

How Does Post-16 Education Affect Expectations of Higher Education and Subsequent Attainment Within A Science Faculty?

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Abstract

“How well prepared are our students?” is a question frequently asked by practitioners in Higher Education (HE) and numerous resources exist to help university teachers understand students’ knowledge. “What are our students’ expectations?” is less frequently asked yet we propose that expectations have significant impact. For prospective students’ expectations may influence the choice of degree and institution; for the new undergraduate, the ability to successfully integrate and progress. The current study investigates student expectations, using questionnaires, interviews and observations alongside data analysis of a single cohort of students, from point of entry to departure.

Whilst limited to students studying science within a single HE institute, grouping by demographic factors such as the type of school attended, shows trends in student expectations of university, their ability to transition and their subsequent academic

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attainment. Significantly, we show that students from independent schools and male students suffer the consequences of misaligned expectations as well as lower degree attainment. Finally we present a case for how this information might be used to provide better support to schools, prospective students and new undergraduates.

Keywords: School-university, transition, expectations, gender, school type, STEM.

Introduction

A-level Entrants and Degree Outcomes in the UK

In the UK, post-16 students' A-level grades are the single most determinant factor for making offers to applicants (HEFCE, 2003). Whilst claims have been made that A-levels are not a good indicator for academic performance (Clare, 2002; Peers & Johnston, 1994; Sear, 1983) the Higher Education Funding Council for England (HEFCE) has published a number of studies demonstrating that, whilst A-levels do not determine degree outcomes, they remain the most reliable single point of data for making such decisions (HEFCE, 2003).

This controversy has arisen, at least in part, due to the contextual factors that influence A-level attainment. School type is one such influence (HEFCE, 2014); independent school students enter Higher Education Institutions (HEIs) with an average of ABB at A-level, whereas state school entrants average BBC. Yet within HEIs, state school students achieve better degree outcomes than students with the same A-level attainment who attended independent school. School performance also impacts degree attainment; students with BBB grades at A-level, from a school averaging CCC, outperformed students with the same entry level qualifications from a school where the average performance is AAA (HEFCE, 2014; McKenzie & Schweitzer, 2001). HEFCE (2014) demonstrate the impact of individual and household characteristics, such as gender, ethnicity and socio-economic factors as impacting university attainment. For students who enter university with AAB at A-level, 79 % of females attain an upper second class degree or a first, whereas 70 % of males attain the same

degree outcome. Additionally, white students perform better than any other ethnicity and entrants from disadvantaged areas attain lower degree outcomes on average.

Previous national studies do not attempt to rationalise why these trends in entrants' exist or what universities might do to address these issues; indeed HEFCE has called for further studies for this very reason (HEFCE, 2013). Whilst HEFCE has not sought to suggest why these effects are observed, the impact on degree outcome is significant. For example, an upper class second degree is worth an estimated £80,000 more over the working lifetime of the graduate, than a lower second class degree (Independent, 2013).

The Transition from Post-16 to Higher Education

The transition from school to university is one which is completed by individuals without familiar peers and with only a written reference to support it; Smith (2004) described it as "the most taxing of transitions". The first few weeks of transition from school set the foundation for the degree (Reason, Terenzini & Domingo, 2006). It is already accepted that pre-university education impacts a student's ability to do well at university. Failure to quickly adjust to university life has been linked to study habits formed during secondary school (Cook & Leckey, 1999) and there is growing concern that schools are not providing the basis for HE study (Browning & Sheffield, 2008), with A-levels described as failing to prepare students for HE (THE, 2009, report by Reform). During the first year a student needs to effectively assimilate their HEI on both an academic and social level (Tinto, 1975). This is only possible if the university experience can be related to the previous educational experiences of school (Perry & Allard, 2003). At the same time the type of students entering HE is becoming more diverse. As such, this transitional period deserves attention from those with the responsibility to support it.

We suggest that the pre-university experience, in terms of educational environment and training, plays a significant role in forming the expectations of students and that groups of entrants, such as those who have attended different schools, will exhibit trends in expectations. To this end we investigate the expectations of A-level students and current undergraduates, from a variety of demographic groups. Furthermore, we propose that where these expectations are not aligned with the reality of HEI study, students struggle with the transition and this will be embodied in these students failing

to match the attainment of their peers. To test our hypothesis, we compare the A-level grades, degree progress and attainment of undergraduates, within these same demographic groups.

Designing the Study Using Outcomes from Previous Studies on Transition

A literature review identified the key challenges faced by students during the transition from post-16 education to university. The challenges can be generalised in two broad categories, academic and social challenges, and are summarised in table 1. These areas have seen increased focus in the literature as the diversity of students attending HEIs increases.

Table 1. The transitional challenges faced by new undergraduate students, as outlined in previous studies, classified in to two key areas.

Academic Challenges	Social Challenges
Teaching methods & learning activities (including labs, lectures, small group teaching & class size) (Clark, Briggs & Hall, 2012; Richardson <i>et al.</i> , 2006; Harvey, Drew & Smith, 2006; Lowe & Cook, 2003)	Financial support (York & Longden, 2008; Hockings, Bowl & Cook, 2007)
Work load including pace & contact hours. (Marland, 2003; Lowe & Cook, 2003)	Homesickness (Keyup & Barefoot, 2005; Lowe & Cook, 2003; Stroebe <i>et al.</i> , 2002; Wilcox, Fyvie-Gauld & Wynn, 2005)
Study skills including reading, writing & independent learning. (Brinkworth <i>et al.</i> , 2009; Crabtree, Roberts & Tyler, 2007; Gettinger & Seibert, 2002; Smith & Naylor, 2001; Cook & Leckey, 1999)	Friendships and peer support (Clark, Briggs & Hall, 2012; Thomas, 2002; Tinto, 1975)
Curriculum & subsidiary subjects (Nampota & Thomson, 2008; Cook & Leckey, 1999; Ives, 1977)	Pastoral support (Leese, 2010; Brinkworth <i>et al.</i> , 2009; Crabtree, Roberts & Tyler, 2007; Cook & Leckey, 1999; Tiedeman, 1942)

The demographic variables which were likely to be influential on the transition were also identified through literature review and are summarised in table 2.

Table 2. A summary of key demographic factors and their influence on transitional challenges for new undergraduate students.

Demographic Factor	Demographic group	Transition Challenges & Impact
School type	Independent school	Independent school: Higher A-level grades but lower university attainment (Hoare & Johnston, 2011) Assumption of going to HE, earlier application and encouragement to apply to higher tariff point HEIs (Dunne <i>et al.</i> , 2013)
	State school	Lower A-level grades but higher HE attainment (Hoare & Johnston, 2011)
Local participation in HEI	First into HEI	Less understanding of what to expect (Leese, 2010) More likely to cite financial challenges (Yorke & Longden, 2008)
Post-16 qualification type (Yorke and Longden, 2008)	A-level	Poor degree subject choices. More social transition issues, specifically lack of friends or peer support.
	Other	Transition issues centre on finance and lack of feedback.
Gender	Male	Financial pressures (Yorke & Longden, 2008).
	Female	Homesickness (Yorke, 1998; Stroebe <i>et al.</i> , 2002). Better degree attainment (Smith, 2004). More likely to transfer from science or engineering degrees, citing male:female balance as key factor (Seymour and Hewitt, 1997; Richardson and Woodley, 2003)
Ethnicity	Ethnic minorities	Social transition issues (Clark <i>et al.</i> , 2012), specifically relating to peers and tutors (Conor <i>et al.</i> , 2004). Financial pressures (Yorke & Longden, 2008).
Disability	Learning support needs	Teacher-focussed teaching methods and larger class sizes (Levinson and Ohler, 1998). Inadequate support from staff and high academic workloads (Yorke & Longden, 2008).

Research Questions

We sought to investigate several key questions:

- Is our study group representative of the national picture illustrated by HEFCEs studies? I.e. What is the attainment at first year and final year of HEI study for demographic groups?
- How do expectations of HE science and concerns for the transition differ for demographic groups, in the applicant study group?
- How do transitional challenges and academic performance differ for demographic groups, amongst the current undergraduate population?
- Are the transitional concerns of applicants reflected in the challenges cited by the undergraduate population?
- Where applicants have less authentic expectations, are particular transition challenges evident and is there impact in attainment?

Qualitative and Quantitative Methods

Through the use of qualitative methods, including questionnaires, observations and interviews, and quantitative data analysis we sought to compare a targeted statistical analysis of a single cohort, from entry point to completion, to the expectations and concerns of A-level students and applicants, collated across several years and in both school and university application day settings. We compared this to the challenges reported by current students, as well as seeking feedback from both school teachers and university tutors.

In questionnaires, Likert scales (Likert, 1932) alongside open text responses, enabled quick responses as well as broader answers. Questionnaires were delivered in person to completers, encouraging greater participation than possible with electronic formats. The themes were selected from previous studies (table 1), to allow comparison to the existing research. Questionnaires presented to A-level students, prospective students, current undergraduates, school teachers or university tutors included consistent themes

of fees, living costs, independent living, home-sickness, friendships and pastoral support. Predicted grades for prospective students were also compiled.

Teaching and learning was investigated through observation, use of national statistics and responses to questionnaires. Observations were carried out at two schools, for a variety of science A-level classes; one independent school, one state funded school, both rated “good” by Ofsted. Prospective students were asked to outline their experience in terms of the types of teaching environment, including practical class time, small group teaching, 1:1 tuition time and class sizes experienced and the perceived difficulty at different transition points, including GCSE to post-16 study.

In order to allow direct comparison to previous research, we looked for differences and themes within key groups. Interrogation of the study groups suggested the research was focussed on demographic variables of school type, whether students were the first to university, gender and those who studied A-levels. School type was segregated into state and independent, as previous studies revealed that types of state school were not significant (HEFCE, 2014). Consideration of gender was limited to male and female. When looking at the influence of local participation, we focussed on whether students were the first to attend university in their family, and the effect of extra-curricular science activities.

A pilot study was carried out with 25 state and 25 independent school students, studying science A-levels, at two different schools; observations of class sizes and teaching methods were also made. Simultaneously, 83 first year undergraduates were asked to indicate the challenges they had faced during their first few months of study. This was followed by two years of study, during the academic years 2013/14 and 2014/15, targeting prospective students attending Faculty of Science application days at the University of Bristol, constituting a data set of over 600 prospective students. 450 current first year undergraduates were also canvassed along with 10 teachers and 10 university tutors over this period.

Performance was used as an indicator of “success”; since dropout rates at the University of Bristol are negligible, non-completion was not considered in this study (Hoare & Johnston, 2011). Previous studies relating transition data of the University of Bristol (Hoare & Johnston, 2011) used first class degree outcome as a success

indicator but the upper second class degree has since been shown to be equal in terms of career progression and subsequent earnings (HEFCE, 2014; Independent, 2013). Degree outcomes at the upper second class level and above, were considered as an indicator of “success”. We did not limit our interrogation of the data to incoming tariff points and outgoing degree awards but also looked at progression in year groups and specific units within year groups.

The data was interrogated via a value-added analysis utilising the incoming tariff points and comparing these to first year grades, specific unit grades as well as degree outcomes. To ensure results were statistically significant, Wilcoxon-Mann-Whitney U-tests were carried out; the uneven spread of the data, with a majority of degree performance at upper first class and above demanded this treatment. Standard definitions for statistical significance were used, i.e. where there was a less than 1 in 20 chance, giving p values lower than 0.05.

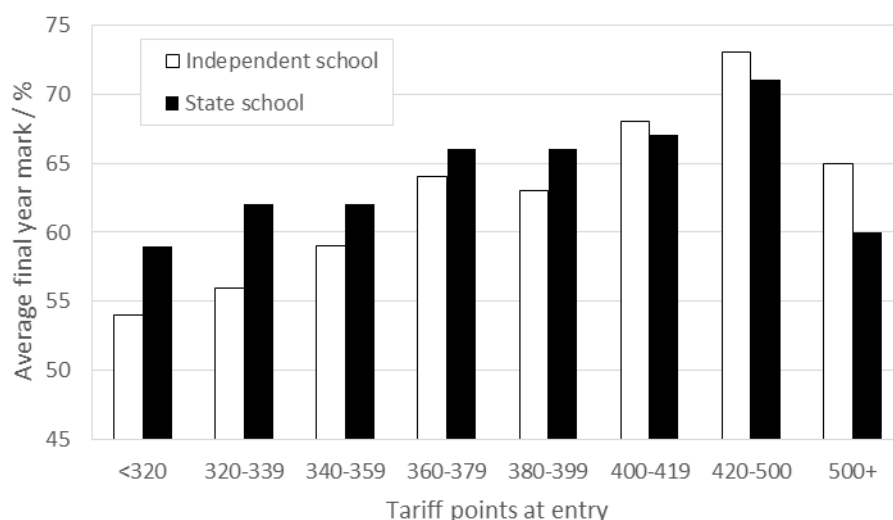
The data set was compiled for a single cohort from entry point to completion, entering in the academic year 2009/10 and completing with a BSc in 2011/12 or MSci in 2012/13. The data only included students entering with A-level subjects and grades were converted in to tariff points. The degrees studied included chemistry, physics, biology and biochemistry and allowed a data set with 1000 individuals to be considered.

Results and Discussion

Entry Point to Final Degree – A Comparison to National Studies

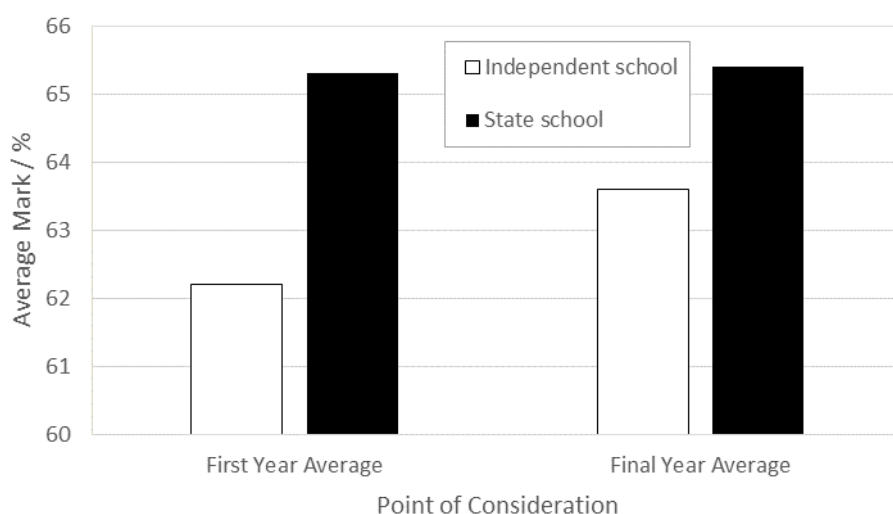
Incoming tariff points were a clear indicator of degree performance (figure 1). In agreement with national studies, state school students outperformed their independent school peers in the same entry point tariff band. However, for students with an entry tariff of 500 points or more degree performance dropped and this was more significant for state school students.

Figure 1. Final year average versus tariff points at entry, considered by school type, for the Faculty of Science.



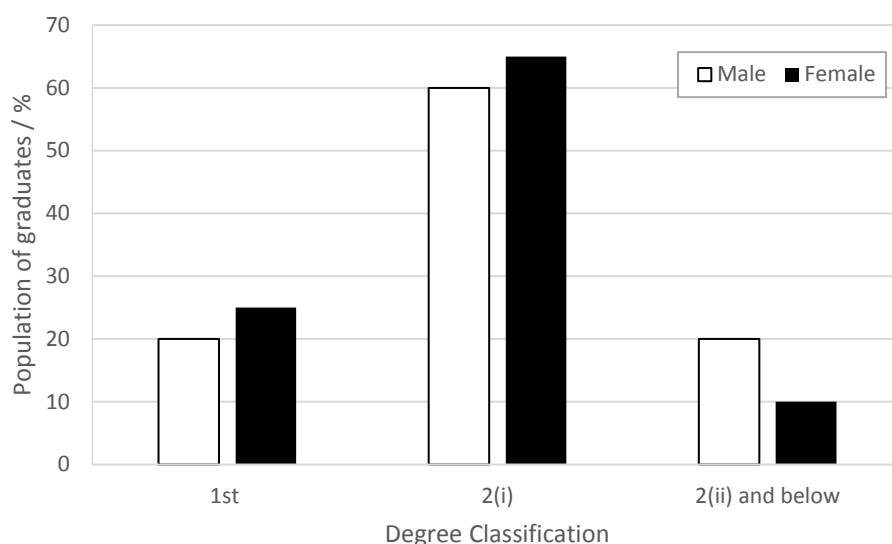
Students who had attended post-16 education at an independent school, attained lower first year averages than their peers who had attended state school; a similar situation was observed for male students, who performed less well than their female peers. However, both independent school and male students showed improvement from first to final year; greater than was observed for their state school or female peers (school type example given in figure 2).

Figure 2. A summary of end of year averages, for the School of Chemistry, considered by school type.



Contrary to previous studies, females consistently outperform males, when considering individual year averages or degree classification (figure 3).

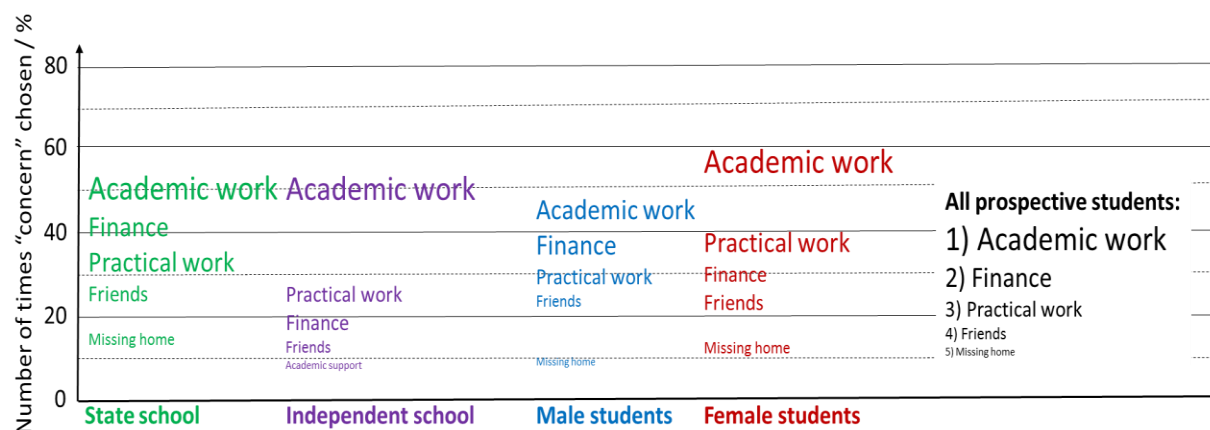
Figure 3. Degree classifications in the Faculty of Science, grouped by gender.



The Concerns of Prospective Students and the Challenges Faced by Current Undergraduates

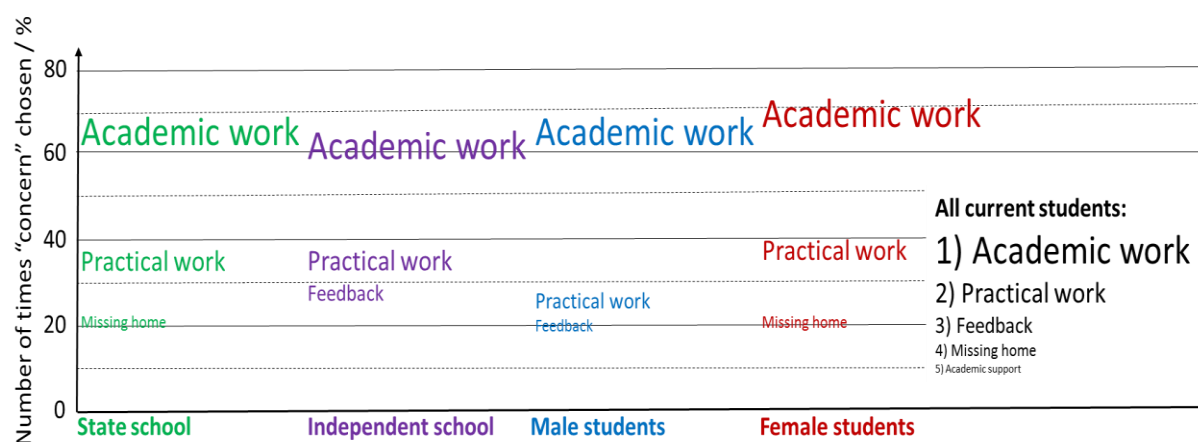
To ascertain what might be causing lower performance for males and independent school students, we compared the concerns of prospective students to the challenges reported by current undergraduates. Academic work was universally reported as the top concern for prospective students (figure 4). Students from independent schools cited academic work to the near exclusion of other concerns. Male students cited finance, whereas female students were more likely to mention practical work. Both practical work and finance were key concerns for students from state schools.

Figure 4. The concerns of prospective chemistry students, grouped by school and gender.



Current undergraduates cited academic work as the key challenge to their first year at university; financial issues didn't feature (figure 5).

Figure 5. The challenges faced by current first year undergraduate chemistry students, grouped by school and gender.

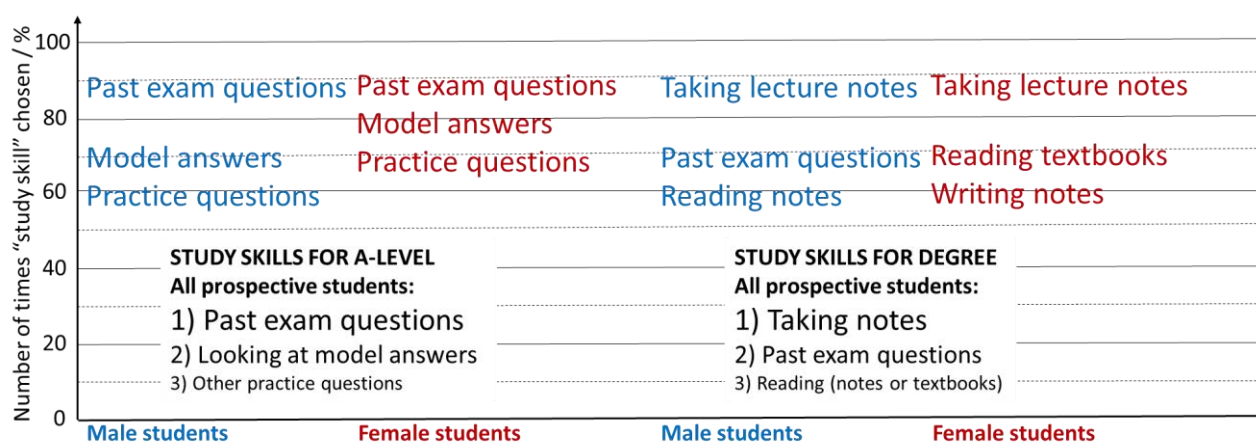


Students from independent schools and male students stated issues with feedback whereas state school students and females suffered home sickness. Asked what challenges their students faced, lecturers' responses more closely resembled the concerns of the prospective students than the challenges reported by the current undergraduates; significantly, academic support and feedback did not feature in lecturers' responses.

Identifying Study Skills in Prospective and Current Undergraduate Students

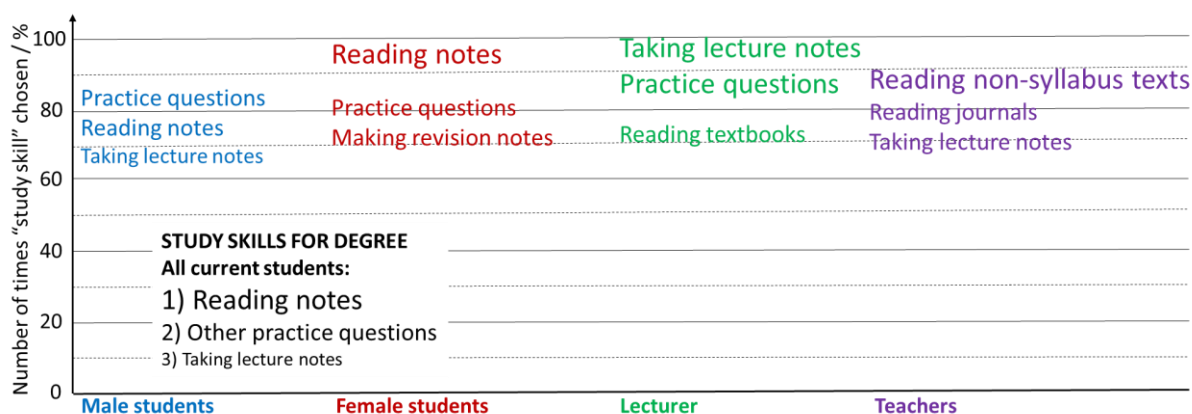
A-level students identified examination revision study skills as key for A-level success. Male students also suggested examination revision techniques for degree success, whereas female students predicted they would need to change their study habits (figure 6).

Figure 6. Prospective students, visiting the School of Chemistry, identify key study skills for A-level and for degree success, grouped by gender.



There were no differences when respondents were grouped by school. Female prospective students identified the same set of study skills for degree success as those suggested by lecturers (figures 6 and 7).

Figure 7. Current students and lecturers, in the School of Chemistry, and A-level teachers identify key study skills for degree success.



Current chemistry undergraduates identified problems with exam format, in comparison to their A-level assessments; this was of more significance for independent school students and males (figure 7).

Teaching & Learning Environments

Observations and data collated from questionnaires indicated state school and independent school students experienced different teaching environs (table 3).

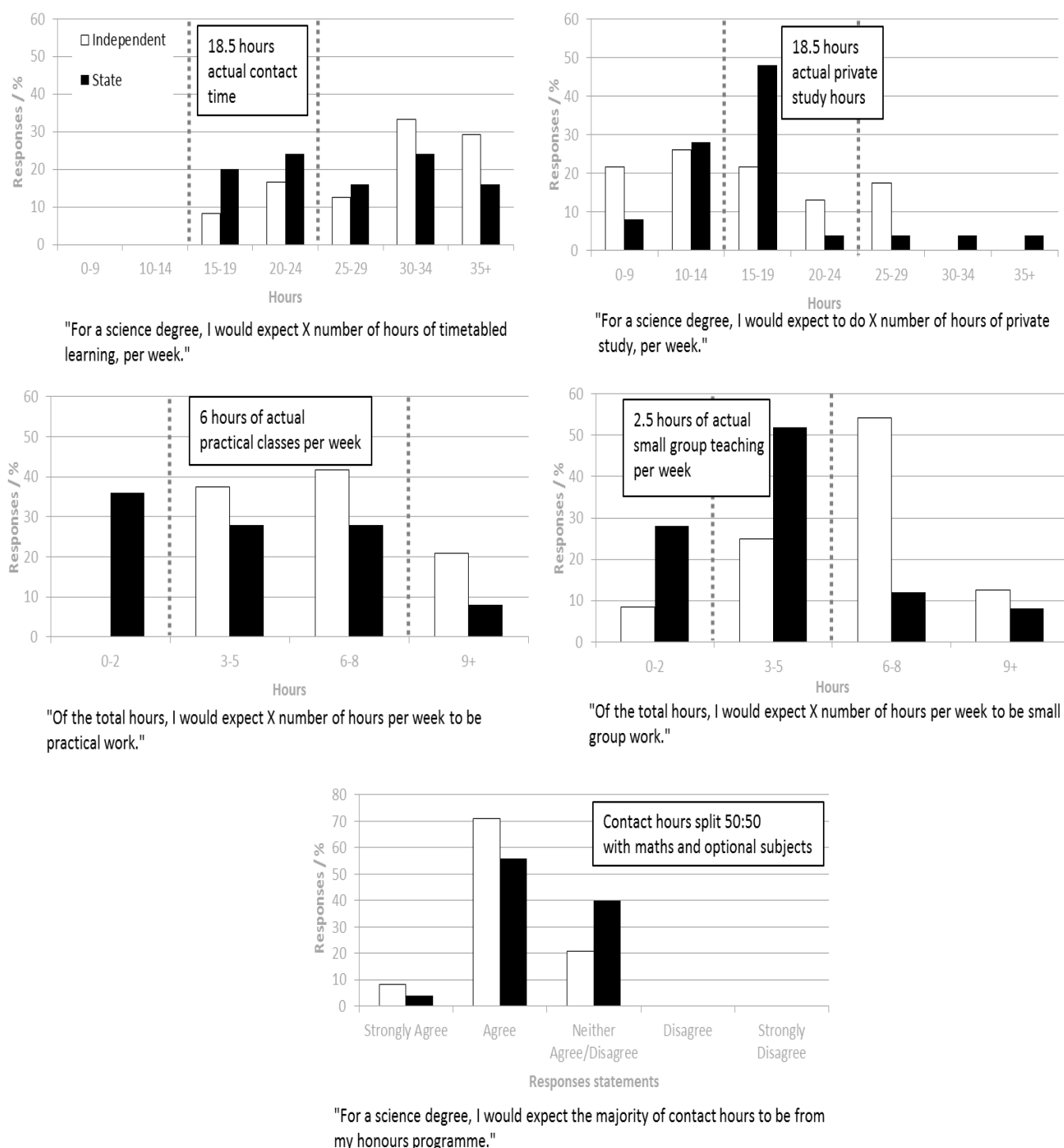
Table 3. Average science class sizes and taught science hours according to school type; collated information from observations and survey responses.

	State school A-level science class		Independent school A-level science class	
Study method	Average class size	Average contact hours per week	Average class size	Average contact hours per week
Observation	Approximately 20 per class	1 hour lesson Slow pace	Approximately 8 per class	1 hour 20 minute lesson Fast pace
Questionnaire responses	16 per class (STD 5.8)	5 hours per week (STD 1.4)	11 per class (STD 4.2)	5.2 hours per week (STD 1.0)
Calculated from questionnaire responses	0.4 hours teacher time per student per week		0.66 hours teacher time per student per week	

STD – Standard deviation calculated for amalgamated questionnaire responses.

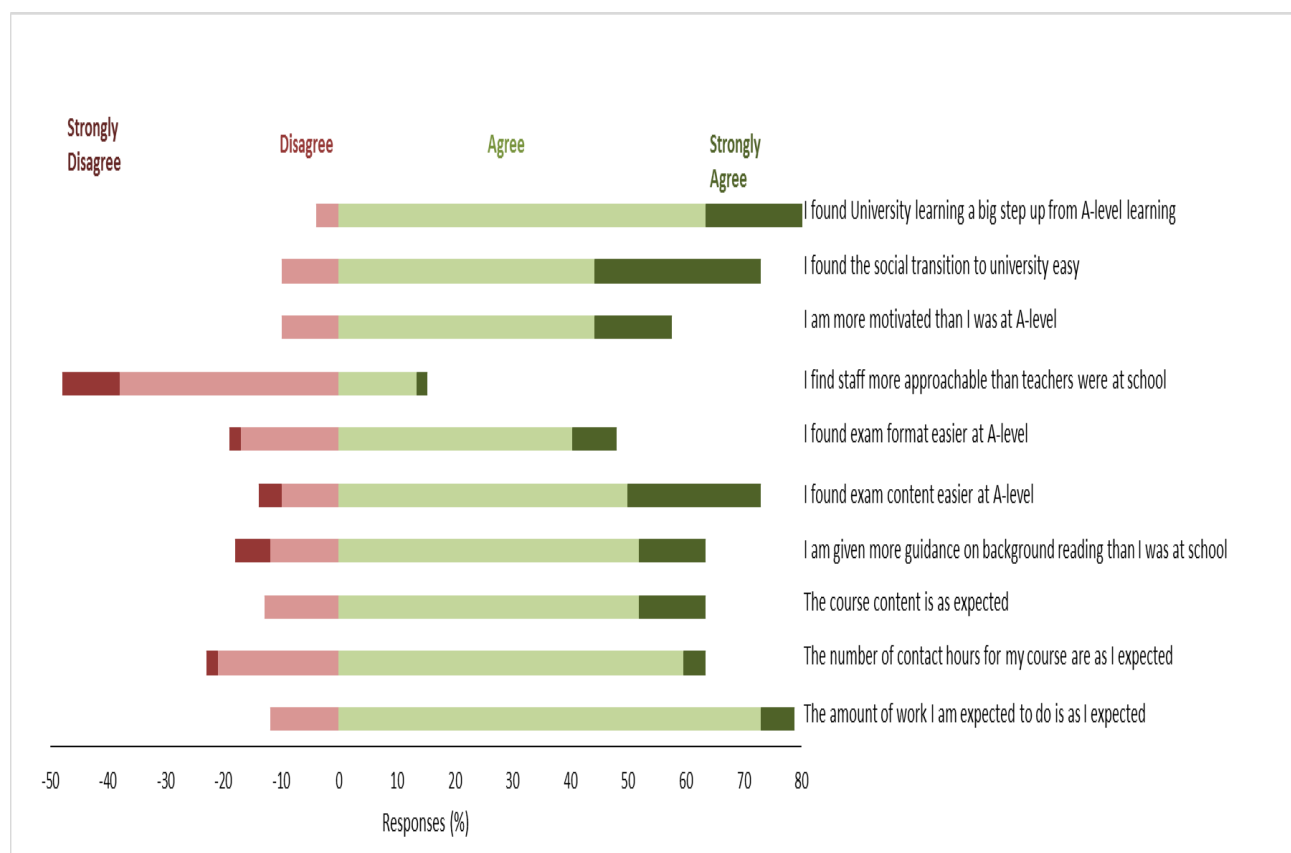
A-level students attending state school were more able to accurately predict teaching hours, with the exception of practical classes (figure 8). All A-level students expected that the majority of first year teaching would be on their honours degree programme (figure 8).

Figure 8. A-level student responses to statements about teaching hours and environments expected for science degree studies.



Comparisons for students who had siblings at university or who took an interest in extra-curricular science did not produce significant characteristics. Current undergraduate students said the amount of academic work and content were as expected but over a quarter said the contact hours were not as expected (figure 9).

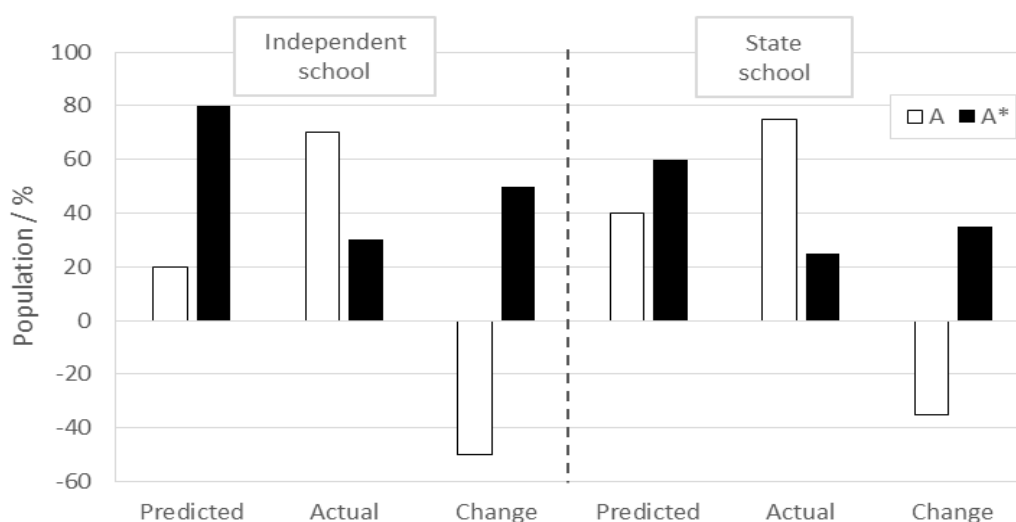
Figure 9. The challenges faced by undergraduates during the first semester of their chemistry degree.



Students' Confidence and Expectations of Support

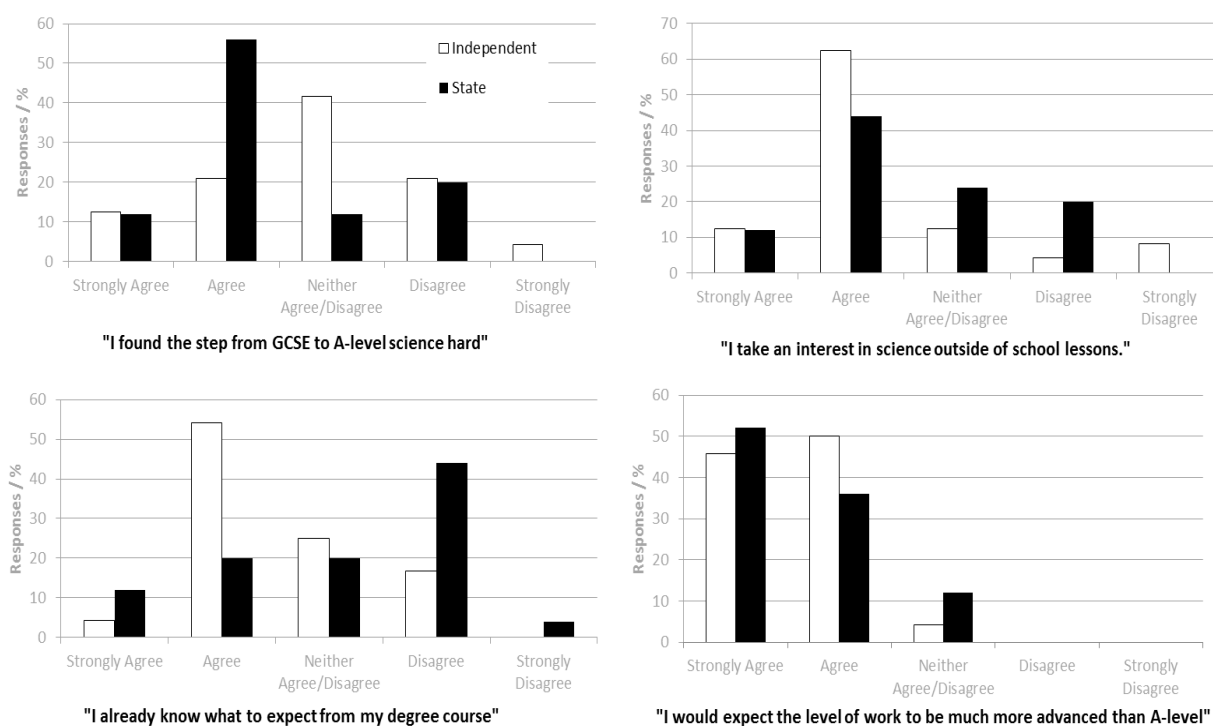
Predicted grades for independent students were not matched by their actual incoming grades (figure 10).

Figure 10. Predicted and actual A-level chemistry grades for School of Chemistry entrants, grouped by school type.



Independent school students were confident in their own knowledge of what to expect from a science degree (figure 11). 20 % of independent school students said they were not concerned by the academic work they would meet as an undergraduate nor had they found the previous, GCSE to post-16 transition difficult.

Figure 11. Confidence and expectations of A-level science students.



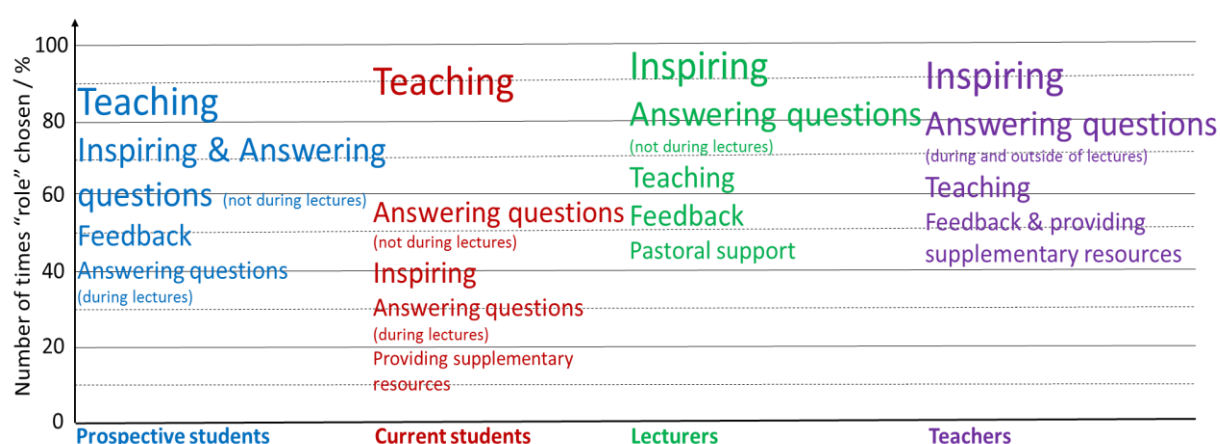
In contrast, 80 % of undergraduates reported that the transition to university had been difficult; 78 % said that the social transition had been easy, suggesting this transitional challenge was academic (figure 9).

There was a significant change in the motivation of students. A-level students, especially independent school students, showed a strong interest for pursuing extra-curricular science (figure 11), suggesting strong motivations towards the subject, but only 56 % of undergraduates agreed that they were more motivated at university and 20 % of undergraduate students who had come from independent school stated they were less motivated (figure 9). 90 % of A-level students expected staff to be approachable (figure 11) but 50 % of undergraduates said staff were less approachable (figure 9).

The Role of the Academic Tutor

Prospective students and teachers did not list pastoral support as a role for lecturers. Current undergraduates did not cite feedback, academic or pastoral support as roles for tutors, even though these were the challenges they highlighted. Lecturers did consider pastoral support to be part of their role (figure 12).

Figure 13. The role of a lecturer, as defined by prospective chemistry students, current chemistry undergraduates, chemistry lecturers and A-level science teachers.



Demand for academic and pastoral support is not met. Students don't expect to find pastoral support in their academic tutors and that students find academic tutors inaccessible will prove a significant barrier for seeking support.

Summary of Key Findings

The data fitted previous studies with degree performance being directly proportional to incoming tariff points. However, male students, students from independent schools and exceptionally talented students underperform in terms of final degree outcome when considering their entry point qualifications. Unlike ascertains made by previous studies, our study suggests university is not a level playing field. Groups with expectations most unlike their degree studies exhibit poorer academic performance.

Independent students arrive with higher A-level qualifications yet have lower performance at university; this trend is most prominent in the first year of university and, although these students do show improvement, the trend persists to degree completion. Such high predicted grades might give rise to an initial feeling of confidence amongst independent school students. Prospective students from independent schools display confidence in their ability to adjust to university study. Yet, considering the inability of the same students to predict the teaching hours accurately (figure 9), this confidence may be misplaced. Students from independent schools are used to more teacher time and directed contact hours in school (table 3), leading to them facing challenges with academic support and feedback at university. Academic work was universally predicted to be harder but especially so amongst independent school students. This expectation of very challenging academic work might lead to disinterest if not realised. Additionally, diminished A-level grades attained could prove a source of disenchantment. For independent students, confidence is not matched by an understanding of what a science degree is like. In turn this group were more effected by loss of motivation during their degree studies.

Male students are outperformed by their female colleagues consistently across the highest levels of degree classification. Male students were more effected by reliance on previously developed study skills, focussing on exam revision and insufficient flexibility for degree studies. Additionally, the reported inapproachable nature of tutors, or the lack of understanding of the role of tutors at HEIs, will impact the transition for all students but more so for males and independent school students, who lack suitable study skills and cite academic support more frequently.

Limitations and Future Work

Our study is limited in terms of population; groupings according to ethnicity and disability gave too small a sample size to make comparison possible. We attempted to identify local participation rates by asking students whether their siblings had been to university; no significant trends were observed. It is unclear whether this is due to our failure to take into account the impact of an individual's wider community, such as parental figures, or the fact that local participation has a limited impact on expectations. A significant factor for science students is the necessity to undertake practical work at university. This theme is insufficiently covered in the current study and, with the current changes in A-level practical work and the introduction of practical endorsement, this key component of a science degree deserves greater attention.

We have succeeded in identifying key differences in study skills and expectations but to confirm why this difference occurs requires research on a wider basis. We should also ask what happens to students as they progress; why are independent school students better at improving their performance and why are male students seemingly less able to improve? There is a need to follow students through university, canvassing the challenges faced at each stage.

Initiatives to Bridge the Transition

Our study should not be used to change school approaches; university is the next step for the minority of school leavers (Clark, Briggs & Hall, 2012). Instead improvements should look to better support the transition. We encourage other institutions to canvass their prospective and current student populations, to define the challenges faced and better understand their own students, so that methods of support appropriate for the incoming and existing student populations can be identified.

Our study identifies a need to clearly set expectations for learning at a very early stage, even before students arrive. This might be achieved through online bridging activities (Laing, Robinson, & Johnston, 2005) and making information accessible (Hibbert, 2006; Thomas, 2012), allowing students to understand what their degree will be like before they arrive. Ensuring science courses follow school curriculum and implementing more

rigorous curricula, especially at the start of courses, to help students quickly understand the requirements of the degree would also be advantageous (Shallcross & Harrison, 2007).

Our study reveals that students do not find academic tutors approachable, leading to the feedback and pastoral support needs of individuals being unfulfilled. One method to create stronger communities which has succeeded is through the implementation of peer-tutoring (Clark, Briggs & Hall, 2012; Thomas, 2012). However, university lecturers should not use this as a device for ignoring the need to support students; institutions must seek to provide greater social and community support.

References

- Brinkworth R., McCann, B., Matthews, C. & Nordström, K. (2009). First Year Expectations and Experiences: Student and Teacher Perceptions. *Higher Education*, 58(2), 157-153.
- Clare, J. (2002, August 15) Toss of a coin 'as good as A-levels'. *The Daily Telegraph*.
- Clark, J., Briggs, A. R. J., & Hall, I. (2012). Building bridges: understanding student transition to university. *Quality in Higher Education*, 18(1), 3-20.
- Cook, A., & Leckey, J. (1999). Do expectation meet reality? A survey of changes in first year student opinion. *Journal of Further and Higher Education*, 23(2), 157-171.
- Crabtree, H., Roberts, C. & Tyler, C. (2007). Understanding the problems of transition into higher education. *4th Education in a Changing Environment Conference*, University of Salford. Retrieved 15 June 2016 http://www.ece.salford.ac.uk/proceedings/papers/35_07.pdf
- Dunne, M., King, R. & Ahrens, J. (2013). Applying to higher education: comparisons of independent and state students. *Studies in Higher Education*, 1-19.
- Gettinger, M. & Seibert, J. (2002). Contributions of Study Skills to Academic Competence. *School Psychology Review*, 31(3), 350-365.
- Harvey, L., Drew, S. & Smith, M. (2006). *The first year experience: A Review of Literature for the Higher Education Academy*. Sheffield Hallam University. Retrieved 15 June 2016 from: https://www.heacademy.ac.uk/sites/default/files/first_year_experience_full_report.pdf

- HEFCE, Higher Education Funding Council for England. (2003). *Schooling effects on higher education achievement*, July 2003/32, Issues paper. Retrieved 15 June 2016 from:
http://webarchive.nationalarchives.gov.uk/20100202100434/http://www.hefce.ac.uk/pubs/hefce/2003/03_32/03_32.pdf
- HEFCE, Higher Education Funding Council for England. (2013). *Higher education and beyond*, July 2013/15, Issues paper. Retrieved 15 June 2016 from:
<http://www.hefce.ac.uk/media/hefce/content/pubs/2013/201315/Higher%20education%20and%20beyond%20Outcomes%20from%20full-time%20first%20degree%20study.pdf>
- HEFCE, Higher Education Funding Council for England. (2014). *Differences in degree outcomes: Key findings*, March 2014/03, Issues paper. Retrieved 15 June 2016 from:
http://www.hefce.ac.uk/media/hefce/content/pubs/2014/201403/HEFCE2014_03.pdf
- Hibbert, B. (2006). *The articulation of the study of history at General Certificate of Education Advanced Level with the study of history for an honours degree*. PhD Thesis. University of Leeds.
- Hoare, A. & Johnston, R. (2011). Widening participation through admissions policy – a British case study of school and university performance, *Studies in Higher Education*, 36(1), 21-41.
- Hockings, C., Bowl, M. & Cooke, S. (2007). 'Academic engagement' within a widening participation context – a 3D analysis. *Teaching in Higher Education*, 12(5&6), 721-733.
- Independent (2013, August 16). *Something for the "slackers" to focus on: A 2:1 degree is worth around £80K more to you than a 2:2*. Based on a report from the Department of Business. Retrieved 15 June 2016 from: <http://www.independent.co.uk/student/news/something-for-the-slackers-to-focus-on-a-21-degree-is-worth-around-80k-more-to-you-than-a-22-8764130.html>
- Ives, E. W. (1977). Transfer at 18+: The Case for Continuity. *Teaching History*, 18-21.
- Keyup, J. R. & Barefoot, B. O. (2005). Learning how to be a successful student: Exploring the impact of first year seminars on student outcomes. *Journal of the First-Year Experience and Students in Transition*, 17(1), 11-47.
- Laing, C., Robinson, A. & Johnston, V. (2005). Managing the Transition into Higher Education; An On-line Spiral Induction Programme. *Active Learning in Higher Education*, 6(3), 243-255.
- Leese, M. (2010). Bridging the gap: Supporting student transitions into higher education. *Journal of Further and Higher Education*, 34(2), 239-251.

- Levinson, E. M. & Ohler, D. L. (1998). Transition from Higher School to College for Students with Learning Disabilities: Needs, Assessment and Services. *High School Journal*, 82(1), 62-69.
- Likert, R. (1932). A Technique for the Measurement of Attitudes. *Archives of Psychology*, 140(22), 1–55.
- Lowe, H., & Cook, A. (2003). Mind the gap: are students prepared for higher education? *Journal of Further and Higher Education*, 27(1), 53-76.
- Marland, M. (2003). The Transition from School to University: Who prepares whom, when and how? *Arts and Humanities in Higher Education*, 2(2), 201-211.
- McKenzie, K. & Schweitzer, R. (2001). Who succeeds at university? Factors predicting academic performance in the first year Australian university studies. *Journal of Higher Education Research and Development*, 20, 21-33.
- Nampota, D. C. & Thompson, J. J. (2008). Curriculum continuity and school to university transition: science and technology programmes in Malawi. *Compare: A Journal of Comparative and International Education*, 38(2), 233-246.
- Peers, I.S. & Johnston, M. (1994). Influence of learning context on the relationship between A-level attainment and final degree performance: a meta-analytic review. *British Journal of Educational Psychology*, 64(1), 1-18.
- Perry, C. & Allard, A. (2003). Making the connections: transition experiences for first year education students. *Journal of Educational Enquiry*, 4(2), 74-89.
- Reason, R. D., Terenzini, P. T. & Domingo, R. J. (2006). First things first: Developing academic competence in the first year of college. *Research in Education*, 47(2), 149-175.
- Richardson, J., Dawson, L., Sadlo, G., Jenkins, V. & McInnes, J. (2006). Perceived academic quality and approaches to studying in health professions. *Medical Teacher*, 29(5), 108-116.
- Richardson, J., Woodley, A. (2003) Another Look at the Role of Age, Gender and Subject as Predictors of Academic Attainment in Higher Education. *Studies in Higher Education*, 28(4), 475-493.
- Sear, K. (1983). The correlation between A-level grades and degree results in England and Wales. *Higher Education*, 12, 609-619.
- Seymour, E., Hewitt, H. M. (1997) *Talking about Leaving: why undergraduates leave the sciences*. Boulder, Colorado, Westview Press.

- Shallcross, D., & Harrison, T. (2007). A secondary School Teacher Fellow within a university chemistry department: the answer to problems of recruitment and transition from secondary school to University and subsequent retention. *Chemistry Education and Research Practice*, 8(1), 101-104.
- Smith, F. (2004). "It's not all about grades": accounting for gendered degree results in geography at Brunel University. *Journal of Geography in Higher Education*, 28(2), 167-178.
- Smith, J. & Naylor, R. A. (2001). Determinants of degree performance in UK universities: a statistical analysis of the 1993 cohort. *Oxford Bulletin of Economics and Statistics*, 63, 29-60.
- Stroebe, M., Hewstone, M., Van Vilet, T., & Willis, H. (2002). Homesickness amongst students in two cultures, Antecedents and Consequences. *British Journal of Psychology*, 93(1), 147-168.
- THE, Times Higher Education (2009), *A Levels are a hollow preparation for university*. Retrieved 15 June 2016 from: <http://www.timeshighereducation.co.uk/407032.article>
- Thomas, L. (2002). Student retention in higher education: the role of institutional habitus. *Journal of Educational Policy*, 17(4), 423-442.
- Thomas, L. (2012). *Building student engagement and belonging in Higher Education at a time of change: final report from the What Works? Student Retention and Success Programme*. Higher Education Academy, London. Retrieved 15 June 2016 from: https://www.heacademy.ac.uk/resources/detail/what-works-student-retention/What_Works_Summary_Report
- Tiedeman, S. (1942). A Study of Pupil-Teacher Relationship. *The Journal of Educational Research*, 35(9), 657-664.
- Tinto, V. (1975). Dropout from Higher Education: A Theoretical Synthesis of Recent Research. *Review of Educational Research*, 45(6), 89-125.
- Wilcox, P., Fyvie-Gauld, M. & Wynn, S. (2005). 'It was nothing to do with the university, it was just the people': the role of social support in the first year of higher education. *Studies in Higher Education*, 30(6), 707-722.
- Yorke, M. (1998). Undergraduate Non-Completion in England: Some Implications for the Higher Education Systems and its Institutions. *Tertiary Education and Management*, 4(1), 59-70.
- Yorke, M., & Longden, B. (2008). *The first year experience of higher education in the UK*. Final Report, The Higher Education Academy. Retrieved 15 June 2016 from: https://www.heacademy.ac.uk/sites/default/files/fyefinalreport_0.pdf