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Examining the guidelines for assessment and instruction in statistics education in relation to teaching styles priorities in introductory statistics courses.

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Abstract

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Examining the Guidelines for Assessment and Instruction in Statistics Education in Relation to Teaching Styles Priorities in Introductory Statistics Courses

Abstract:

The American Statistical Association (2005) describes a need to “reexamine and review many introductory statistics courses to help achieve the important learning goals for students” (p. 10). The goal of introductory statistics courses is to produce students who are statistically educated. Statistics educators for many years have been concerned with reforming the introductory course in statistics, a “non-calculus based, often terminal, introductory applied statistics course” (Garfield, 2000, p. 2). The Guidelines for Assessment and Instruction in Statistics Education (GAISE) are six recommendations that have evolved out of this need for reform. These recommendations have the intent to help students attain learning goals that are appropriate for an introductory statistics course. The six recommendations are emphasize statistical literacy and develop statistical thinking, use real data, stress conceptual understanding rather than mere knowledge of procedures, foster active learning in the classroom, use technology for developing conceptual understanding and analyzing data, and use assessment to improve and evaluate student learning. Using Q methodology (principal components analysis and varimax rotation) to capture opinions of teachers of introductory statistics toward their teaching styles priorities, this study used 44 statements reflecting the GAISE recommendations for 21 teachers of introductory statistics to sort. Analysis resulted in two viewpoints of teaching preferences: (a) Conceptual Teachers and (b) Applied Teachers. The Conceptual Teacher’s typology represents those who focus on teaching the concepts to students using passive learning techniques (note taking, lack of hands-on activities), but expect students to be able to make appropriate decisions when using statistics. The Applied Teacher’s typology represents those who focus on teaching the fundamentals of statistics to students using active learning techniques (activities, discussion, examples), but do not expect students to be able to make appropriate decisions yet when using statistics. A discussion of which GAISE recommendations are salient in each viewpoint is presented.