PROPOSALS OF TEACHING STATISTICS THROUGH SCIENTIFIC INVESTIGATION

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Proposals of teaching statistics through scientific investigation are becoming more important in the teaching–learning process, since they require that each of the subjects involved in this process, to work in an active way, by questioning, weighing up and being critical in their arguments. The goal in our proposal is to promote the learning of the main descriptive statistical measures through a research in the field, to be accomplished by the students in his/her community. Since data, graphs, and statistical measures are processed and analyzed in an electronic spreadsheet, the important point in this proposal is relating this research with the statistical methods and techniques that are studied in high school and undergraduate courses.

The sample taking part in our experience were students from the “Universidade Regional Integrada do Alto Uruguai e das Missões - Campus de Santo Ângelo” that were supervised by lecturers from the Federal University of Santa Maria that was the approach used to transmit knowledge to the first community.

First of all, the students were invited to participate in the study, and after that they formed sub-groups of four students each, they looked for a potential case study to apply statistical methods in their own region. After this step, a series of lectures, papers to read and tasks were given to each group.

The groups were technically supported and supervised by lecturers in their classroom. At the end of the studies, each group of students made a presentation to all their colleagues, in which they showed the results, the methods applied and the difficulties faced to develop the project. All of this was evaluated by three lecturers.

After the presentation and discussion, the students were given a questionnaire to assess the interest of this approach. Results of the questionnaire were analyzed through univariate and multivariate statistics, to point to the most important relationships in performance, learning and knowledge. It was possible to notice that participant students presented a meaningful increase in knowledge.

Cross-tabulation analysis and hypothesis tests served to show which variables were related at a significant level. With multivariate methods we identified the groups of students that had a preference for quantitative or qualitative methods and to what courses they belong, by using cluster analysis. Factor analysis and principal component analysis served to identify the variables that the students considered most important, which were performance! importance and evaluation. Finally our research suggests that the students taking part in the project were able to apply statistical methods and recognize the importance of this tool.