*Short Paper*

# What Makes a Student Succeed?

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## INTRODUCTION

Academic ability is not the only factor influencing student success in Pharmacy, and GCE A-level grades are poor predictors of final degree class. In a project begun in 1997, we have sought to correlate student data available to us on UCAS forms and data available early in the student's University career with the results obtained in the final year of the course. The intention is both to inform the admissions process and to design appropriate support for students at risk of underachievement.

## METHODS

Data about the 1997 intake were obtained retrospectively from:

1. UCAS forms, available up to 40 weeks before admission.
2. A-level results, 4–6 weeks before admission.
3. Skills tests in Mathematics, Chemistry, Biology, Physics and English, taken during the first week of the course.
4. Attendance data, available at intervals through the course.
5. End of semester examination results.

These data were stored in compliance with data protection legislation, and correlated with final examination results (the criterion of success used in this exercise). In all, 123 students began the M.Pharm course in 1997; 11 withdrew, 13 have yet to complete the course, 3 graduated with a B.Sc in Pharmaceutical Sciences and the remainder graduated in 2001 with an M.Pharm degree.

## RESULTS

A number of factors revealed on the UCAS forms correlated with student achievement.

### Gender

Although the mean A-level grades for men and women were essentially identical, women scored on average 4% better than men in the final degree examinations ($t = 3.08$, $p = 0.003$). This can be attributed in part to motivation, with men being three times more likely to be poor attenders than women. However, a subject breakdown of first year examination results shows that women outperform men particularly in Chemistry and related subjects, rather than in Biology. It may be that women underachieve in mixed schools in Chemistry, and thrive in the more gender-neutral environment of a University Pharmacy School.

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## Postcode

The postcode of the family home was used to determine the Index of Multiple Deprivation (IMD) of the student's family. The School of Pharmacy and Pharmaceutical Sciences recruits from the full range of IMDs, but IMD showed no correlation with achievement. There was, however, a strong correlation between region and achievement, students from the Greater Manchester area scoring on average 5% more in finals than those from other regions ($t = 3.10$, $p = 0.003$).

## Personal Statement

The personal statements yielded three strong correlations with success. Students who held a position of responsibility at school performed 3% better on average than those who did not, and students who mentioned an interest in reading performed 3.5% better than other students. More surprisingly, the six students who did not report an interest in sport performed consistently better than their peers, such that the 6.7% difference in the mean final exam scores is statistically significant ($t = 3.11$, $p = 0.003$).

## A-level Results

Total A-level points correlated only weakly with success, however, an increase of one grade in A-level Biology corresponds to a 5% increase in Finals marks ($t = 5.03$, $p < 0.001$). Students without A-level Biology were not disadvantaged, but the minority of students with only grade C were. Biology A-level is much more linguistically demanding than Chemistry or Mathematics, and a subject in which hard work is especially important, even for able students. We attribute the relative success of students with good Biology A-levels to their linguistic proficiency and diligence.

## Skills Tests Results

The Chemistry skills test marks correlated significantly with Finals marks, independently of Chemistry A-level. More surprisingly the English skills test marks correlated equally strongly with Finals, regression analysis showing 1% in the skills test to correspond to 0.2% in Finals marks ($t = 2.29$, $p = 0.024$). The Manchester Pharmacy intake of 1997 consisted largely of white and Asian British students (approximate ratio 60:40). Asian British students generally scored poorly in the English skills test and only 3 Asian British students (all women) appeared among the 18 first class honours degrees (see Fig. 1). English support was made available to the 1997 intake, but this was not compulsory and uptake was poor. In 1998, the School intervened by developing a 10-credit module, Effective Writing, in semester 1 of the first year. In the 2001 examinations taken by the 1998 intake, there was no significant correlation between race and examination performance.

## Attendance Data

Attendance at all classes is recorded during the M.Pharm course and poor attendance has been shown to correlate strongly with examination failure.
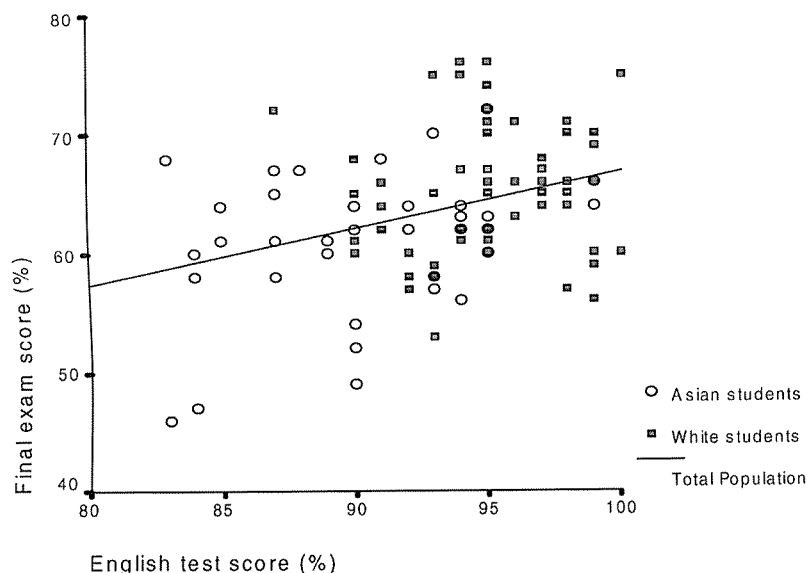


FIGURE 1   Correlation between results in the Chaplen English Skills test (1997) and final examination results (2001) of the 2001 Manchester Pharmacy intake.

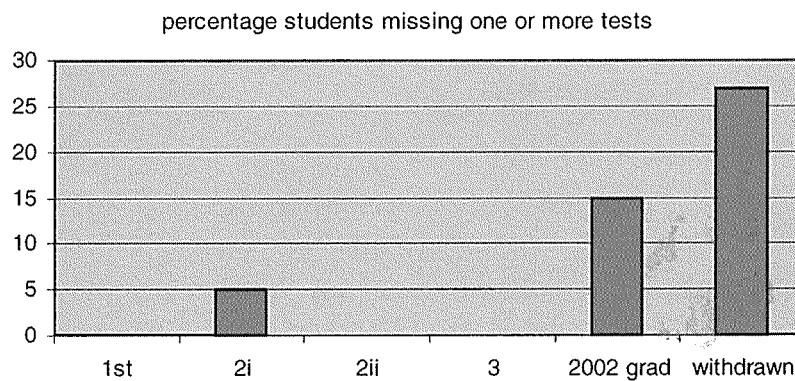percentage students missing one or more tests



FIGURE 2   The percentage of students who missed one or more skills tests, by class of degree (Category axis: 1st = First class degree; 2i = Upper second class; 2ii = Lower second class; 3 = Third class).

Figure 2 shows the correlation between poor attendance at skills tests in Freshers' Week and failure to complete the M.Pharm course in four years. Students who attended all the skills tests were three times more likely to complete the course on time than those who missed one or more tests. This result is significant at the 0.05 level. It can be seen that many of the students who withdrew from the course, or who required an extra year to complete, signalled their poor motivation or other problems as early as Freshers' Week.

### First, Second and Third Year Examination Results

Results in first, second and third year examinations correlate very strongly with final year examination results. Each 1% in third year corresponds to 0.8% in Finals, and only one student who obtained first class honours in Finals scored below 70% in the first year.

## CONCLUSIONS

An understanding of the factors that predispose students towards success or failure helps both academics and students themselves to intervene appropriately. Retention rates at the Manchester School of Pharmacy and Pharmaceutical Sciences have been rising steadily since this project began and now stand at above 97% for the critical first–second year transition.