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The Application of Biostatistical Analysis to Applied Health Scenarios: Realities in Curriculum, Instructional Models and Application to Service Learning

The development of a successful curriculum for the delivery of biostatistical methods and theory to graduate and undergraduate students requires an applied perspective with instructional models utilizing principles of cooperative learning. The impact of stimulating the cognitive while engaging the spatial components of the learning paradigm requires students to be placed in a realistic problem solving scenario. This allows for observation to be practically associated with the intellectual approach to problem solving.

The basis of this research is to develop predictors for quantitative and analytical courses based on curricula design that will accurately forecast the likelihood of success. The process of analysis is based on the standard educational premise that specific curriculum design will dictate outcome. In this setting, the incorporation of the spatial with the cognitive is being tested against the sole engagement of the cognitive. Three groups of undergraduate and postgraduate students were used in this study with one set from each category exposed to the lecture/tutorial approach whereas the other was taught using a combination of spatial and cognitive methods simultaneously. The effects of the tested model has resulted in significant improvements in student performance and their ability to retain and apply established biostatistical principles to the realistic environment encountered through service learning activities. Graduate Performance improved from a mean percentage score of 79.46 ± 3.60 to 86.30 ± 2.64 and undergraduate performance increased from a mean percentage score of 52.80 ± 5.90 to 74.80 ± 3.35.

The model demonstrated that the successful delivery of concepts in quantitative disciplines in health can be done through the successful stimulation of the cognitive through spatial stimulation by a quantitative applied approach with the identification of predictors from the curricula of outcome.