Higher Education Policy Institute

What affects how much students learn?

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Tim Blackman, the Vice-Chancellor of Middlesex University, discusses his analysis of learning gain using data from the HEA/HEPI Student Academic Experience Survey

New analysis of survey data reveals students' self-reported learning gain is linked to:

- having access to high-quality teaching
- undertaking high levels of independent study (especially above 20 hours a week)
- providing support for students with low wellbeing
- avoiding high levels of paid work (above 17 hours a week)
- location of study, with extra challenges for London-based students
- studying at an institution with a Gold rating in the Teaching Excellence Framework

Introduction

The Student Academic Experience Survey conducted by the Higher Education Policy Institute and the Higher Education Academy has been running since 2006. The 2017 survey included a new question on self-reported learning gain: 'Since starting your course how much do you feel you have learnt?'

Respondents could answer that they had learned 'a lot', 'a little', 'not much' or 'nothing'. The sample size was 14,057 undergraduate students across the UK and the fieldwork was undertaken by YouthSight.

This is a great question. When I was a student, if I had been asked how much I had learnt since starting the course I think my answer would have been pretty accurate. Even if the answers do not exactly mirror more objective measures of learning gain, how much students feel they have learned is surely important in its own right.

When I analysed answers to this question for relationships with answers to other questions in the survey, some interesting patterns become apparent. Particularly striking is the strength of the relationship with the quality of teaching, even when controlling for the effects of other variables.

Methodology

I used logistic regression to explore these relationships, a statistical technique for analysing the independent contributions of 'causal' variables to a binary outcome (known as a 'dichotomous outcome variable'). My dichotomous outcome variable was 'learnt a lot' compared to 'a little', 'not much' or 'nothing'. In total, 65 per cent of students in the sample reported that they had 'learnt a lot', but this varies significantly depending on responses to other variables.

I explored various combinations of variables to find the combination that was a 'best fit' with the outcome variable. The final model has an 'R-square' value of 0.24, which means that it explains 24 per cent of the variation in the outcome, the rest being unexplained because it is either not captured by the variables in the dataset or is essentially random. This R-square value is not to be sneezed at though. It means the model has low predictive power at the individual student level but we can still make statistical inferences about the patterns or 'signal' in the data (although these are based on association and are not direct evidence of causation).

Individual variables were added or removed from the regression model depending on whether they strengthened or weakened the R-square value. Some surprising variables fell out of the final model, including whether respondents lived in the family home or with others, ethnic group and timetabled taught hours. This is because other variables were better predictors.

I also added some institution-level variables to the HEA/HEPI dataset. Two made it to the final model because they had significant independent

effects that added to the overall model: whether the student's institution was in London or outside London, and whether the institution achieved 'Gold' in the TEF (it was Gold that mattered, not Silver, which had a similar effect to Bronze).

Results

The table below shows the final model. The variables are listed in order of the size of their effect on the outcome: whether the respondent reports that they 'learnt a lot'.

All the variables are statistically significant independent predictors of the outcome (significance <0.05 in the second column). The third column shows the 'odds ratio', which enables us to see the effect of each variable value on the outcome while controlling for the effects of the other variables. An odds ratio of '1' means no effect. Above '1' means there is an effect, and the more above '1', then the bigger the effect or 'odds' of the outcome 'learnt a lot' occurring. Interactions between variables were explored but no interactions were found to be significant.

Multivariate model for the outcome 'learned a lot'

Variable	*Significance*	*Odds ratio*
Teaching quality		
Intermediate v. low teaching quality	0.00	2.16
High v. low teaching quality		7.00
Independent study hours		
High v. intermediate study hours	0.00	1.35
High v. low study hours		2.56
Wellbeing		
High or intermediate wellbeing v. low	0.00	1.83
Paid work in term time		
Less than 17 hours v. 17+ hours		1.57
Year of study		
Year 2+ v. Year 1	0.00	1.33
Entry grades		
144+ UCAS points v. <144	0.00	1.23
London		
Outside London v. London	0.02	1.18
TEF		
TEF Gold v. Silver or Bronze	0.01	1.14
Graduate parent		
Graduate v. non-graduate parent	0.01	1.13

- *High-quality teaching*

Based on the differences in likelihood shown for each variable in the table, the biggest difference is for high-quality teaching compared to low-quality teaching. There were ten separate teaching-related questions in the survey, including for example 'Teaching staff were helpful and supportive', 'Staff were poor at explaining things' and 'Staff gave you useful feedback'. I computed the teaching quality variable by clustering these teaching-related questions into three clusters to create a single categorical variable that represents student reports of high-quality, intermediate-quality and low-quality teaching. The effect of this variable is striking and there is a 'dose-response' relationship: the better the teaching, the larger the odds of reporting having learnt a lot.

- *Independent study*

The next biggest difference is the amount of independent study hours that students report they undertake in an average week during term. There is again a dose-response relationship. The odds of having 'learnt a lot' step up as students report less than 5 hours (low), 5-19 hours (intermediate) and 20 or more hours (high) of independent study.

- *Wellbeing*

Wellbeing has an effect, based on a variable that clusters the four wellbeing questions in the survey into three categories of 'low', 'intermediate' or 'high' wellbeing. However, there is not a dose-response relationship but a threshold effect: **what matters for having learnt a lot is not having 'low' wellbeing.**

- *Paid work*

Undertaking paid work during term time has a similar threshold effect. **It is a high amount of paid work (more than 17 hours a week) that has a negative effect on 'learnt a lot'.**

- *Year of study*

Year of study has an effect as would be expected: **students in Year 2 or above have a higher likelihood of reporting 'learnt a lot'** than students in their first year of study.

- *UCAS points*

UCAS points do not have an effect except at a very high threshold of 144 or more points, when respondents are more likely to report having 'learnt

a lot'. The quality of teaching appears to be several times more important than students' entry grades in determining whether they have learnt a lot.

- *Studying in London*

Being at a London institution, at an institution that did not achieve a Gold in the TEF, and having non-graduate parents all appear to depress the odds of reporting having learnt a lot.

Conclusion

Overall, the findings point to some important things that universities can do to improve learning gain. The most important is high-quality teaching, which makes a big difference across a wide range of UCAS entry points. Also significant are high amounts of independent study, supporting students with low wellbeing and discouraging more than 17 hours of paid work a week. London institutions appear to face particular challenges achieving learning gain, perhaps associated with the well-documented costs and pressures associated with studying in the capital. TEF Gold institutions appear to do well, although the effect is far less than high-quality teaching.

The findings have implications for the Government's proposals for more two-year degree programmes as a 'cheaper' option to three-year programmes. Currently an undergraduate degree is 360 credits, each credit based on 10 hours of study. Students on accelerated degrees are expected to study for 1,800 hours a year, in excess of the 1,600 hours of many full-time jobs. If they undertake paid part-time work as well, as most students do, the pressure on them is likely to be considerable, with a risk of putting in too few independent study hours and their wellbeing suffering, both potentially leading to doing less well in their degree than pacing their study over three years.

So there is a danger that many students will do less well than their potential taking two-year degrees, and that it will be students from less affluent backgrounds who are tempted by the offer. Indeed, if it is more affluent students who choose this route, and who may do so because their higher prior attainment means they can cope with the intensity, that will leave their less affluent peers with the greater debt and loss of earnings from a year less in the labour market.

For all but a small minority of students able to achieve well with less study hours, value-for-money is more about excellent teaching and students who learn a lot than degree courses crammed into two years.