Modelling the impact of supplemental instruction on student grades, pass rates and retention: A three year analysis

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Supplemental instruction (SI, aka. peer assisted study sessions or PASS) is a widely deployed academic support initiative in which successful higher-year students facilitate peer-learning sessions attached to units with historically higher than average fail rates. SI attendance is voluntary and open to all students enrolled in supported units. In 2015 at Curtin University, the accredited UniPASS program was available to over 11,000 students enrolled in 70+ units. Research has demonstrated that SI attendance is associated with stronger academic performance, lower fail-rates and increased retention. However, much of this work suffers from from methodological limitations, including insufficient controls for self-selection biases, and a failure to account for clustering effects resulting from nested data structures. The current research overcomes several of these limitations with the use of linear and generalised linear mixed modelling. Specifically, we modelled students' grades, odds of passing and year-on year retention with UniPASS attendance, after controlling for proxies of prior achievement (e.g., previous semester weighted averages), ability (e.g., ATAR) and motivation (e.g., the extent of prior engagement the program), as well as multiple demographic variables. The data file comprised over 5700 observations from more than 4000 students who entered the University based on their ATAR performance, internally completed (i.e., passed or failed) one or more UniPASS supported units between 2012 and 2014, and had been enrolled in at least one supported unit prior to observation. Results firstly indicated a clear and significant association between increasing attendance and improved student grades, with predicted gains in excess of 10 marks associated with a full semester's attendance (i.e., 11 one-hour sessions) for certain sub-samples. Furthermore, the proportion of students passing units increased significantly with sessions attended, with a model-predicted increase of .1 (or 10%) associated with full attendance. Finally, the proportion of students re-enrolling in units the following semester also increased significantly with attendance, and was predicted to be highest (.09) for students who had not previously engaged with the program. Each of these effects was calculated after controlling for proxies of prior achievement, ability and motivation. This research speaks particularly to the conference theme of 'teaching, learning and the student experience', and provides a model that can be adapted for rigorous evaluation of the wide suite of opt-in co-curricular support programs currently provided to students across the higher education sector.