AMATYC Project SLOPE Fellow:
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Overview:
Examining Student Attitudes Towards Statistics

Student perceptions of an academic course and the potential for a fixed mindset around a subject before the course begins can have a major impact on their potential success and ownership of their learning. This case study examined the personal perceptions about statistics of a group of students (n=19) at the beginning of the semester. Specifically, student’s attitudes towards the accuracy and validity of statistical findings in scientific studies, attitudes towards the relevance of statistical applications to future education, and attitudes towards the value of statistics for the layperson.
Inciting Incident

Feedback (summarized) from a student:

“All before I took this class, I believed all statistics used in research and science are skewed or, even worse, completely made up to falsify scientific studies for political or conspiratorial purpose.”
Set-up

Week one of the class:
Give a 30-question survey to gauge student’s initial feelings on both the validity of statistics and attitudes towards the course in general (before any lectures take place).

Week eight:
Give the survey a second time after the basics of statistical design and data analysis have been covered.

Week fifteen:
Give the survey a third, and final, time after all course materials have been covered.
Examples of statements from the survey

- Statistics seems very mysterious to me.
- I have difficulty seeing how statistics relates to my field of study.
- Statistics is too math oriented to be of much use to me in the future.
- Statistics is an inseparable aspect of scientific research.
- Statistics is a worthwhile part of my professional training.
Waking up every morning in 2020 be like

Let’s see ... where were we?

Oh yes. In The Pit of Despair.
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Some results

Statistics is an inseparable aspect of scientific research (19 responses).

- Strongly Disagree: 4
- Disagree: 1
- Neutral: 2
- Agree: 10
- Strongly Agree: 2

Statistics is a worthwhile part of my professional training (19 responses).

- Strongly Disagree: 2
- Disagree: 12
- Neutral: 2
- Agree: 2
- Strongly Agree: 1

In addition, 63% of the students felt that being enrolled in statistics was a very unpleasant experience, 53% felt statistics was a mysterious subject, and 74% felt intimidated by mathematics in general.
Takeaways and future projects

Classroom changes:
- Place a greater emphasis on computational technologies that minimize tedious calculations while still allowing for students to explore statistical ideas in a practical manner.
- Place a greater emphasis on real-world data sets, and data analysis inside these sets.
- Place a greater emphasis on core skills, statistical concepts, and statistical theory rather than the mathematical aspects.

Future projects:
Run the study as originally envisioned to track the evolution of student attitudes with these classroom changes implemented.