

Gaining Student Interest in AP Statistics at Your School

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Abstract: Within three years, our secondary statistics program grew from one, difficult to fill class into our most popular elective math course. To generate interest in statistics, I created projects that increase student understanding while promoting the statistics course throughout the campus. Projects and other “promotional” strategies will be discussed.

Author Notes: I believe that every student should take a statistics course at some time in their academic careers; however, it is not always easy to get a statistics course running at the high school level. We hope in this spotlight session to share strategies for beginning a course on your high school campus as well as projects and ideas to strengthen your already existing course.

Strategies to be Discussed:

1. The First Year – Getting Students Involved

- a. Target your intended population
Unlike AP Calculus, students in AP Statistics do not need to be the strongest math students. Students do need to be proficient in Algebra II, but Pre-calculus is not necessary. It is just as important that your students have good English skills as reading and writing have a role in today’s AP Statistics curriculum.
- b. Don’t compete with Calculus
Many students are able to take both Calculus and Statistics – however, the majority of my students are students who do not want, or are unable, to compete in the AP Calculus environment. An AP Statistics program should strengthen your existing mathematics program, not compete with it.
- c. Discuss Math Requirements for University Programs
This is a large draw for enrollment in high school statistics. Have students in lower-level math courses investigate the math requirements needed for careers in which they have an interest. Students are often surprised at how prevalent statistics is on college campuses.
- d. Educate Students about the applications of Statistics
For all of your ‘when are we ever going to use this’ students, statistics is a wonderful course with many practical applications.

2. Once a Program is Running

a. Promote Statistics on Campus

Get the non-statistics students interested in your statistics class by conducting samples on campus, displaying student projects, and bringing in guest speakers. I often have younger students ask me about the course because of projects they've seen around campus.

b. Refine promotional techniques from above

3. Student comments on why they signed up for Statistics will also be shared.

Promotional Projects:

These particular projects are used both to increase student understanding of AP Statistics topics and to generate interest in taking the course to non-statistics students on campus.

An Overview of the Projects:

1. Sampling Project

After studying sampling methods: SRS, cluster, stratified, and systematic, have students design and conduct a sample on campus to answer a question of interest to them. Students begin by selecting their question of interest, their target population, and preferred sampling method. After deciding these, they submit a written sample design detailing the steps they will take to conduct their sample based on their sampling method. Their sample design includes everything from obtaining a list of their population, (if required), and detailing the sampling process to steps they will take to prevent bias and deal with issues of nonresponse. Once approved, students conduct their samples on campus. A week later they submit a poster of their results presented in a creative way that is displayed on campus. Non-statistics students who were randomly selected to participate in these samples will gather to read the results. My statistics students, as well as myself, will often receive follow-up questions about the statistics course and sampling process from non-statistics students as a result of this project.

2. Statistics in Life: Experiment/Sample Analysis

Students scour newspapers and magazines for articles that contain real-life examples of statistical inference. An article may concern a medical study, upcoming election, or other topic in which the results of an experiment or sample have been compiled. Upon selecting an appropriate article, the students then use their knowledge of appropriate statistical procedures to critique the methods used in the article. The project is broken up into parts: students must explain the methods used in this study, discuss the good and "could be improved" aspects, and redesign the original experiment or survey. Students prepare a poster containing a copy of the article with their analysis results. When displayed on campus these posters show practical knowledge the students are gaining from the course.

3. Significance Testing and Confidence Intervals on Campus

This is a natural expansion of the sampling project described above. Revisit the earlier sampling project or have students conduct a new on-campus survey for a question of interest. This time after collecting the data, students will find a confidence interval for

the true mean of the campus population or perform an appropriate significance test for a given claim. I do this project after the students have studied inference procedures with proportions as well as the t- and chi-square distributions. This is a great tool for emphasizing the importance of checking conditions as well as strengthening the students' understanding of when to use which procedure. I find that my students take this project very seriously and over the years I have had students tackle such strong issues as comparing the divorce rate of students' parents to the national divorce rate and testing for a relationship between GPA and number of sports/extracurricular activities. These projects are once again displayed on campus and become a point of conversation to promote interest in the statistics course.

**Handouts for projects as well as grading rubrics will be available at our session table. If you are unable to attend our spotlight session and would like copies, email me at gillespiemath@yahoo.com .