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## Research Paper

### Recommended Citation

M. Nweke, I. Lazar, A. Nyamapfene, F. Akinmolayan, Y. Liu, & O. Egemonye (2024). Investigating What Contributes Towards A Holistic Engineering Student Experience For International And Home Students. Proceedings of the 52nd Annual Conference of SEFI, Lausanne, Switzerland. DOI: [10.5281/zenodo.14254872](https://doi.org/10.5281/zenodo.14254872)

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## A STUDY INTO ENGINEERING STUDENTS' SENSE OF BELONGING AT UNIVERSITY

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**Conference Key Areas:** *Diversity, equity and inclusion in our universities and in our teaching (EDI)*

**Keywords:** *Student experience, international students, home students, inclusion,*

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## ABSTRACT

Recently there has been a diversification of student profiles across the UK at all taught levels. The student fee freeze for home students, increasing fees for overseas students and other financial considerations have led to many universities announcing that they are considering increasing their student intake, which will undoubtedly impact modes of delivery and our student body representation, which implicates the need for a new approach to instilling a sense of belonging and a review of university provisions and support mechanisms (all of which have been shown to impact student performance). UCL Engineering has seen a sharp increase in student numbers (>40% in 3 years), with a large portion comprising of international students. The sector is often cited as one that actively promotes social mobility, however the Engineering UK briefing *Social Mobility in Engineering* (2018) argues that there is further work required due to performance outcomes of different student cohorts. This study investigates the contributing factors towards creating a good holistic student experience for both home and international students with the aim of developing and adapting current university provisions. A combination of surveys, focus groups and interviews were used to capture the student voice. The main outcomes of the survey will be presented in this paper. Overall, the results indicate that the extent of university integration is impacted by factors related to living arrangements, student societies and perceptions of the university's efforts to address EDI-related issues.

## 1 INTRODUCTION

The landscape of higher education in the UK has increasingly diversified in recent years. According to the latest government report *International students in UK higher education* (Bolton et al., 2023), a record high of 24% (679,970) of the total student population in British universities has an overseas background in 2021/2022 with about 18% from the EU and the remaining from elsewhere. China, India, and Nigeria are the top three countries in terms of the number of students studying in British universities. China accounts for the largest proportion, with 151,690 students, followed by India with 126,535 students. The number of Nigerian students has more than doubled, increasing from 14,270 in the 2020-2021 academic year to 32,945 in 2021-2022. The new report also highlights that the proportion of EU students has decreased by 21.4%, while the number of non-EU students has grown by 23.8% (Bolton et al., 2023; Universities UK, 2024).

With a mix of home and international students navigating their academic journeys in the UK, understanding the unique challenges faced by each cohort is vital for institutions aiming to provide inclusive and supportive environments. This section aims to explore challenges experienced by students from home and international backgrounds. It will cover perspectives on student experience, well-being, and cultural challenges, including visa application difficulties, as well as language differences that are particularly related to international students.

A large and growing body of literature has investigated the obstacles encountered by international students and what factors might affect their sense of belongings. Hoffman et al.'s (2002) mixed methods study concluded that five factors affect students' sense of belonging: peer support, faculty support, classroom comfort, isolation, and empathetic faculty. More recently, Cena et al. (2021) examined the experiences of 16 international students at Queen's University Belfast (QUB) in

Northern Ireland, focusing on their sense of belonging and the challenges they face both academically and socially. Through semi-structured interviews, researchers identified four domains impacting their feelings of belonging: educational differences, on-campus social interactions, influences from the home society, and the wider off-campus environment.

Ramachandran (2011) has identified eight common challenges, which are financial issues, academic issues, English proficiency, social and cultural issues, university administrative procedures, issues of transnational student, bilateral state relationship and its effect and information and support systems. Along the same lines, Khodabandelou et al. (2015) interviewed 21 Iranian postgraduate students in Malaysian universities, identifying four challenges: financial matters, visa, culture and insurance. It should be noted that some of the challenges might also apply for home students, such as financial issues, academic issues (Office for Student, 2022). However, these challenges can affect international student sense of belonging even more profoundly. For instance, social and cultural issues and the anxiety of being far from their home country can be significant (Taylor and Ali, 2017). Additionally, lack of participation and engagement due to English proficiency have also been identified (Cammish, 2002; Carroll, 2007; Trenkic and Warmington, 2019). Even when students are able to adapt to the new environment quickly and have met language requirements, they might have difficulties in understanding different variants of English (Pho, 2019).

There is a large volume of published studies describing the significant role of support mechanism with regards to increase student wellbeing and experiences in universities. Stress is not uncommon among university students, particularly since the outbreak of COVID, there has been an increase concern for student wellbeing considering factors related financial pressure, worry for academic performance, university experience, social isolation, and career prospects (Son *et al.*, 2020; Appleby *et al.*, 2022). Engineering students, in particular, face additional challenges due to their demanding curriculum, heavy workload and low retention rates (Chadha *et al.*, 2021; Jensen and Cross, 2021). Yet the literature specific to the experience and support mechanism of engineering programme students is relatively limited.

Chadha *et al.*, (2021) has conducted a mixed methods research study exploring student experiences of support mechanisms to enhance wellbeing on an engineering programme in the UK. A variety of supporting scheme has emerged and put into practice in British universities setting to enhance engineering student wellbeing, such as peer mentoring, wellbeing officers, tutorial support system (personal tutor). However, with many types of assistance available, it is difficult to assess their impact. Concerns from students include a lack of clear links and coherent organization in these initiatives. Additionally, although peer to peer support has gained popularity among British universities in recent years and it has been suggested to have positive impact on student integration (Collings, Swanson and Watkins, 2014), a clear scope of responsibilities of the role is essential to make sure the system runs smoothly. Moreover, tutorial support system has received positive feedback, but the lack of training and specificity of the personal tutoring role, staff hiring freezes and increases in student numbers is leading to less regular contact with students and eventual student detachment. As several students state: "I would not go to my personal tutor for anything", and "I feel detached from it and that I can't really make any change" (Chadha *et al.*, 2021, p. 642).

Many British universities and organizations have taken actions to help students. According to the Department for Education (2023), Office for Student (OfS) has distributed 276 million of government funding to help students. The University of York which announced that £150 would be given to student households who are finding it difficult to pay their bills as part of a £6 million package to support students most in need (Department for Education, 2023; University of York, 2022). The University of Southampton which has made a total of £1.1 million in the current academic year available to students to cover emergency costs (Department for Education, 2023). Turning the focus back to the capital city, Queen Mary University of London which has a bursary scheme automatically provided to any domestic undergraduate from a family whose annual taxable income is below £20,000 (Department for Education, 2023; Russel Group, 2022). Similarly, UCL has announced the following financial support to students since September 2022. There is a permanent £500 increase to the UCL Undergraduate Bursary, supporting students with an annual household income of £42,875 or less (UCL, 2022). Additional funding for students in financial need can be accessed from the Financial Assistance Fund and the Sarah Douglas Hardship Fund, enabling us to support more students dealing with unexpected financial pressure. However, it should be noted that a number of these funding opportunities are only open to home students.

## **2 METHODOLOGY**

The results discussed in this paper focus on the data gathered from the survey, although data was also collected from focus groups and interviews which will be analysed in the future. The survey was disseminated to the entire faculty (undergraduate and postgraduate taught >1500) and was completed by 87 students (~5% of the cohort). The survey mainly uses a combination of Likert scale and free text questions, with a mix of obligatory and non-obligatory responses. The survey comprised of 36 total questions split into 6 sections: Section 1: Demographics, Section 2: Sense of Belonging, Section 3: Course Experience, Section 4: Student Values, Section 5: EDI at University, Section 6: Open-Ended Questions. This research has been approved by the UCL Research Ethics Committee.

## **3 RESULTS**

For the purposes of this paper, we have provided a brief overview of all of the sections of the survey but honed in specifically on the overall sense of belonging, the evolution of their mental health during their time in the engineering department, their perspectives on EDI issues and involvement in extracurricular activities as these categories provided a diverse set of responses across different personal characteristics.

### **3.1. Sense of belonging**

A summary of section 1 shows that there were an equal number of home and international (overseas) student participation (44% each) and 12% International EU with a near enough equal split of male: female respondents. 30% of respondents were noted as having a disability. Approx. 60% of respondents were of Asian background, 30% Caucasian, 10% Black, mixed, Arab or other.

Section 2 of the online survey focused on the feelings of belonging, comfort and connectedness that students developed during their time at university. Figure 1 shows the distribution of all answers received, on a scale of 1 to 5 (where 1 is strongly disagree and 5 is strongly agree) for various Likert scale questions.

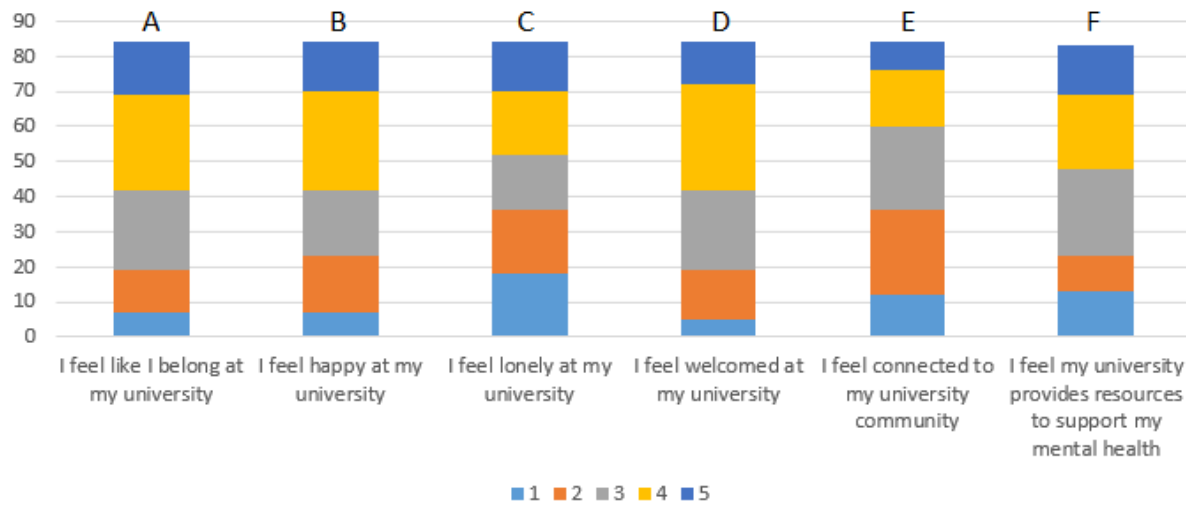


Figure 1: Students perception of their sense of belonging, happiness, loneliness, welcome, connectedness and resource availability at university

The overall averages of the answers for the 6 categories (A-F) of questions shown in Figure 1 were 3.37, 3.31, 2.9, 3.36, 2.81 and 3.16 respectively. It is interesting to note that whilst students appear to have developed a feeling of belonging and feel welcome at the university, they also feel lonely and sometimes disconnected from it (categories that scored the lowest averages). We further disaggregated these results to observe whether there were any deviations from the averages occur when looking at various categories of students. We only report on those where the sample was larger than 5 students and where a deviation was noticed.

Table 1 shows the average answers given by students, based on their fee status, where Home refers to home fee payers, Intl-EU represents international students from the European Union and Intl-OS represents overseas students or international students from outside of the European Union. The number of students in each category is shown in the first column. The bottom line shows the overall average for comparison.

Table 1: Averages of answers to questions in Figure 1, based on fee status.

Fee status	A	B	C	D	E	F
Home (35)	3.26	3.2	2.77	3.14	2.74	2.94
Intl-EU (12)	3.83	3.67	3.17	3.83	3.08	3.58
Intl-OS (37)	3.32	3.3	2.95	3.41	2.78	3.14
Overall (84)	3.37	3.31	2.9	3.36	2.81	3.16

Table 2 shows the average answers given by students, based on their accommodation type. The number of students in each category is shown in the first column. The bottom line shows the overall average for comparison. As can be seen, students living with their families are generally less connected to the university and feel the loneliest, whilst students in private shared flats have the scored the strongest.

*Table 2: Averages of answers to questions in Figure 1, based on living arrangements.*

Accommodation setup	A	B	C	D	E	F
With family (17)	2.88	2.88	3.12	2.88	2.41	2.82
Student accommodation (25)	3.44	3.32	2.76	3.64	2.88	3.12
Private shared flat (28)	3.79	3.68	2.89	3.36	3.04	3.14
Private single flat (14)	3	3.07	2.93	3.43	2.71	3.43
Overall (84)	3.37	3.31	2.9	3.36	2.81	3.16

When focusing on ethnicity, lower scores were given by Arab students, indicating that they feel less integrated at university. No significant deviations from the overall averages were observed for other ethnicities or based on gender identity, sexual orientation, age, or level of study.

### **3.2. Mental health evolution**

Another important factor in assessing the student experience, is the evolution of their mental health while at university. Overall, 34% respondents state that their mental health has improved during their studies, 44% that it has worsened and 32% that there has been no change (last column in the chart of Figure 2) and for various categories of students, where a deviation from the overall numbers is present. As can be seen in Figure 2, students with disabilities and those living with their families show a decline in mental health while at university.

The survey also directly addressed students' perspectives of whether their experience at UCL had improved, worsened or made no impact on their mental health. The figure below reflects the responses to this question, showing that the most popular answer was that student's felt that their mental health had worsened since coming to UCL. A significant proportion also reported that there had been no change in their mental health – which suggests that the relationship between mental health and a students' experience at the university was more complex than could be captured in a survey.

### **3.3. Extra-curricular activities**

This section of the survey explored students' experiences with extra-curricular activities such as joining clubs, groups or organisations. The survey highlighted that over two thirds of the respondents engaged in extracurricular activities. The most popular reason that respondents did not join societies was due to lack of personal time or extracurricular activities occurring at unfeasible times for students. Other significant reasons for not joining clubs or societies included commuting students finding it difficult to justify the journey and transport costs, social anxiety & insecurities and no personal interest.

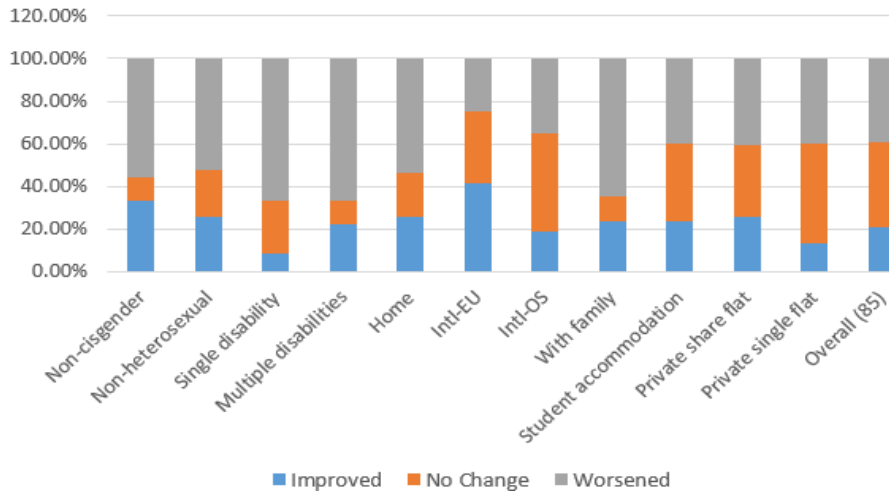


Figure 2: Evolution of mental health of different groups whilst at university

In section 6 one student stated:

***“I do not live on campus so I do not feel it is worth commuting for an hour for club activities. Most social activities are centred around alcohol, and I work while studying so I do not have enough free time”***

Others reflected that:

***“work load is difficult to manage alongside personal life”***

and

***“As a girl who lives far from school, I felt very insecure, so it was impossible for me to participate”***

### 3.4. Students’ perceptions on how EDI is addressed

Section 5, Question 28, of the online survey focused on students’ perceptions of the extent to which their institutions were prepared to listen to, and to address, issues pertaining to diversity, equity and inclusion. Table 3 shows the distribution of all answers (84 respondents) received, on a scale of 1 to 5 (where 1 is strongly disagree and 5 is strongly agree).

Approximately 70% of the respondents (Likert scales 1,2, and 3) were either uncertain that they would know how to raise with their university an issue to do with diversity, equity and inclusion (68.96%), did not feel confident that an issue to do with diversity, equity and inclusion would be listened to by their university (68.66%) or did not feel confident that an issue to do with diversity, equity and inclusion would be addressed appropriately by their university (69.33%).

Table 3: Average scores for student perception on how EDI concerns are addressed

Likert Scale Question:	1	2	3	4	5
I would know how to raise an issue to do with diversity, equity and inclusion if I see any. (n=87)	11.49%	26.44%	31.03%	16.09%	14.94%



I feel confident that an issue to do with diversity, equity and inclusion would be listened to. (n=67)	14.93%	16.42%	37.31%	2.99%	28.36%
I feel confident that an issue to do with diversity, equity and inclusion would be addressed appropriately by my university. (n=75)	13.33%	18.67%	37.33%	8.00%	22.67%

#### 4 SUMMARY AND ACKNOWLEDGEMENTS

Overall, the results show that there are a number of differences in challenges faced by international vs home students, and these can be further exacerbated by delving deeper into other characteristics related to gender, disability and ethnicity. The main outcomes show that the sense of belonging is felt the least by certain populations in the international student body, but also by home students (particularly those who live at home), reasons for which are explored in the next phase of the study.

The results also show that student experience may differ based on living arrangements. Home students are likely to live with family which may impact on their integration with university life given the central location of UCL. This is contrary to international students who will most likely live with fellow students closer to campus. The results also explored the impact on mental health, engagement with student societies and student perceptions on how inclusion concerns are handled by UCL, all further explored in the next phase. The next phase of this study delves further into the main outcomes of the survey through focus groups and interviews with cohorts of home students and international students to compare and contrast experiences and their perspectives on what support looks like for them. Questions we intend to ask during focus groups and interviews include how comfortable students feel within their department and on their course. Specifically, we want to know if they feel like they belong, and if so, why. Furthermore, we will explore what impacts their sense of belonging. Additionally, we will evaluate the current measures to improve students' sense of belonging and discuss how we can further enhance it.

These authors acknowledge and thank the Centre for Engineering Education, UCL for funding this research.

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