TRENDS IN THE STATISTICS CLASSROOM SINCE NCTM STANDARDS

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In 1989, the National Council of Teachers of Mathematics Commission on Standards for School Mathematics published guidelines for improving the quality of mathematics instruction in American primary and secondary schools . The goal was to improve the teaching and learning of mathematics by establishing a “broad framework to guide reform” in order to meet the needs of a society increasingly dependent on technology. NCTM recommended that the emphasis of classroom teaching shift from the passive acquisition of facts and formulas to the active application of ideas.

It has been nearly ten years since the standards were introduced. Over the last decade, NCTM had hoped schools would produce more “mathematically literate workers, thus creating a more informed electorate.” Toward this end, statistics and probability was to be included in the school curricula as early as kindergarten, where students could learn statistical analysis by collecting, organising, and describing data, ultimately leading to its interpretation and analysis. In the middle grades, students were to “evaluate arguments that are based on data analysis,” and at the secondary level “use curve fitting design a statistical experiment interpret the outcomes” and test hypotheses.

How have teachers of mathematics implemented these standards? Many classrooms now use more than one textbook for reference, and in some cases have abandoned the textbook altogether. Statistical software packages such as are used routinely for simulation exercises, replacing the labour-intensive formulaic methods. The affordability of good statistical packages almost mandates the use of computers as a teaching tool. Students are also being asked to design and complete data analysis projects to enhance their understanding of fundamental statistical principals. Concept maps have long been used as a teaching strategy in the sciences, and are now being used successfully in teaching statistics as well. Team projects - using raw data from such diverse sources as newspapers, television documentaries, professional organisations, sporting events and the world wide web - promote student participation, critical thinking and experience beyond the academic exercise.

This presentation will address problems associated with the implementation of changes in teaching and learning statistics, and propose new methods for evaluating student competency in these learning environments.