Evaluating student satisfaction at a top-performing UK university

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Abstract
This paper compares UK and non-UK students’ satisfaction with their teaching and learning experiences in higher education. Modules surveyed at a UK University, awarded Gold in the Teaching Excellence Framework (TEF) (Times Higher Education [THE], 2017), were examined to determine whether satisfaction is influenced by the percentage of UK and non-UK students registered per module. Students were grouped by residency, irrespective of nationality, to examine the different academic experiences in and outside the UK. UK students were defined as residing in the UK permanently and non-UK students as residing outside the UK, except during their studies. Findings indicated that although there were apparent links between residency and satisfaction, these differences may instead be attributable to other variables, such as class size. The results of this study question whether integrating non-UK students into large class sizes, in order to fulfil demand, has implications for the student experience.

Keywords
Student satisfaction, Student surveys, UK and non-UK students, Class size, Global Learning, Inclusivity

Introduction

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Tuition fees were introduced in the UK over a decade ago, following the Dearing Report (Dearing, 1997), and have since surged, with Higher Education Institutions (HEIs) from 2012 being permitted to charge up to £9,000 per year (Bunce, Baird, & Jones, 2016). From 2017, tuition fees were further permitted to rise to £9,250 per year (Coughlan, 2016). The idea of ‘students-as-customers’ is a controversial issue (Guilbault, 2017) but has become increasingly recognised with rising tuition fees (Chapleo, 2013). In a survey conducted by ComRes (market research consultancy) in early 2017, including just over 1,000 students, 47% of undergraduate students were found to view themselves as consumers (Universities UK, 2017). Since the 2012 tuition regime, it has become particularly in the best interests of students to apply for courses within institutions which offer the best value for money in terms of the overall student experience (Lenton, 2015). Students demand more value for their money (Neves & Hillman, 2016) and meeting student demands is a key priority in an increasingly competitive global higher education environment (Universities UK, 2015a). In this context, students’ levels of satisfaction have become an important part of assessing the quality of courses in higher education (Maringe & Sing, 2014).

Student surveys are commonly used within higher education (Douglas, Douglas, & Barnes, 2006; McGrath, Guerin, Harte, Frearson, & Manville, 2015; Moskal, Stein, & Golding, 2016) to gather feedback from students regarding their teaching and learning experiences (Maringe & Sing, 2014). Some surveys are intended to be administered at module or course level (Dean & Gibbs, 2015; Ramsden & Callender, 2014) whilst others are tailored to meet the specific requirements of the given institution (Ramsden & Callender, 2014). Since student satisfaction ratings are used globally to compile league tables/rankings, high performing institutions are able to take advantage of significant financial and reputational benefits (Wilkins & Balakrishnan, 2013; Wilkins & Huisman, 2012).

In the UK, the results of the annual National Student Survey (NSS), introduced in 2005, are specifically used to inform university league tables (Douglas, Douglas, McClelland & Davies, 2015). The NSS explores the thoughts and experiences of final year undergraduate students, in regards to the quality of their courses and institutions (Higher Education Funding Council for England [HEFCE], 2017). It is intended to: (1) support quality assurance and accountability (2) direct prospective students to the best possible provision and (3) drive improvements in the quality of teaching and learning (HEFCE, 2017). A revised NSS survey came into effect in 2017 and specifically includes new questions directly related to student learning and wider aspects of the overall experience (HEFCE, 2016) for which its limited coverage had previously been met with criticism (see Ramsden & Callender, 2014). The NSS specifically informs the Teaching Excellence Framework (TEF) (Universities UK, 2016), for which the government outlined delivery plans in 2016 (see Department for Business, Innovation & Skills, 2016). The TEF aims to monitor and assess teaching and learning quality within UK HEIs (Department for Business, Innovation & Skills, 2016). Institutions that are reviewed by the framework as providing high quality teaching will be permitted to charge higher tuition fees (Department for Business, Innovation & Skills, 2016). The core metrics specified in the TEF include key questions

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from the following NSS themes: (1) Teaching (2) Assessment & Feedback and (3) Academic Support (Department for Business, Innovation & Skills 2016; Department for Education, 2016). As such, it is important for institutions to continue to maintain high rates of student satisfaction.

Non-UK students and student satisfaction
With a growing number of students who reside permanently outside the UK, choosing to travel to and study in the UK (McDonald, 2014), it follows that their satisfaction is also of increasing importance. In 2015-16, 438,010 non-UK students chose to study in the UK (UK Council for International Student Affairs [UKCISA], 2017). Studying in the UK is a popular choice for non-UK students (Lillyman & Bennett, 2014), with undergraduate students particularly being highly satisfied with their teaching and learning experiences, according to responses provided in the International Student Barometer (ISB) survey from 2008-2014 (UK Higher Education International Unit, 2015). There are multiple reasons for non-UK students choosing to study at HEIs in the UK (Lillyman & Bennett, 2014) which include an expectation of high quality provision and to enhance future career prospects (Hemsley-Brown, 2012).

In the UK, the five most popular courses for non-UK students are (based on Higher Education Statistics Agency 2014-15 data): Business & Administrative Studies, Engineering & Technology, Social Studies, Creative Art & Design, and Law (The Complete University Guide, 2017). Moreover, STEM subjects (Science, Technology, Engineering and Maths), particularly at postgraduate level attract non-UK students (HEFCE, 2015; Universities UK, 2015b), as illustrated in Figure 1 (see below). The popularity of specific subjects, in turn, suggests that there may be a greater proportion of undergraduate and postgraduate non-UK students enrolled on these courses, and thus on modules, in comparison to others.
Non-UK students are often viewed as a means of additional funding streams (Cantwell, 2015) with there no longer being restrictions on the number of students UK HEIs can recruit (Paddick, 2015). As a result, increased class sizes have become common in a competitive higher education environment which present a number of challenges and issues (Mulryan-Kyne, 2010; Maringe & Sing, 2014). Increased class sizes have been found to lead to reduced levels of satisfaction amongst students (Mavondo, Tsarenko, & Gabbott, 2004) and negatively impact on students’ academic achievement (Bandiera, Larcinese, & Rasul, 2010; Soilemetzidis, Bennett, Buckley, Hillman, & Stoakes, 2014). Previous research has also highlighted that levels of student satisfaction vary according to residency. Mavondo et al., (2004) suggested that greater levels of provision (in the form of teaching, learning and student support services) are required to achieve increased levels of satisfaction amongst Australian students, in comparison to non-Australian students. In terms of integrating UK and non-UK students, Spencer-Oatey & Dauber (2015) reported that an increase in the number of non-UK students within the total student population has resulted in reduced levels of satisfaction in terms of the overall student experience.

**Figure 1: Postgraduate student enrolment by subject area and by residency, non-UK (grey) and UK (black), 2012-2013.** Adapted from Universities UK (2014 p.4).

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Non-UK (%)</th>
<th>UK (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGT Business &amp; Administrative Studies</td>
<td>57%</td>
<td>57%</td>
</tr>
<tr>
<td>PGT Engineering &amp; Technology</td>
<td>57%</td>
<td>57%</td>
</tr>
<tr>
<td>PGT Computer Science</td>
<td>57%</td>
<td>57%</td>
</tr>
<tr>
<td>PGR Computer Science</td>
<td>57%</td>
<td>57%</td>
</tr>
<tr>
<td>PGT Mathematical Sciences</td>
<td>57%</td>
<td>57%</td>
</tr>
<tr>
<td>PGR Engineering &amp; Technology</td>
<td>57%</td>
<td>57%</td>
</tr>
<tr>
<td>PGR Business &amp; Administrative Studies</td>
<td>57%</td>
<td>57%</td>
</tr>
<tr>
<td>PGR Architecture, Building &amp; Planning</td>
<td>53%</td>
<td>53%</td>
</tr>
<tr>
<td>PGR Mathematical Sciences</td>
<td>50%</td>
<td>50%</td>
</tr>
</tbody>
</table>
Aims of the study
In light of the literature, it is clear that there is a need to explore satisfaction amongst UK and non-UK students recognising that they have different prior academic experiences depending on whether they reside in the UK permanently or reside outside the UK, except during their studies. These include developing more nuanced understandings of areas with lower satisfaction and possible targeted interventions to positively influence student satisfaction, as well as providing new insights for addressing areas of improvement. Whilst tackling reduced levels of satisfaction amongst students continues to be paramount for HEIs this is likely to be catalysed by the metrics included within the TEF. Hence, this study, as part of a wider investigation to examine satisfaction levels amongst different groups of students, aimed to determine if satisfaction differed amongst UK and non-UK students. In line with previous research (as cited earlier), it was envisaged that this study would identify differences and highlight potential areas of concern and/or those areas which require further investigation.

Methodology
This study investigates differences in satisfaction amongst UK and non-UK students, using Coventry University as a case study. As set out earlier, student satisfaction is an important measure of university performance. In common with many other institutions, Coventry University undertakes internal surveying to monitor and assess student satisfaction. Over the past eight years, Coventry University has consistently achieved high student satisfaction ratings within module evaluations which is reflected by their high league table rankings.

Data collection
Student satisfaction data are collated across Coventry University through requesting students registered on undergraduate and postgraduate taught modules to complete a Module Evaluation Questionnaire (MEQ). The questionnaire is anonymous as students have suggested that they would respond differently if responses were linked to their student identifier (Coventry University Internal Report, 2014).

The questionnaire consists of 19 closed-questions, with responses ranging from Definitely Agree to Definitely Disagree or Not Applicable, and are grouped according to the following key themes: Teaching, Online Tools, Assessment & Feedback, Academic Support, Organisation & Management, Learning Resources and Overall satisfaction. Within Teaching, for example, questions include ‘Staff teaching on this module are good at explaining things clearly’ and ‘The module is intellectually stimulating and engaging.’ The questions are grouped under similar themes to those found within the NSS. Module evaluations allow all students the opportunity to provide feedback and for improvements to be made throughout the duration of their studies. Furthermore, it is important to emphasise that module evaluations are only one of several methods used by the institution to assess and improve student satisfaction. Others include student representation in university governance and decision making.
Procedure
Ethical approval was obtained from Coventry University’s Ethics Committee. Modules that were running during the autumn term of the academic year 2014/15 and the total number of students registered (grouped by UK and non-UK students) were initially extracted from the University’s student record system. Satisfaction scores (expressed as the percentage of responding students definitely agreeing or mostly agreeing with each statement) for each of the modules surveyed during autumn term 2014 were then compared according to the percentage of students registered per module who reside permanently in the UK. Due to the anonymity of the questionnaire it was not possible to explicitly distinguish between UK and non-UK respondents at the individual level. However, it is reasonable to assume that modules with a higher percentage of UK students registered will also have a higher percentage of UK respondents, given that there is a representative sample of students who completed the questionnaires (see below).

A total of 934 modules were surveyed during autumn 2014. However, some modules were not included in the study due to satisfaction scores not being available for them. In total, 700 modules were included, 556 undergraduate (UG) modules (Years 1-3) and 144 postgraduate (PG) modules (taught Masters Level). Response rates averaged 66.5%.

Data analysis
Statistical analyses (correlation and regression) were undertaken to determine if satisfaction was related to the composition of UK and non-UK students on each module. Due to the effect of class size on student satisfaction, as identified by various studies (see earlier references), this was also investigated. Modules with 30 or fewer registered students were defined as a small class size and those above 30 as a large class size. It should be acknowledged that not all contact time is scheduled with the whole group of registered students and may instead be divided into separate seminar or tutorial groups. However, it has been assumed that students with larger registered class sizes have more contact hours in large groups than those with smaller registered class sizes. Therefore, caution should be exercised when interpreting the findings in regards to class size.

Findings
The sample of 700 undergraduate and postgraduate modules used for this study at Coventry University revealed some key findings. As illustrated in Table 1, the Spearman rank correlations demonstrate that an increase in the percentage of UK students, for both UG and PG modules, was associated with an increase in satisfaction scores for all of the key themes except for Assessment & Feedback (for PG modules). Specifically, the larger positive coefficients indicate that increased satisfaction is associated with a higher percentage of UK students. Correlation coefficients were generally larger for PG modules, however the lower sample size (144 cf. 556) impacted on the levels of significance.
Table 1: Spearman correlation coefficients illustrate the percentage of UK students and satisfaction scores for undergraduate (UG) and postgraduate (PG) modules according to the key themes of the Module Evaluation Questionnaire (MEQ).

<table>
<thead>
<tr>
<th>Key themes</th>
<th>n=556</th>
<th>n=144</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching</td>
<td>0.138**</td>
<td>0.237**</td>
</tr>
<tr>
<td>Online Tools</td>
<td>0.195**</td>
<td>0.192*</td>
</tr>
<tr>
<td>Assessment &amp; Feedback</td>
<td>0.131**</td>
<td>0.105</td>
</tr>
<tr>
<td>Academic Support</td>
<td>0.154**</td>
<td>0.205*</td>
</tr>
<tr>
<td>Organisation &amp; Management</td>
<td>0.137**</td>
<td>0.216**</td>
</tr>
<tr>
<td>Learning Resources</td>
<td>0.107*</td>
<td>0.166*</td>
</tr>
<tr>
<td>Overall satisfaction</td>
<td>0.152**</td>
<td>0.229**</td>
</tr>
</tbody>
</table>

**p<0.01; *p<0.05

Spearman’s rank correlation also identified a significant correlation between actual class size and the percentage of UK students, at both UG and PG level (both p<0.001), with a tendency for smaller classes to be associated with a higher percentage of UK students (as illustrated in Figures 2 and 3). This was particularly evident for PG modules, which were comprised of a greater number of smaller class sizes. Due to the difference between UG and PG composition, the three band categories used in Figure 3 differ from those in Figure 2. UG modules had means of 72 registered students, 66% response rate and 75% UK students, while the respective figures for PG modules were 48, 67% and 36%. 
Figure 2: Undergraduate class size category in relation to the percentage of UK students.

Figure 3: Postgraduate class size category in relation to the percentage of UK students.
Results for the correlation analysis indicated that when the percentage of UK students registered on the modules was higher, satisfaction scores for the themes were also higher. However, there was also a significant correlation between actual class size and the percentage of UK students, with a tendency for smaller classes to be associated with a higher percentage of UK students. This suggested that there may be other confounding variables at play in influencing satisfaction scores. As a result, a two-step hierarchical regression analysis was undertaken to determine if there was still a significant relationship if the effects of other variables (i.e. class size and UG/PG status) were eliminated. The first model in the regression analysis explored the extent to which class size category (small versus large) and UG/PG status predicted the satisfaction scores for each theme. The second model assessed whether the percentage of UK students registered on the modules then added to the explanation of differences in satisfaction scores.

For all of the key themes (e.g. Teaching and Online Tools as illustrated in Table 2 and Table 3) there was no significant improvement to the model when adding the percentage of UK students. In other words, once the effect of the other variables was eliminated, the composition of UK and non-UK students was no longer significant (e.g. Teaching p=0.993 and Online Tools p=0.154).

Table 2: Hierarchical regression models of satisfaction scores for Teaching in relation to the percentage of UK students, once the class size category and PG/UG differences have been controlled for.

<table>
<thead>
<tr>
<th>Model 1</th>
<th>Coefficient</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(adj $R^2=10.0%$)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large (cf. Small)</td>
<td>-7.6</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>UG (cf. PG)</td>
<td>-3.5</td>
<td>0.003</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model 2</th>
<th>Coefficient</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(adj $R^2=9.9%$)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large (cf. Small)</td>
<td>-7.6</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>UG (cf. PG)</td>
<td>-3.5</td>
<td>0.015</td>
</tr>
<tr>
<td>% UK</td>
<td>0.00</td>
<td>0.993</td>
</tr>
</tbody>
</table>
Table 3: Hierarchical regression models of satisfaction scores for Online Tools in relation to the percentage of UK students, once the class size category and PG/UG differences have been controlled for.

<table>
<thead>
<tr>
<th>Model 1 (adj $R^2=2.3%$)</th>
<th>Coefficient</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large (cf. Small) UG (cf. PG)</td>
<td>-3.0 -1.8</td>
<td>&lt;0.001 0.100</td>
</tr>
<tr>
<td>Model 2 (adj $R^2=2.6%$)</td>
<td>Coefficient</td>
<td>p-value</td>
</tr>
<tr>
<td>Large (cf. Small) UG (cf. PG) % UK</td>
<td>-2.9 -2.9 0.03</td>
<td>0.002 0.031 0.154</td>
</tr>
</tbody>
</table>

In order to investigate class size further, mean satisfaction scores between UG and PG modules and between small and large classes were estimated from the regression analysis. For the following themes: Teaching, Online Tools, Assessment & Feedback and Organisation & Management, UG mean satisfaction scores were significantly lower than PG mean scores as illustrated in Table 4. In Table 4, a negative mean for UG-PG indicates lower satisfaction in UG modules and a positive mean for Small-Large indicates higher satisfaction in small class sizes. There was a significant difference in satisfaction between small and large class sizes for all of the themes. Satisfaction was consistently higher for all of the themes in small class sizes.

Table 4: Differences in mean satisfaction scores between UG and PG modules and between small and large class size categories.

<table>
<thead>
<tr>
<th>Key themes</th>
<th>UG - PG</th>
<th>p-value</th>
<th>Small - Large</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Online Tools</td>
<td>-3.5 -2.9</td>
<td>0.015 0.031</td>
<td>7.6 2.9</td>
<td>0.002 0.002</td>
</tr>
<tr>
<td>Assessment &amp; Feedback</td>
<td>-2.8 -2.2</td>
<td>0.043 0.085</td>
<td>6.6 7.1</td>
<td>&lt;0.001 &lt;0.001</td>
</tr>
<tr>
<td>Academic Support</td>
<td>-2.3</td>
<td>0.036 0.085</td>
<td>2.5 7.1</td>
<td>&lt;0.001 &lt;0.001</td>
</tr>
<tr>
<td>Organisation &amp; Management</td>
<td>-0.9</td>
<td>0.596 0.036</td>
<td>5.0 2.5</td>
<td>&lt;0.001 &lt;0.001</td>
</tr>
<tr>
<td>Learning Resources</td>
<td>-3.0</td>
<td>0.067 0.036</td>
<td>6.3 2.5</td>
<td>&lt;0.001 &lt;0.001</td>
</tr>
<tr>
<td>Overall satisfaction</td>
<td>-3.0</td>
<td>0.067 0.036</td>
<td>6.3 2.5</td>
<td>&lt;0.001 &lt;0.001</td>
</tr>
</tbody>
</table>
Overall, the findings suggest that apparent differences in satisfaction may be due to other variables, such as class size and UG/PG status, rather than the composition of UK and non-UK students.

**Discussion**

This study examined if there were differences in satisfaction amongst UK/non-UK students. Findings indicated that for undergraduate modules, when the percentage of UK students registered on the module was high, satisfaction scores were also higher for the following themes; Teaching, Online Tools, Assessment & Feedback, Academic Support, Organisation & Management, Learning Resources and Overall satisfaction. Similarly, this was also the case for postgraduates, with the exclusion of the Assessment & Feedback theme. The findings are in line with previous research which suggests that a higher number of non-UK students within the total student population results in reduced levels of satisfaction (Spencer-Oatey & Dauber, 2015).

On further investigation, it became apparent that such differences in satisfaction according to residency may instead be attributable to other variables, such as class size. Satisfaction was consistently higher for modules with a smaller number of students registered on them. Similarly, previous findings have highlighted that large class sizes lower both satisfaction levels amongst students (Mavondo et al., 2004) and perceived levels of educational gain (Soilemetzidis et al., 2014). However, caution should be taken when interpreting the findings of this study given that it was assumed that students with larger registered class sizes have more contact hours in large groups than those with smaller registered class sizes. Further unravelling of all student contact class sizes is necessary to explore in more detail the effect of class sizes on satisfaction scores and the way in which teaching is delivered on modules with larger numbers of students. Despite this, certain subjects, as outlined earlier, are popular with non-UK students (Universities UK, 2014) and numbers of such students are rising in order to fulfil demands and generate income (Cantwell, 2015). This leads the authors to conclude that institutions need to be mindful regarding how they expand their courses, particularly in terms of balancing contact class sizes and integrating non-UK students whilst at the same time maintaining high levels of student satisfaction. Thus, particular attention has to be paid to curriculum design, to ensure a similar high quality learning experience is delivered irrespective of class size.

There are limitations to this study. Firstly, a sample of modules from one HEI may not be representative of all HEIs in the UK. However, the evidence obtained provides useful insight for HEIs in terms of the ways in which existing university-held student satisfaction data can be examined to positively influence student satisfaction amongst different groups of students.

Secondly, given that student satisfaction data are collated anonymously at Coventry University it was not possible to distinguish between those questionnaires completed by UK/non-UK students. However, it did not seem appropriate or justifiable to target and request students to complete further surveys according to
residency, which may potentially risk skewing the data, given that anonymity is considered to elicit less socially desirable responses (Lelkes, Krosnick, Marx, Judd & Park, 2012). There is also evidence to suggest that administering multiple surveys, particularly one after the other, does appear to adversely affect response rates (Porter, Whitcomb, & Weitzer, 2004). This, in turn, reinforces the importance of using existing data to avoid survey fatigue. Various studies have reported numerous benefits in using existing data including a reduction in time, cost-efficiency and the extensive data available (e.g. Boslaugh, 2007; Grady, Cummings, & Hulley, 2013).

Thirdly, the percentages of UK and non-UK students who completed module evaluation questionnaires may not exactly correspond with those students actually registered to the module. However, the large number of modules included in the dataset minimised the effect of any anomalies.

Finally, there were considerably more undergraduate than postgraduate modules included in the dataset, however this was expected given the greater number of undergraduate programmes.

Conclusions and Future Research
This study has produced evidence of differences in satisfaction that merit further investigation. Specifically, the effect of class sizes on satisfaction scores will be explored in greater detail. Furthermore, the questions arising from this study in terms of the implications of integrating non-UK students into large classes are particularly pertinent, since the quality of the student experience, as reinforced by the TEF, is now even higher on the HE agenda. After this study was conducted, the UK initiated the process of leaving the European Union (EU). As a result, investigating differences in satisfaction by grouping students by residency, as in this study, will be even more pertinent. Once the UK has exited the EU it is expected that EU students across the sector will join those students outside the EU in paying higher fees compared to UK students (Marginson, 2017). Therefore, it will also be important to consider the impact of significant price differences in terms of student satisfaction amongst UK/non-UK students.
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