized Skills: Developing Research Competencies Across the Bennett College Psychology Curriculum

Introduce | Reinforce | Practice | Master

		Required Courses						Elective Courses		
		PS 300	PS 101	PS 274	PS 254	PS 275	PS 255	PS 436	PS 457	PS 459
General learning goals, based on APA (2007) *Guidelines for the Undergraduate Psychology Major*	Specific skills emphasized via psychology curriculum	Orientation to the Psychology Major	General Psychology Prerequisite for all 200-400-level courses	Descriptive Research Methods	Descriptive Statistics	Experimental Research Methods	Inferential Statistics	Tests & Measurements	Senior Thesis Required for BS degree	Independent Study May focus on literature review or on conducting original research.
Information Literacy (APA Goal 6 Information and Technological Literacy)	Working with subject dictionaries and encyclopedias	Library workshop	Locating and reading journal articles	Library Pathfinder Modules					Draft & completed thesis introduction & references sections.	Mastery expected, details pending agreed-upon scope of project.
Information Literacy (APA Goal 6 Information and Technological Literacy)	Keyword/ synonym/ similar term development	Library workshop, PsycInfo assignment	Locating and reading journal articles	Literature Review Topic Selection					Draft & completed thesis introduction & references sections.	Mastery expected, details pending agreed-upon scope of project.
Information Literacy (APA Goal 6 Information and Technological Literacy)	Distinguish different types of scholarly sources	Library workshop, PsycInfo assignment	Locating and reading journal articles	Annotated Bibliography		Revised Literature Review		Project development	Draft & completed thesis introduction & references sections.	Mastery expected, details pending agreed-upon scope of project.
Information Literacy (APA Goal 6 Information and Technological Literacy)	Working with electronic databases (PsycInfo)	Library workshop, PsycInfo assignment	Locating and reading journal articles	Annotated Bibliography		Research Proposal		Project development	Draft & completed thesis introduction & references sections.	Mastery expected, details pending agreed-upon scope of project.
Information Literacy (APA Goal 6 Information and Technological Literacy)	Working with citation tools	Library workshop, PsycInfo assignment	APA writing style	Annotated Bibliography, Literature Review		Research Proposal		Project paper preparation	Draft & completed thesis introduction & references sections.	Mastery expected, details pending agreed-upon scope of project.
Information Literacy (APA Goal 6 Information and Technological Literacy)	Evaluating sources		Locating and reading journal articles	Annotated Bibliography		Research Proposal		Project development, project paper preparation	Draft & completed thesis introduction & references sections.	Mastery expected, details pending agreed-upon scope of project.
Writing (APA Goal 7 Communication)	APA-style writing skills	APA format workshop, APA style document & references assignment	APA writing style	Writing APA-style sections and then Full-length APA-style Papers	Write APA-style results sections for descriptive analyses performed in lab.	Research Proposal	Write APA-style results sections for inferential analyses performed in lab.	Project paper preparation	Draft & completed thesis.	Mastery expected, details pending agreed-upon scope of project.
Writing (APA Goal 7 Communication	Reporting and Presenting Research Results		APA writing style	Observation and Survey Papers, Literature Review Paper and Oral Presentation	Write APA-style results sections for descriptive analyses performed in lab.	Simple & Complex Experiment Papers	Write APA-style results sections for inferential analyses performed in lab.	Project paper preparation	Draft & completed thesis results section, including tables & figures. Thesis presentations.	May or may not be required pending agreed-upon scope of project.
Working with Data (APA Goal 2 Research Methods in Psychology)	Graphing			Graphing Workshop, graphing data collected for class	Prepare APA-style tables & figures for descriptive analyses performed in lab.	Graphing data collected for class; graphing expected results for Proposal	Prepare APA-style tables & figures for inferential analyses performed in lab.	Project paper preparation, project presentation preparation	Draft & completed figures in results section.	May or may not be required pending agreed-upon scope of project.
Working with Data (APA Goal 2 Research Methods in Psychology)	Data analysis: descriptive		The science of psychology	Analyze data collected for Stats class	Problem sets, lab exercises using Excel to summarize & display data.	Analyze data collected for Stats class	Problem sets, lab exercises using Excel to summarize & display data.	Project data analysis	Draft & completed data summaries in results section & participants section.	May or may not be required pending agreed-upon scope of project.
Working with Data (APA Goal 2 Research Methods in Psychology)	Data analysis: inferential		The science of psychology		Problem sets & lab exercises introducing hypothesis testing with the binomial & z-scores.		Problem sets, lab excercises using SPSS to conduct hypothesis tests.	Project data analysis	Draft & completed thesis results section, including tables & figures.	May or may not be required pending agreed-upon scope of project.
Working with Data (APA Goal 2 Research Methods in Psychology)	Data interpretation		The science of psychology	Writing results and discussion sections	Write APA-style results sections for descriptive analyses performed in lab.	Writing results and Discussion sections	Write APA-style results sections for inferential analyses performed in lab.	Project data analysis, project paper preparation, project presentation preparation	Draft & completed results & discussion sections.	May or may not be required pending agreed-upon scope of project.
Planning & Conducting Research (APA Goal 2 Research Methods in Psychology)	Operationalizing variables			Assignment on identifying variables and their operational definitions	Selecting appropriate descriptive methods depending on how variables are operationalized.	Identifying and Operationalizing variables for Research Proposal	Selecting appropriate tests for variables operationalized on different scales of measurement.	Developing measures for class project	Draft & completed methods section, IRB forms, including study materials & protocol development.	May or may not be required pending agreed-upon scope of project.
Planning & Conducting Research (APA Goal 2 Research Methods in Psychology, Goal 5 Values in Psychology)	Ethical research practices	Online NIH PHRP Certification Assignment	The science of psychology	Mock IRB case studies		Develop IRB application for Research Proposal		Developing data collection protocol for class project	Repeat NIH PHRP online certification, IRB form preparation & submission for approval.	May or may not be required pending agreed-upon scope of project.
Planning & Conducting Research (APA Goal 2 Research Methods in Psychology)	Planning Research Projects			Overview of Proposal Assignment		Research Proposal	Emphasize how methods used to operationalize variables can limit or expand analytical options.	Project development, developing data collection protocol for class project	Plan original thesis research project.	May or may not be required pending agreed-upon scope of project.
Planning & Conducting Research (APA Goal 2 Research Methods in Psychology)	Conducting Research		The science of psychology	Data collection for class projects	Lab exercises involving data collection & preparation of data summaries in Excel.	Data collection for class projects	Lab exercises involving data collection & hypothesis testing using SPSS.	Implementation of class project	Implementation of original thesis research project.	May or may not be required pending agreed-upon scope of project.

Reference

American Psychological Association. (2007). APA guidelines for the undergraduate psychology major. Washington, DC: Author. Retrieved from www.apa.org/ed/resources.html

Non-Curricular Strategies

- Support student participation in undergraduate research workshops.
- Take students to undergraduate research conferences.
- Utilize alumnae and upper-level students with research experience as role models and mentors.
- Encourage participation in campus Interdisciplinary Research Day.
- Offer workshops on finding summer REU and other research opportunities.

Observed Impact

- Increased student interest in conducting research, exploring research-focused graduate programs & careers, & pursuing summer research internships.
- Increased understanding that research methods & statistics courses are an integral part of the psychology curriculum & that mastery of these skills can enhance graduate school and career options.
- Enhanced motivation & performance (on average) in statistics classes; & prerequisite math classes.
- Students are less likely to delay completing statistics courses & prerequisite math classes.
- Students are better able to see how concepts in Statistics apply to Research methods and vice-versa, rather than considering these as independent.
- More students are electing to do senior thesis projects, even though few of them are required to do so.

Recommendations for Improvement

- Continue emphasizing good scholarship practices and academic integrity in the early stages of the curriculum.
- Improve coordination of statistics & research methods courses; conduct more “cross-over” laboratory exercises (collect data in research methods, summarize/display/analyze data in statistics), and more closely synchronize presentation of related material to maximize student retention & transfer of material.
- Emphasize how mastery of knowledge & skills taught in research methods & statistics courses can contribute to better performance in other psychology courses. Emphasize that mastery & transfer of this material is expected, especially in courses such as PS 436 Tests & Measures.
- Improve assessment of SPSS proficiency in statistics courses to insure that students do not depend on others to analyze their data and thus avoid acquiring expected mastery of SPSS; this would eliminate the need to re-teach this material in research-focused elective courses.
- Enable more students to take statistics & research methods courses during their sophomore year. Typical incoming students require 2-3 semesters to complete math prerequisites, so many students do not take statistics and research methods until their junior year.
- Be more proactive in obtaining assistance for students struggling with math so that they meet the prerequisites for research methods/statistics in their sophomore year, or junior year at the latest. The percentages of research methods/statistics students who were seniors in 2011-2012, 2012-2013, & 2013-2014 were 13%, 21%, and 42%, respectively. This is much too high.