Underlying Reasons for Different Learning Approaches in Statistics in an Australian University

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During the last couple of decades, technological improvements have enabled easier and faster data collection in many areas. The silos of data brought about the necessity of more widespread use of statistical analysis. The realisation of the importance of statistical analysis and understanding research outputs in peer reviewed articles has led to the inclusion of statistics units into many different degree programs: from Biology and the Health Sciences, to Marketing and Human Resources. However, inclusion of statistics units into curricula does not guarantee an in-depth understanding of statistics even after completion of the unit, especially if students use a surface approach to their learning. Therefore, the aim of this study was to investigate students' learning approaches in statistics units, especially in the service statistics units, and relate these to background variables such as country of origin, age, gender and work commitments. The results of this study might shed light into curriculum development in the future for such statistics units, and enable the adoption of deeper learning approaches by students. The preliminary results of our analyses showed that there were statistically significant positive correlations between age and using a deep approach to learning, age and strategic approach to learning, deep and strategic approaches to learning, years at university and deep approach to learning, years at university and strategic approach to learning, the number of units studied and surface approach to learning and negative correlations between age and strategic approach to learning. The analysis also showed that when students stated that they liked studying mathematics at high school, their deep and strategic approach scores were higher compared with those who did not like studying mathematics at high school. Finally, students' expected grade for their statistics unit was highly related to the learning approaches they utilised; higher expected grades were associated with higher deep and strategic approach scores and lower surface approach scores.

Keywords: Statistics education; Service teaching; Deep approach to learning