CHAPTER EIGHT

ENGAGING STUDENTS IN A RESEARCH INTERNSHIP SCHEME AND ITS IMPACT ON THE GRADUATE OUTCOMES OF BME INTERNS

NEIL WILLIAMS AND LUCY JONES

Abstract

Internships involving staff and students working as partners on a research project were identified as a way of enhancing the success of STEM undergraduate students from under-represented groups. The development of an inclusive Summer Undergraduate Research Internship (SURI) scheme at Kingston University is described. Initially, student engagement in the scheme was relatively low, prompting research into the barriers to students applying for internships. The results showed that BME students were more likely to agree with all the possible reasons given for not applying. However, the only statistically significant difference between BME and white students (Mann-Whitney $p < 0.05$) was for "Felt the grades you had were not good enough". Changes to the promotion of the scheme and recruitment of interns, in response to the research, are described. A significant increase in the number of applications and a 50% increase in the success rate of BME applicants was seen after the changes. Reflections of interns from different subject areas are presented; these highlight variation in learning gains between subject disciplines, but were predominantly positive. Evaluation of the impact of doing an internship on getting a good degree indicated that there was a statistically significant difference between BME students who did an internship and those that applied, but did not do one. There was no significant difference between the two groups for white students.

Introduction

What happens to students after they gain access to higher education is an important aspect of the widening participation agenda; widening access and support for student success in higher education are both necessary. The well-publicised Black Minority Ethnic (BME) attainment gap is of particular concern in the sector's attempt to ensure that students from all backgrounds achieve their full potential.[1,2,] [3]The attainment gap is the difference in percentage of white British students getting a good degree (first or upper second class) and the percentage of BME students getting a good degree. In 2014, the gap in the UK was 15.2%; 75.6% of white British students were awarded a good degree compared to 60.4% of BME students and 49.5% of black students.[4] BME students with the same entrance qualifications as white British students are still less likely to obtain a good degree. For example, 72% of white students with BBB grades at A level were awarded a good degree compared to just 53% of black

[1] John T. E. Richardson, "Degree Attainment, Ethnicity and Gender: A Literature Review," York: Higher Education Academy. (2008) http://www.heacademy.ac.uk/assets/documents/research/J_Richardson_ literature_review_Jan08.pdf.
[2] John T.E. Richardson, "The Under-Attainment of Ethnic Minority Students in UK Higher Education: What We Know and What We Don't Know," *Journal of Further and Higher Education* 39 (2015): 278–91.
[3] John T. E. Richardson, "The Attainment of Ethnic Minority Students in UK Higher Education." *Studies in Higher Education* 33, no. 1 (2008): 33–48.
[4] Equality Challenge Unit, *Equality in Higher Education*: *Statistical Report* 2015. *Part 2*: *Students*. London: ECU. (2015), accessed June 3, 2016, http://www.ecu.ac.uk/publications/equality-higher-education-statistical-report-2015/.

students with the same A level grades.[5] A review of the widening participation (WP) research literature[6] noted that activities that helped improve success involved staff student partnerships and built confidence. Only a slight reduction in the gap has been achieved so far, however; in 2013/4 the gap was 15.2%, compared to 17.2% reported in 2003/4.[7] Recent research highlights differences in other student outcomes such as progression to graduate employment and progression to postgraduate study (taught and research).[8] The lesser attainment of certain BME groups may hinder the progression of BME students going onto graduate jobs or postgraduate study. Wakeling and Hampden-Thompson[9] found that some ethnic groups (e.g., Black Caribbean and Bangladeshi) were considerably under-represented in postgraduate study and in general BME students were less likely to progress on to postgraduate research courses. Research has also highlighted differences in graduate incomes and the percentage of students progressing to graduate jobs (Machin, Murphy and Soobedar 2009).[10] These latter deficits demonstrate that aspiration raising and advice and guidance need to continue even after BME students enter university. Research also shows that work experience in the form of placements or internship helps in gaining graduate level employment.[11,12,13]

The value of linking research and teaching by engaging students in research processes is well established in UK universities.[14,15] Jenkins and Healy (2009)[16] have reviewed the wide variety of ways in which undergraduates can be engaged in research and inquiry within and outside the curriculum. Summer undergraduate research internships, also known as summer vacation studentships, are one of the major ways of engaging students in research before their final year. These typically consist of students being paid a bursary to work for around 8 weeks in the summer on a research project in collaboration with an academic. In a study of evaluations of such internships by academics (N=55) and students (N=76), 90% of academics and 92% of students reported specific gains from student participation in undergraduate research over the summer.[17] Learning gains identified included: clarification of a career path; understanding of the research process; ability to analyse data; learning laboratory techniques; ability to read and understand primary literature; skill in how to give an effective oral presentation; skills in science writing; self-confidence and learning to work independently. Russell et al.[18] examined the experiences of more than 4000 students and found that students' motivation and interest in Science Technology Engineering and Mathematics (STEM) research careers increased as a result of summer research participation.

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[5] HEFCE. "Differences in Degree Outcomes: Key Findings," HEFCE (2014), accessed July 2016, http://www.hefce.ac.uk/media/hefce/content/pubs/2014/201403/HEFCE2014_03.pdf.

[6] Joanne Moore, John Sanders, and Louise Higham. "Literature Review of Research into Widening Participation to Higher Education." Bristol: HEFCE (2013), accessed April 14, 2016, https://www.offa.org.uk/wp-content/uploads/2013/08/Literature-review-of-research-into-WP-to-HE.pdf.

[7] Equality Challenge Unit, *Equality in Higher Education.*

[8] Anna Mountford-Zimdars, Duna Sabri, Joanne Moore, John Sanders, Steven Jones, and Louise Higham. "Causes of Differences in Student Outcomes." London HEFCE (2015), accessed April 9, 2016, http://dera.ioe.ac.uk/id/eprint/23653.

[9] Paul Wakeling and Gillian Hampden-Thompson. "Transition to higher degrees across the UK: An analysis of national, international and individual differences." York: Higher Education Academy. 2013, accessed April 9, 2016, https://www.heacademy.ac.uk/sites/default/files/transition_to_higher_degree_across_the_uk_0.pdf.

[10] Stephen Machin, Stephen, Richard Murphy, and Zeenat Soobedar. "Differences in Labour Market Gains from Higher Education Participation." National Equality Panel, 2009.

[11] Roger Bennett, Lynne Eagle, Wendy Mousley and Rehnuma Ali-Choudhury, "Reassessing the Value of Work Experience Placements in the Context of Widening Participation in Higher Education," *Journal of Vocational Education & Training* 60 (2008): 105-22.

[12] Martin Pennington, Emma Mosley and Robbie Sinclair. AGCAS/AGR Graduate Success Project: An Investigation of Graduate Transitions, Social Mobility and the HEAR. Sheffield: AGCAS, accessed May 5, 2016, http://www.agcas.org.uk/assets/download?file=3960&parent=1519.

[13] Moore, Sanders, and Higham. "Literature Review."

[14] Alan Jenkins and Mick Healey. "Institutional Strategies to Link Teaching and Research." York: The Higher Education Academy 2005, accessed November 20, 2015, http://www.vision2020.gu.se/digitalAssets/1345/1345048_institutional_strategies.pdf.

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[16] Alan Jenkins and Mick Healy. Developing Undergraduate Research and Inquiry. York: The Higher Education Academy [Online] June 2009, accessed November 9, 2015, https://www.heacademy.ac.uk/sites/default/files/developingundergraduate_final.pdf.

[17] Anne-Barrie Hunter, Timothy J. Weston, Sandra L. Laursen and Heather Thiry, "URSSA: Evaluating Student Gains from Undergraduate Research in the Sciences," *Council on Undergraduate Research Quarterly* 29 (2008): 15–19.

[18] Susan H. Russell, Mary P. Hancock and James McCullough, "Benefits of Undergraduate Research Experiences," *Science* 316 (2007): 548–49.

Pender et al.[19] reported that summer undergraduate research experience increases the likelihood of minority students pursuing postgraduate study in STEM. In the US, one study indicated that involvement in undergraduate research enhanced student retention for African-American students, but there was no significant difference amongst white students.[20]

A UK study of research internships[21] concluded that they make a significant contribution to the development of research capability. Although numbers were small, the research indicated that internships benefitted non-STEM subject students as well as STEM. An additional conclusion was that the internships that posed a form of challenge were more likely to encourage students to pursue postgraduate study.

Kingston University has a long-standing commitment to widening participation, both in widening access and supporting students through the complete student life cycle. In 2011/12, the attainment gap was 29.5%. At this time, a pilot project providing Summer Undergraduate Research Internships (SURIs) was launched in the Faculty of Science, later to become part of a larger Faculty of Science Engineering and Computing.

This chapter provides a brief overview of the provision of SURIs in UK universities and describes how the scheme at Kingston University has been developed in response to research on students' perceptions and experiences of the scheme and in recognition of its contribution to enhancing the success of BME students. This paper investigates reasons for students not applying for an internship, the impact of the scheme on students' degree attainment and graduate employment and the students' reflections on what they have gained from doing an internship. In light of the attainment gap, we were particularly interested in any differences between white students and BME students.

Provision of summer undergraduate research internships in UK universities

SURIs are available in most UK universities. However, the number of opportunities varies greatly between departments and universities. There are national schemes funded by charities, research bodies, and professional societies, e.g., Wellcome, Royal Society of Chemistry, Royal Academy of Engineering EPRSC. These are competitive and students from any institution may apply for a bursary to fund an internship project developed by a member of academic staff. Many university departments advertise these funding opportunities and encourage students to apply. Some universities run their own institution-wide SURI schemes. One of the oldest and biggest formal schemes is the Undergraduate Research Opportunities Programme (UROP) at Imperial College, London.[22] This offers up 400 six to ten week internships for students from within or outside Imperial College, London. This scheme covers Science, Engineering and Medicine. Institution-wide schemes are also run by Warwick, Kings College, Cardiff, Sheffield, Sussex and Reading universities, but these are confined to their own students. The schemes at Warwick and Reading arose from two separate **Centres for Excellence in Teaching and Learning.** Department schemes are more commonly found in UK universities, for example, Biological science departments at York, Birkbeck, Dundee, Leeds, Newcastle run departmental schemes. Elsewhere, schemes are run in Maths, Medicine, Physics, Engineering, Psychology and Sociology departments. John and Creighton[23] surveyed 1226 students carrying out research internships in 2008, of which 29% responded; 86% of the respondents were from research intensive universities. The largest disciplinary populations were biological sciences (n=115), physical sciences (n=83) and maths and computing (n =55); engineering disciplines only covered 25 students. Overall 94% of internships were in STEM disciplines. This suggests that even though there may be several institution wide schemes, they are dominated by the STEM disciplines. At Kingston, a Faculty wide scheme covering science, engineering, and mathematics and computing is run.

Data collection and methods

Data collection

[19] Matea Pender, David E. Marcotte, Mariano R. S. Domingo and Kenneth I. Maton, "The STEM Pipeline: The Role of Summer Research Experience in Minority Students' Ph.D. Aspirations," *Education Policy Analysis Archives* 18, no. 30 (2010): 1–36.

[20] Biren A. Nagda, Sandra R. Gregerman, John Jonides, William von Hippel, and Jennifer S. Lerner, "Undergraduate Student–Faculty Research Partnerships Affect Student Retention," *Review of Higher Education* 22 (1998): 55–72.

[21] Joanna John and John Creighton, "Researcher Development: The Impact of Undergraduate Research Opportunity Programmes on Students in the UK," *Studies in Higher Education* 36, no. 7 (2011): 781–97.

[22] Sinclair Goodlad, "Research Opportunities for Undergraduates," Studies in Higher Education 23, no. 3 (1998): 349–56.

[23] John and Creighton, "Researcher Development."

Administrative and academic data on students who applied or did an internship between 2011 and 2015 has been used. The number of students involved is shown in Fig. 8-4. Ethnic background, gender and academic school data were analysed for students who applied in 2014-5. Degree outcomes for students who did an internship between 2013 and 2015 were analysed. Destination of Higher Education Leavers data has also been used.

Questionnaire

When the research internship scheme was first launched at Kingston, students were told selection would primarily be based on previous academic performance and their commitment to research and an interest in going on to postgraduate research. In these first two years, a relatively low percentage of students applied. Therefore a survey was designed to explore the reasons why some students did not apply. A paper copy of the survey was distributed to all students attending five final-year modules in five different departments within the Faculty. The students were told that the aim of the survey was to expand the impact of the undergraduate research internships scheme to a wider range of students. The survey asked students whether they knew about the scheme and whether they applied for an internship. If they had not applied for an internship, the survey asked respondents to indicate their extent of agreement or disagreement, using a Likert Scale, about reasons for not applying for a research internship the previous year. The survey also asked students for their department and other demographic information. Respondents signed a separate participation letter to give informed consent. There were 154 respondents, of which 140 did not apply for an internship.

Felt the grades you had were not good enough

Not enough information available on the internship

None of the internship projects interested me

The salary of £150 per week was not enough

Duration of the summer internship was too long

Not enough time to apply

The blogs of interns were also analysed by identifying themes and topics included in individual student blogs.

Ethical approval for the evaluation of the scheme was gained from the Faculty of Science Engineering and Computing Research Ethics Committee.

Summer undergraduate research internship scheme at Kingston

The SURI scheme was launched in the Faculty of Science in 2011 and was then continued when three faculties merged to form the Faculty of Science, Engineering and Computing in 2013. Each internship covers a stipend of £1200 for eight weeks work and £300 for project consumables. Students are expected to work a minimum of twenty hours per week. Staff were asked to submit short project proposals for an eight week internship. A booklet of potential internship projects was emailed to all level 5 students and level 6 students in integrated masters courses in February after they had received their first semester results. Project supervisors and course directors were encouraged to promote the internships scheme in their classes. First year and final year students were not eligible. Students were asked to apply by selecting 4 choices in order of preference along with a CV including their academic results and a rationale for why they were interested in the project. The choice of projects to run as internships was based on the quality and quantity of applications for the projects. The supervisors were then sent the application of the 3-5 best qualified students for the projects and asked to select the best candidate based on the CV.

In 2013, 90 students out of around 1700 eligible students applied for the 63 different projects advertised, with 22 internships available. At the time, we were surprised at the small percentage of eligible students that actually applied for an internship. In 2014, the number of internships available was increased to 40 and students felt there was a better chance of obtaining one. In addition, final year students were surveyed to see whether they knew about the scheme and whether they applied for an internship. If they had not applied for an internship, the survey asked respondents to indicate their extent of agreement or disagreement about reasons for

not applying for a research internship the previous year. Results from the survey are presented in Fig. 8-1to 8-3. Not enough information was the major reason for not applying. The data for individual schools in Fig. 8-3 indicates the percentage of the respondents in that school that knew about the scheme. The data show that this varied between 44% for students from Pharmacy and Chemistry to just 18% in Geography Geology and the Environment. It is likely that promotion of the scheme in class was very important in making students aware of the scheme. Another interesting feature of the survey was that BME students were more likely to agree with all the other reasons for not applying than white students. The only statistically significant difference between BME and white students (Mann-Whitney $p < 0.05$) was for "Felt the grades you had were not good enough". This could be linked to the BME attainment gap problem and also the idea that BME students may lack confidence in their abilities and achievements.

An analysis of the students that were awarded an internship in 2014 also raised some concerns around equality, diversity and inclusion as 22% of all BME applicants were selected compared to 44% of white applicants. This is partly explained by the greater competition for internships in Pharmacy and Chemistry and Life Science, which have a higher proportion of BME students. The chance of getting an internship in these schools is around 1 in 5 whereas in other schools it can be as low as 1 in 2.

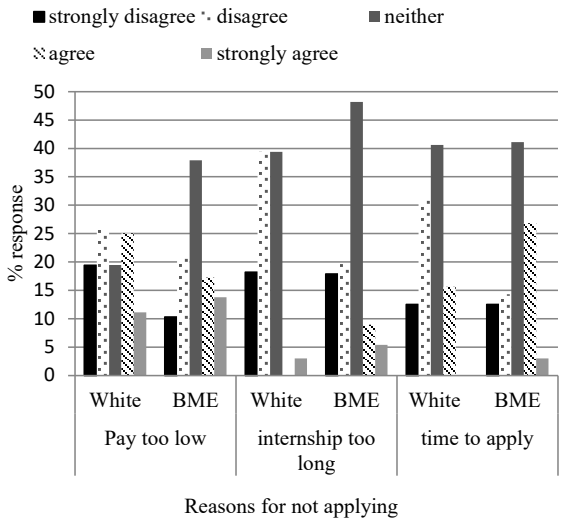

Fig. 8-1 Likert scale responses to reasons for not applying for an internship: reasons 1-3

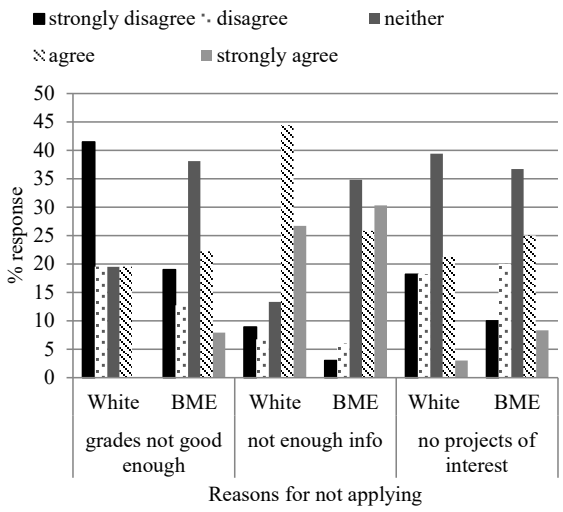

Fig. 8-2 Likert scale responses to reasons for not applying for an internship: reasons 4-6

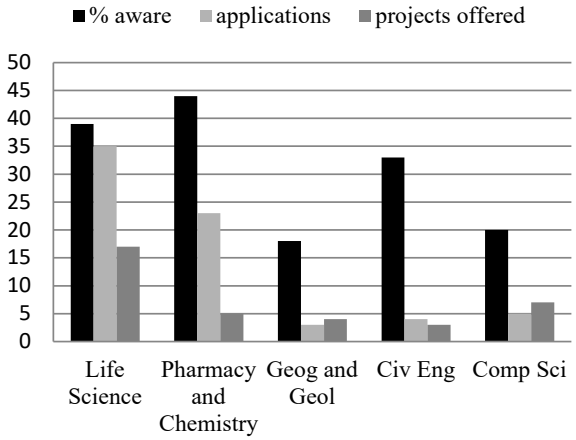

Fig. 8-3 Internship application details for different schools in 2013

As a result of this evaluation, the promotion of scheme and the selection procedures were modified in 2015. Greater encouragement was given to staff to submit project proposals to increase the likelihood of students finding a project that would match their interests, particularly in schools which offered fewer projects. When advertising the scheme, links to the blogs of the previous year's interns were included to give prospective applicants more information about what an internship involved and also promote the enjoyment and academic benefits of the scheme. The internships were also advertised on the University student job site. The major change was to request that each project supervisor should interview between 4 and 6 students for their internship and provide feedback to all the students interviewed. Staff were also encouraged to put less emphasis on grades when recruiting and more on the enthusiasm for research. Fig. 8-4 illustrates that improved promotion to students and staff has led to a growth in the number of projects offered by staff and the number of student applications.

In 2015, there were 139 applicants and 43 internships were awarded. 78% of applicants were BME students, whilst 64% of internships were awarded to BME students. The majority of applicants were from students in the Schools of Pharmacy and Chemistry and Life Science (Fig. 8-5). There is considerable variation across schools. The most applications (n=48) came from the School of Pharmacy and Chemistry however only 11 projects were offered by this school and all were awarded internships. In contrast, 39 projects were offered from the School of Life Science, which attracted fewer application (n=33). Four schools had four or less applications suggesting that summer undergraduate research internships are not attractive to students studying these subjects; this is consistent

with other research.[24] In 2015, it was encouraging to see that the percentage of BME students that were successful in gaining an internship increased from 22% to 33% whereas that of white students stayed essentially the same at 44%. In 2016, 198 applications were received and 43 internships were awarded; these started in June 2016.

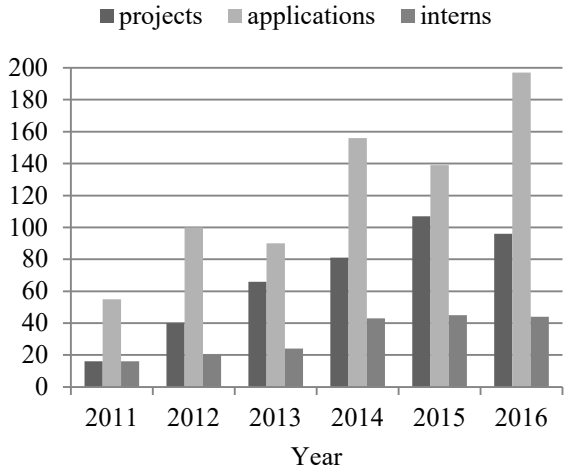

Fig. 8-4 Growth of applications and potential projects offered for the internship Scheme

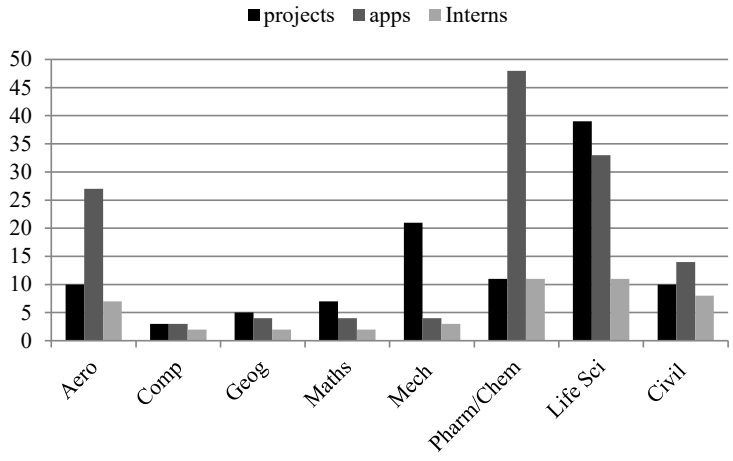

Fig. 8-5 Projects offered, applications and internships awarded by subject area in 2015.

In 2015, an analysis was performed on the impact of doing an internship on getting a good degree (First class or upper second class honours), Fig. 8-6. As might be expected, the percentage of good degree from students that did an internship was greater than that for the body of students who had applied for an internship. What is of interest is that there was no statistically significant difference between white students that did an internship and those that applied but there was a significant difference between the groups for BME students. This suggests the possibility that an internship experience has greater impact on BME students and that internships are particularly beneficial for raising the attainment of BME students.

[24] John and Creighton, "Researcher Development."

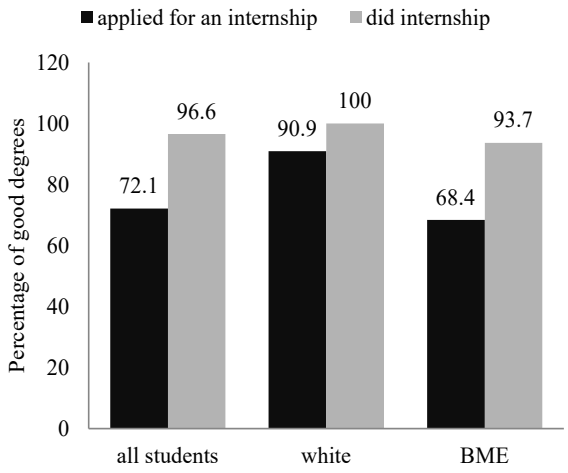

Fig. 8-6 Percentage of good degrees for students who did and applied for an internship in 2015.

Student reflection on their summer undergraduate research internships at Kingston 2015

In 2014/5, interns were asked to write weekly blogs on their work and reflect on their experience. Students were given a free choice about what to write. Their experiences and overall reflections turned out be quite subject/school dependent. This may reflect different types of internships and different career aspirations. Science students are more likely to go on to postgraduate research than engineers, so perhaps are looking for different things from the internship compared to engineering students.

In Aerospace and Aircraft Engineering, the aspects that were most highly acknowledged were the practical experience gained in the laboratory/workshop environment and the project management skills that were developed in the internship. These were widely recognised as being helpful for future study/work. The majority of interns in this area made a point of saying they would highly recommend an internship to other students.

In the subject area of the Natural and Built Environment (civil engineering, construction, and environmental science), there was, in general, less reflection on their overall experience. The dominant positive aspect of the programme was the experience of literature searching and retrieval as the starting point of research. Many of the interns' blogs described workshop/laboratory work, but did not reflect on the benefits of this practical experience. Recommendations of the internships were less effusive than other subject areas. In addition, a couple of interns did not maintain a blog.

The interns within the School of Life Science showed a strong appreciation of learning about the research process and research skills in addition to gaining valuable laboratory experience and practice using specialised equipment. In this area, a number of students specifically commented about increased confidence and that they had improved their professional/key skills such as oral and written communication and working as part of a team. It was noted that a number of interns had attended research meetings and also presented at these group meetings. A few of the interns stated how the internship would help them in their year studies; however, there was little comment about how their experiences may have affected careers or postgraduate study choices.

The reflection of students in Pharmaceutical Science and Chemistry were similar to those in the School of Life. Again reflections concentrated on laboratory, research and key skills. The students were appreciative of the opportunity of working closely with academic and other research staff. One of the most widely mentioned benefits was the development of scientific writing skills. The critical reading and analysis of research papers was another skill that several students talked about. These students recognised that this experience was good preparation for their final year research projects. More students in this area appeared to be thinking of postgraduate research in the future and the majority said that their experience had whetted their appetite for research and would explore it as a postgraduate option. In one case though, the experience made the student realise that they did not want to pursue research or further study after they graduated, but they acknowledged that the internship was valuable in making them realise this at an early stage.

Kardash,[25] who used a 5-point scale to measure perceived gains, noted that the biggest gains were "orally communicating the results of research projects", "observing and collecting data" and "relating results to the bigger picture of their field". A review of qualitative research in the undergraduate research experiences in the US by Seymour et al.[26] indicated that students cited improvement in communication skills as their most significant gain. In the Kingston scheme, the requirement to keep a weekly blog was introduced after 2012 and this is likely to have raised students' awareness of communication skills throughout the internship.

Seymour et al.[27] also suggested that the internship experience did not have a strong effect on career choices, apart from few students who decided they did not want to pursue further research. This is consistent with our findings. John and Creighton[28] reported that a UK wide survey indicated that internship schemes enhanced the research capabilities and confidence of the students. However, they noted that as most applicants were already interested in pursuing post graduate research, there was little evidence that such schemes boosted the number of students going on to do postgraduate research. Thiry *et al*. (2012)[29] concluded from their research that notable gains were evident in confidence, working relationships with faculty, understanding how science research is done, the ability to work independently and post-graduation/career plans. Quantitative research by Lopatto[30,31] revealed that the largest student-reported learning gains were in "Understanding the research process", "readiness for more demanding research", "understanding how problems are tackled" and "learning laboratory techniques". The lowest learning gains were "skills in science writing and oral presentation" and "clarification of career path".

Interestingly, Lopatto[32] noted that under-represented students (African-American, Hispanic, Native American) rated their learning gains higher in many areas than the comparison group of Caucasian/Asian American students. The most significant increased student-perceived gains were in skills in science writing, learning ethical conduct and skills in giving oral presentations.

Graduate outcomes: good degree and DHLE data

The scheme has been run in the large Faculty of Science, Engineering and Computing for 3 years. The degree outcomes of students who have done internships and graduated by July 2015 (n=47) are impressive (Fig. 8-7); 98% of interns who had graduated had achieved a good degree and 72% of them achieved first class honours, as would be expected given that selection for participation in the scheme is partly based on academic performance. Of particular note is that there is no significant BME attainment gap when considering degree classes: for example 73% of BME interns were awarded first class degrees compared to 71% of the white student interns.

[25] Carol M. Kardash, "Evaluation of an Undergraduate Research Experience: Perceptions of Undergraduate Interns and Their Faculty Mentors," *Journal of Educational Psychology* 92 (2000): 191–201.
[26] Elaine Seymour, Anne-Barrie Hunter, Sandra L. Laursen and Tracee DeAntoni, "Establishing the Benefits of Research Experiences for Undergraduates in the Sciences: First Findings from a Three-Year Study," *Science Education* 88 (2004): 493–534.
[27] Ibid.
[28] John and Creighton, "Researcher Development."
[29] Thiry, Heather, Timothy Weston, Sandra L. Laursen and Anne-Barrie Hunter. "The Benefits of Multi-Year Research Experiences: Differences in Novice and Experienced Students' Reported Gains from Undergraduate Research." *Cell Biology Education* 11 (2012): 260–272.
[30] David Lopatto, "Survey of Undergraduate Research Experiences (SURE): First Findings." *Cell Biology Education* 3 (2004): 270–77.
[31] David Lopatto, "Undergraduate Research Experiences Support Science Career Decisions and Active Learning." *Cell Biology Education* 6 (2007): 297–306.
[32] Ibid.

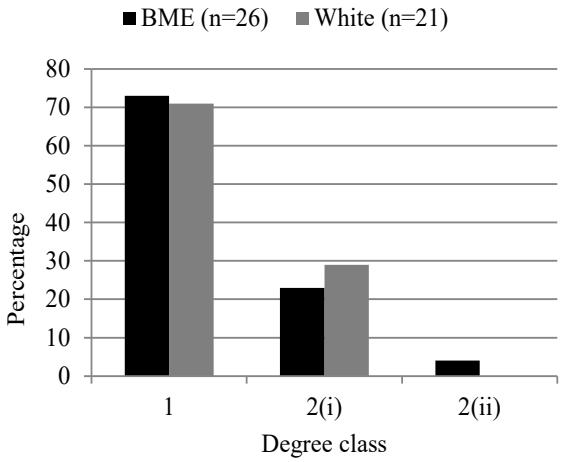

Fig. 8-7. Award outcomes of summer interns from 2013 and 2014

The average mark for the final year research project or dissertation module was also investigated; for BME students the module average of the project was 70% compared to 77% for white students which is a significant difference ($P < 0.05$). This is quite surprising considering there is little difference in their degree awards. It is also interesting data when considering how doing an internship prepares students for their final year project.

Analysis of **Destinations of Leavers from Higher Education (DLHE) data for interns is only available for those that did their internship in 2012 and 2013 so far. This data also show positive results for BME students as 88% of BME interns (n=17) were employed or studying compared to 78% of white interns (n= 18).**

Conclusions and future work

Not surprisingly, given the selective recruitment process, the graduate outcomes of students who do internships are excellent. It is interesting to note that there is no significant attainment gap between BME and White interns: 73% of BME interns were awarded first class degrees compared to 71% of the white student interns. The employment data is also encouraging as BME students do not show a deficit compared to white students. The evaluation highlights that students identify a range of benefits from doing an internship and these are dependent on the discipline area. Practical experience and project management are rated highly for engineering whereas in science subjects, gains in knowledge of the research process and research skills are more widely acknowledged and there is greater reference to moving onto postgraduate study. Future work is planned on researching the degree of learning gain for various students using an adaptation of the Undergraduate Research Student Self-Assessment developed and made available by Hunter et al.[33]

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[33] Hunter, Weston, Laursen and Thiry, "URSSA: Evaluating Student."

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