

# THE SECOND YEAR SLUMP IN ENGINEERING STUDENTS AT JAMES COOK UNIVERSITY

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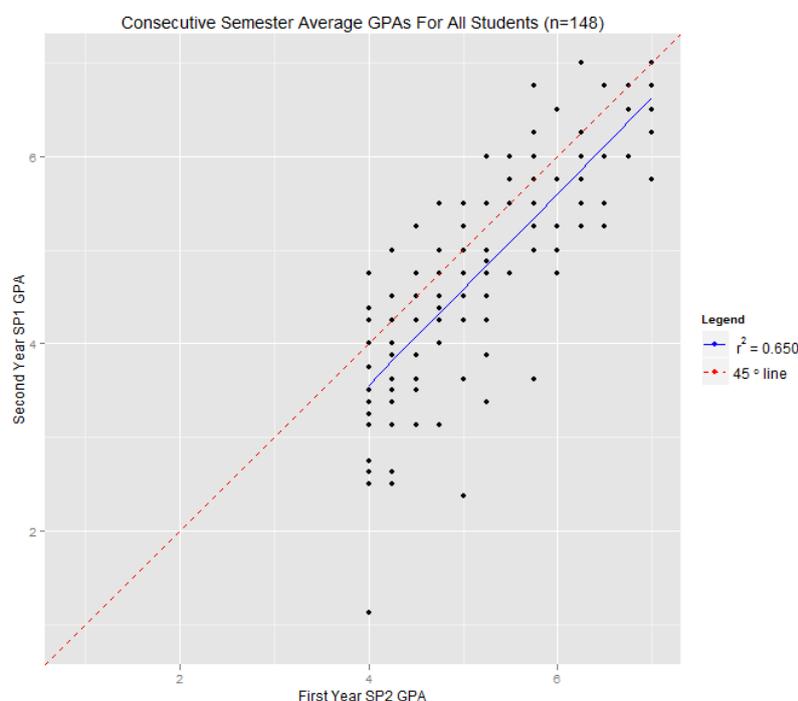
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## Abstract

This work looks at a number of student cohorts passing through the Bachelor of Engineering program at James Cook University with the aim to determine whether the phenomenon known as the second year slump is present and, if so, to what extent. The second year slump (or alternatively, sophomore slump as it is known in the American tertiary education system) has been widely used to describe students who lack motivation, feel disconnected and flounder academically (Hunter et al, 2009) upon entering their second year of tertiary education.

A slump is most notably expressed through measureable quantities such as a student's GPA, which has been shown to drop during this period (Graunke & Woodley, 2005). A relatively narrow cross section of students were filtered for this pilot study in order to get an idea of at what resolution a slump may be present and identifiable. Only the students who took a full time study load of the standard four prescribed subjects in the engineering first year semester two (SP2), as well as four subjects in second year semester one (SP1), were selected. This effectively results in a bias of beginning with students who have successfully navigated their first year of tertiary education and then continue on in their second year of study. These students are the most *standard* or core students typically seen at institutions. They undertake the standard enrolment plan and progress as expected through their course and as a result, tend not to raise any of the typical flags in various support systems to identify that they may be floundering.



**Figure 1: Summary scatterplot of consecutive semester results for students across all years. A 45° line is included to show whether students have improved or worsened. The blue line represents a linear regression model with  $r^2 = 0.650$ .**

Figure 1 shows a summary of the analysis performed over each of the cohorts put together. Also present is a 45° line to show the split between where students would have improved, maintained or fallen in their average GPA scores. From the linear regression model applied, it can be seen that the average drop in GPA is consistent across all achievement levels. While this obviously has more immediate consequences for those students only just passing in their first year, who are now failing, it indicates that this same phenomenon is occurring to the stronger students also. As such, if it is possible to counteract the effects of this slump, it may benefit students across the entire achievement spectrum.

Table 1 shows a statistical summary of the analysis broken down into the individual cohorts examined as well as a combination of these. In one cohort, the mean drop in GPA score was over 0.5, which translates to dropping a grade down in two out of the four subjects undertaken. The least significant drop seen of around 0.25 is still a drop of a grade in a subject on average. Further analysis is to be undertaken, but these initial coarse findings confirm the presence of a slump within the program, thereby justifying a deeper look in order to lead towards a more thorough understanding of the mechanisms involved and development of strategies to combat the second year slump.

**Table 1: Statistical Summary of Second Year Slump Data**

	First Year SP2 GPA to Second Year SP1 GPA $r^2$	Difference in GPA (First Year SP2 - Second Year SP1)		
		Mean	Standard Deviation	Range [Lower, Upper]
2009 SP2 to 2010 SP1 [n=50]	0.676	-0.430	0.688	-2.625,1.000
2010 SP2 to 2011 SP1 [n=40]	0.640	-0.534	0.718	-2.875,0.750
2011 SP2 to 2012 SP1 [n=28]	0.564	-0.241	0.612	-1.625,0.750
2012 SP2 to 2013 SP1 [n=30]	0.709	-0.388	0.633	-2.125,0.500
All Students Combined [n=148]	0.650	-0.414	0.673	-2.875,1.000

## References

- Graunke, S. S., & Woosley, S. A. (2005). An Exploration of the Factors that Affect the Academic Success of College Sophomores. *College Student Journal*, 39(2), 367-375.
- Hunter, M. S., Tobolowsky, B. F., Gardner, J. N., Evenbeck, S. E., Pattengale, J. A., Schaller, M., & Schreiner, L. A. (2009). *Helping sophomores succeed: Understanding and improving the second year experience*. Jossey-Bass and Wiley.

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