COURSE LEARNING OUTCOMES
Statistics for Psychologists

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Overview of Learning Outcomes

Learning outcomes are descriptions of what students should be able to know and do following a particular course or program. Learning outcomes are useful in that they identify a set of goals for instructors to use in their teaching. These learning outcomes provide an essential set of building blocks for the assessment of students' performance. Most universities and professional organizations recommend that instructors identify a set of objectives for each course and assess the extent to students meet these objectives.

Relevant Local and National Learning Outcomes

The University of Wisconsin – Stevens Point (2017) specifies three learning outcomes that are particularly relevant to all Quantitative Literacy courses (which includes this course). Students completing this course should be able to:

- Select, analyze, and interpret appropriate numerical data used in everyday life in numerical and graphical format. (UWSP GEP QL Outcome 1)
- Identify and apply appropriate strategies of quantitative problem solving in theoretical and practical applications. (UWSP GEP QL Outcome 2)
- Construct a conclusion using quantitative justification. (UWSP GEP QL Outcome 3)

Similarly, the American Psychological Association (APA, 2013) offers a list of student learning outcomes for all psychology curricula. For statistics courses, the following outcomes are particularly relevant. Students completing this course should be able to:

- Interpret complex statistical findings and graphs in the context of their level of statistical significance, including the influence of effect size, and explain these findings using a common language. (APA Outcome 2.2E)
- Communicate quantitative data in statistics, graphs, and tables. (APA Outcome 4.1F)

Finally, a Statistical Literacy Task Force (2014) proposed 26 more specific and detailed learning outcomes for statistics and methodology courses within Psychology. However, these outcomes are not policy approved by APA or by UWSP and are, therefore, not elaborated on here. They were, however, taken into consideration during the creation of my course.

Specific Learning Outcomes for My Statistics Course

I have outlined three more specific learning outcomes that are designed to encompass and combine the UWSP and APA learning outcomes described above. I believe that by fulfilling these learning outcomes, students will meet the spirit of both the UWSP and APA outcomes. Specifically, students completing this course will:

- Explain the logic and appropriate applications of statistical analyses for univariate or bivariate research designs, problems, or hypotheses.
- Calculate the statistics necessary to solve problems (both manually and via computer), including descriptive statistics, statistical significance tests, effect sizes, and confidence intervals.
- Communicate the meaning of statistical analyses in everyday language and professional formats (e.g., graphs, tables, and words).

How the Learning Outcomes are Addressed and Assessed in My Course

The relevant learning outcomes are outlined on the first day of the course, are explicitly emphasized throughout the course, and form the cornerstone of the grading rubric used in the course (see Wendorf, 2007).

In Table 1 below (in a format adapted from Fink, 2003), I have outlined how my statistics course is designed around these learning outcomes. The table briefly describes the learning experiences and assessment techniques that are directly relevant to each outcome.

Overall, I encourage all of my students to be familiar with this information because it explains why and how the various assignments and exams in the course are important.

References

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major (Version 2.0).* Washington, DC: Author. Retrieved from www http://www.apa.org/ed/precollege/about/psymajor-guidelines.aspx

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University of Wisconsin – Stevens Point. (2012). GEP learning outcomes. Retrieved from http://www.uwsp.edu/acadaff/GEP/ GEP_Category_Learning_Outcomes.docx

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Table 1: Explicit and Assessed Learning Outcomes for Statistics for Psychologists

Learning Outcomes What specific learning outcome is explicitly addressed in this learning experience?	Course/Unit/Experience Design What do students specifically do to address the learning outcome during this learning experience?	Assessment Context What is the assessment method and its context/setting for this learning experience?	Formal Feedback What formal feedback do students receive about their representation of learning in this experience?
Explain the logic and appropriate applications of statistical analyses for univariate or bivariate research designs, problems, or hypotheses.	As preparation for each type of statistical analysis, students work on in-class worksheets and homework assignments that address the logic behind the analysis and its application to specific research designs.	Both homework assignments and in-class exams test students' knowledge of statistical and related research methodology terms and concepts.	Homework and exams are quickly graded (and relevant comments are made) and returned the next day. For each exam, students are required to re-do the entire exam, incorporating explanations that respond to the feedback.
Calculate the statistics necessary to solve problems (both manually and via computer), including descriptive statistics, statistical significance tests, effect sizes, and confidence intervals.	Students work on in-class worksheets and homework assignments that require them to calculate and interpret basic descriptive and inferential statistics by hand and using SPSS.	Both homework assignments and in-class exams test students' ability to calculate and interpret basic descriptive and inferential statistics.	Homework and exams are quickly graded (and relevant comments are made) and returned the next day. For each exam, students are required to re-do the entire exam, incorporating explanations that respond to the feedback.
Communicate the meaning of statistical analyses in everyday language and professional formats (e.g., graphs, tables, and words).	On in-class worksheets and homework assignments, students describe all results in APA style, which also involves using clear interpretations of the findings.	In addition to the graded homework assignments, in-class exams also test students' ability to describe results in APA style and to describe conceptual interpretations.	Homework and exams are quickly graded (and relevant comments are made) and returned the next day. For each exam, students are required to re-do the entire exam, incorporating explanations that respond to the feedback.