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## CASE STUDY

# Towards a Better Transition to University: A Student-Centric Welcome Day for the New Undergraduate Students in a Mathematics Department

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## Abstract

This case study delves into a Welcome Day event organised by the Department of Mathematical Sciences at a UK university for the incoming first year students in the department. This report reflects some of the practicalities and the evaluation of the event. The event, primarily focused on student engagement activities along with reduced amount of traditional presentations, was aimed at facilitating peer networking and smoothing the transition from school to university, hence nurturing a sense of belonging within the student community. The structure of the event was crafted to align with the department's unique ethos, with an emphasis on activities that resonate with the field of mathematics. Evaluation of the event is done based on the responses from the students during the event via an online questionnaire. The event not only demonstrated high levels of student satisfaction but also served as a good example of department-specific orientation programs. These localized events can complement university-wide initiatives, offering a more tailored setting for new students to acclimate to their specific academic environment. This paper has the prospect to guide others and to reinforce the notion of seeking to tailor welcome days to match the needs of new cohorts.

**Keywords:** Transition to university, student community, welcome event, orientation event, first year students.

## 1. Introduction

Learning communities create an environment and framework for individuals (students) to unite under a common objective. Within the university setting, the student community plays a pivotal role in linking students together, fostering collective learning, and nurturing a sense of belonging, which is closely associated with academic success (Thomas, 2012). It's crucial, therefore, to establish a robust student community from the very beginning of a student's journey in the university. This is even more important because the transition from school or college to university marks a significant milestone in a student's academic journey. During this period students navigate new academic challenges, social dynamics, and personal growth opportunities. The first-year experience is crucial in setting the tone for a student's entire university life, impacting their academic success, social integration, and overall well-being. In this context, welcome or orientation events play a pivotal role. In addition to being just ceremonial introductions, these events can be carefully designed to ease the transition, providing first-year students with essential information, resources, and leading them towards an enriching student community. These events, in particular, can be utilised to offer a platform for students to connect with peers, familiarize themselves with the university environment, and understand the expectations and opportunities of their new academic community. Moreover, as discussed in (Gill et. Al, 2011), a carefully planned and good quality welcome or orientation program

along with sufficient peer involvement in programs can improve student retention (Davig and Spain, 2004; Ramsburg, 2007).

Globally, various approaches (Cooper, 2021; Zachary et al, 2012, 2014) have been adopted to improve first year orientation or welcome events, aiming to make it more student-centred in nature which can cultivate a sense of community and friendship among students. Most of the time these approaches were typically implemented across entire universities. However, as discussed in (Saha, 2023), it's essential to cultivate a feeling of community within individual academic departments, as students mainly encounter university life in these specific settings. Starting from the academic year 2022-23, a significant stride in enhancing the student community within the Department of Mathematical Sciences at this UK university was made and it is reported in (Saha, 2023). This paper, however, reports the practical aspect and evaluation of the welcome event which took place for the first-year new students in the academic year 2023-24 which is a more organised version of the last iteration with an outlook to measure its impact.

## 2. Overview of the event

In 2023-24 academic year, total number of year 1 enrolments (at the Department of Mathematical Sciences) was 194 and a total of 125 students attended the welcome event. Rather than centering the welcome day around lectures, the department shifted its approach to emphasize student engagement, peer interaction, and building relationships within the campus community, while still delivering key information to students.

The traditional informative part of the event was redesigned to make it appropriate for the students so that they are not overwhelmed. The essential program and degree information was concisely conveyed by the Head of Teaching in a one-hour session. Mindful of the diminished efficacy often associated with prolonged presentations, this was strategically segmented into two thirty-minute talks, interspersed with a lunch break. Live (and anonymous) questions/feedback was also incorporated in each of the 30-minute presentations. Apart from this there were only two other "talks" in the whole event: one by an existing student on the importance of Equality, Diversity, and Inclusion and the other one by the career team of the university. Both talks were brief (10-15 minutes each). Hence a major part of the event was completely student-centric, and the three such key activities were "campus-hunt", "group quiz", and "discussion with senior students".

The "campus hunt" was a dynamic group activity, engaging students in teams of three or four. This interactive exercise involved visiting strategically chosen campus locations, such as lecture theatres and the library, to enhance familiarity with key university facilities. Participants were tasked with decrypting a set of clues that guided them to various spots across the campus. Upon reaching these destinations, they had to find hints and answer questions related to each location, turning the campus into an engaging and educational landscape for exploration and discovery. There are different ways one can organise this activity. In our case we created a set of 5 questions each having two clues to decrypt. Upon decrypting first clue they would know the specific location of the campus where they should go. Then when they are at that specific location, they can find the answer hidden in the second clue for the question. So, for example in one of the questions first clue was "This building is positioned in row 6 of the campus map grid. The building number is divisible by 13." This referred a building number 221 in the campus map (provided separately). They second clue for the question was "Your integer A will be the total number of lockers present on the whole of the first floor."

So, they need to physically go the building 221 in order to find out that there is total 96 lockers (numbers are marked, so no need to count separately!) and thus they record that  $A=96$ . Similar way from other questions they find integers B, C, D and E. Once they have found all five integers they can answer online questions involving these, for example "Find the value of  $f'(\frac{A}{E})$  where  $f(x) = x^2 + 3x - 2$ . There was total 4 questions like the above which they had to submit online. These were auto marked online using Microsoft Forms which also records when the answer was submitted.

Similarly, the "group quiz" was another engaging group activity, typically involving the same teams of three or four members. This fast-paced challenge required the groups to answer 20 questions within a 30-minute timeframe, with responses submitted online. To encourage collaborative problem-solving and resourcefulness, students were allowed to use any available resources to assist in finding the answers, or parts thereof. All these questions were multiple-choice question with possibility of having more than one correct answer. These questions were created with the idea of making each of them a fun mix of general/searchable knowledge with mathematics. For example, one of the questions was "As in The Hitchhiker's Guide to the Galaxy by Douglas Adams, the "Answer to the Ultimate Question of Life, the Universe, and Everything" is an integer n. Which of the following polynomials has a root which is an odd prime divisor of n?" There were four options for this question and out of them two were correct. The important thing to note that either someone can know the integer n for the question, or they were allowed to use any means (like internet) to search for it and then they need to do some simple mathematics to finalise the answer. The whole quiz administered and then was auto marked online using Microsoft Forms which also records time taken to complete. Adding a competitive edge to the event, the winning groups from both the campus hunt and the group quiz were awarded prizes, fostering a spirit of enthusiasm and achievement among the participants.

The "discussion with senior students" activity was a thoughtfully designed interactive session. Prior to the discussion, new students were encouraged to submit their questions anonymously using an online platform called Padlet. This submission window closed 30 minutes before the session began, allowing the next half-hour for senior students (year 2 and above), with the assistance of staff members if needed, to review these questions and prepare their responses. During the discussion, senior students addressed these queries, providing insights and sharing their experiences. The session's primary goal was to foster a comfortable atmosphere where new students could freely ask questions on a range of topics. By enabling anonymous online submissions, the activity aimed to reduce any hesitation new students might feel in posing questions directly, thus promoting a more open and honest exchange of information. The whole event was organised with the help of student helpers who were undergraduate students of year 2 and above. Some of these students also participated in the "discussion with senior students" activity.

It is important to note that while we were inspired by some previous works, like (Ronan, 2019), Cooper (2021) and Zachary et al. (2012, 2014), in developing activities, these were not directly duplicated. Instead, they were adapted to reflect the unique characteristics of the Department of Mathematical Sciences. The core elements of the activities, such as the clues in the campus hunt and the questions in the group quiz, were thoughtfully designed to relate to the field of mathematics. For instance, participants were required to apply basic mathematical principles to arrive at the final answers for each activity. However, we ensured that the complexity was kept to a minimum to maintain student engagement.

### 3. Goal and rationale

The aim of the event was to complement the conventional "lecture"-oriented welcome event with activities centered around the students. There were two major goals for this event.

#### *Reduced Information:*

It is discussed in (Gill et. al, 2011) that despite of the fact that participation at the welcome or orientation programs is important in helping students' transition and adaption to university life (Dilekmen, 2007), these programs are often overloaded with information for the students (Singer, 2003). Gill et. al (2011) showed the effectiveness of "just-in-time" information contextualised to the cohort. In this departmental level orientation event, we also focused on contextualised information for the year 1 students.

#### *Peer networking:*

The student-centric activities were aimed to provide opportunity for peer networking and meeting new people. For example, the campus hunt activity was designed as a group-based task and the design of the activity itself was intended to promote peer discussion among students. Students also had the chance to network during a complimentary lunch.

### 4. Evaluation Method

The data collection was aimed at evaluating the impact of the activities conducted during the event. An online questionnaire was administered to students who participated in the event and responses were collected during the event. The participation was entirely voluntary, and all responses were anonymized. A total of 103 responses were collected. An ethics was approved by the University Ethics Committee for this study.

### 5. Impact: evaluation of results and students' perception

To start with, this event could be considered to have a positive effect as more than 83 percent respondent said, overall, they were satisfied with the welcome event, see Figure 1.

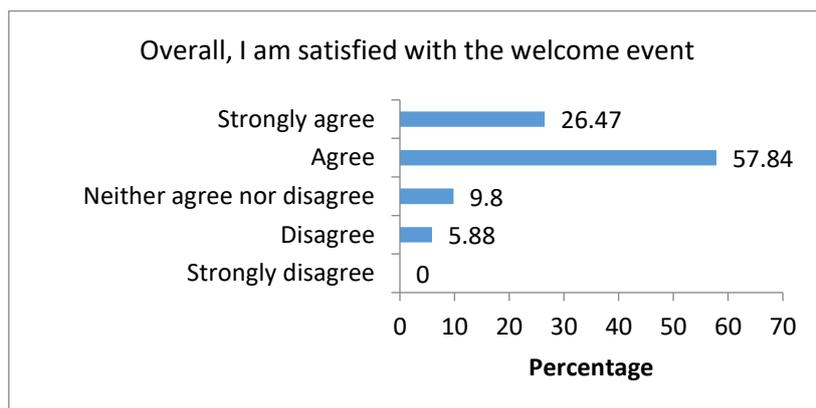


Figure 1. Summary of Responses to the Question "Overall, I am satisfied with the welcome event"

We further asked specific questions to the participants to measure the success and effectiveness of different goals for the event.

*Reduced and contextualised information:*

The essential program and degree information was concisely conveyed by the Head of Teaching. Feedback from the students indicated that the presentation was highly informative. This was substantiated by the survey results, where over 95% of respondents agreed that "The presentation given by the Head of Teaching was informative" as illustrated in Figure 2.

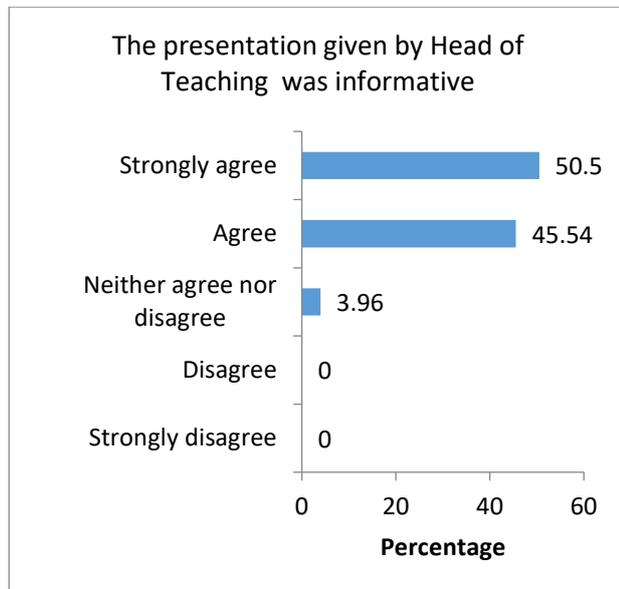


Figure 2. Summary of Responses to the Question "The presentation given by Head of Teaching was informative"

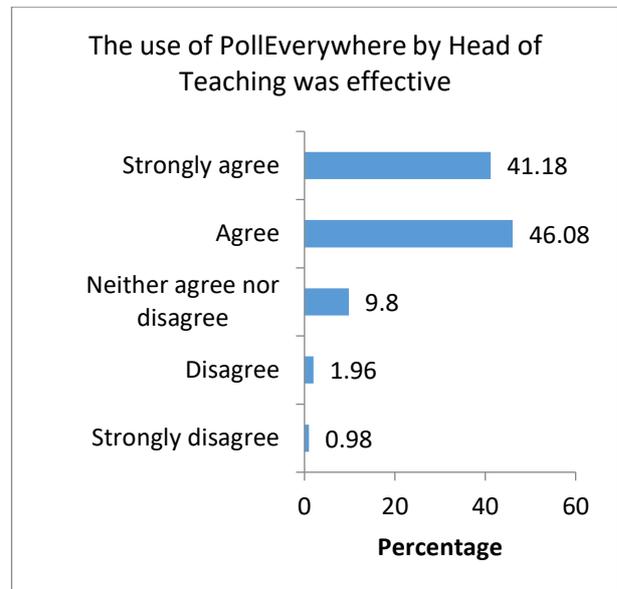


Figure 3. Summary of Responses to the Question "The use of PollEverywhere by Head of Teaching was effective"

Some of the comments from the students also reflected the same.

*"The head of teachings presentation was informative of how university would differ from previous education, and how best to deal with that change."*

We deliberately made these presentations more student friendly by incorporating live (anonymous) questions/feedback and polls via online platform. Over 87% of respondents agreed that "The use of PollEverywhere during the presentation given by Head of Teaching was effective in encouraging students to ask questions" as illustrated in Figure 3. PollEverywhere is a licensed software which was be used to organise the in-event anonymous polls.

*Peer networking:*

The event featured student-focused activities such as "campus hunt," "discussion with senior students," and "group quiz," designed to facilitate peer networking and social engagement among new students. The campus hunt and group quiz were well-received, as evidenced by student feedback. A significant majority of the participants, approximately 87%, reported that these activities

effectively promoted interactions between individual students and their peers, as detailed in Figure 4.

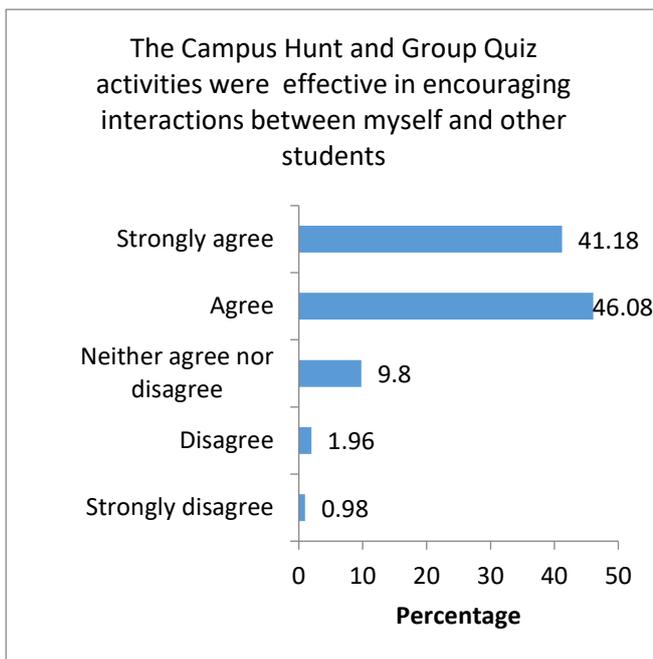


Figure 4. Summary of Responses to the Question "The Campus Hunt and Group Quiz activities were effective in encouraging interactions between myself and other students"

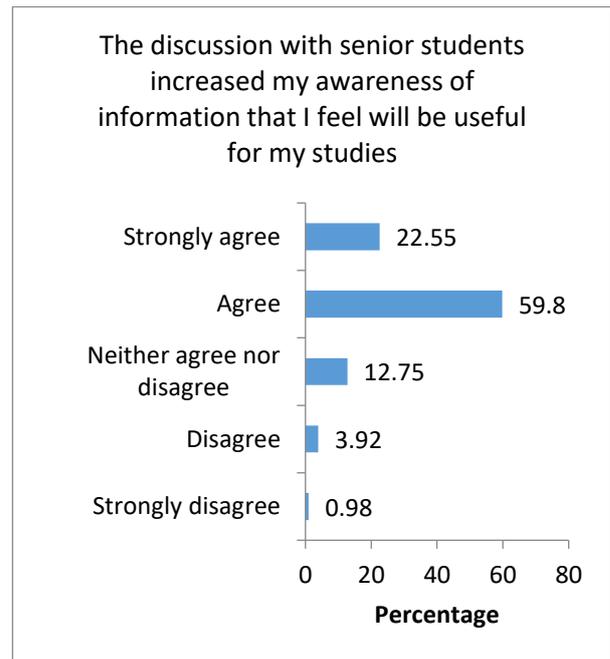


Figure 5. Summary of Responses to the Question "The discussion with senior students increased my awareness of information that I feel will be useful for my studies"

The students' feedback similarly mirrored these observations.

*"Exploring campus with a new group of people made it easier to make friends"*

Reflective feedback from students regarding the session featuring discussions with senior students mirrored the same positive sentiment. Such an interaction was possibly a new experience for the first-year students, but overall, they showed good enthusiasm and participated actively. Almost 82% students agreed that the discussion with senior students increased their awareness of information that they feel will be useful for their studies, see Figure 5. This perspective was also evident in several remarks made by the students.

*"The Q&A with senior students also opened my eyes to new things to try whilst at the university."*

*"Q&A with students to get the students perspective on what uni life will be like"*

To render the session more approachable, we provided the chance to the new students to submit their queries anonymously via a digital platform. More than 79% participants appreciated this effort in their response, as detailed in Figure 6.

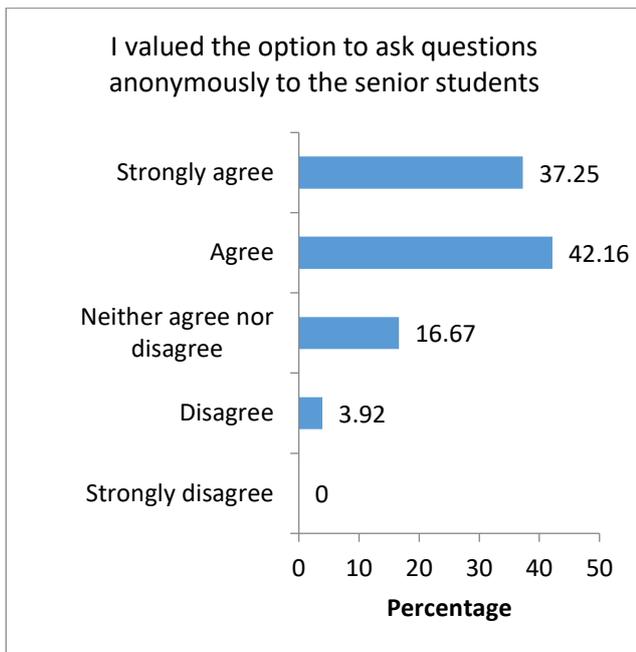


Figure 6. Summary of Responses to the Question "I valued the option to ask questions anonymously to the senior students"

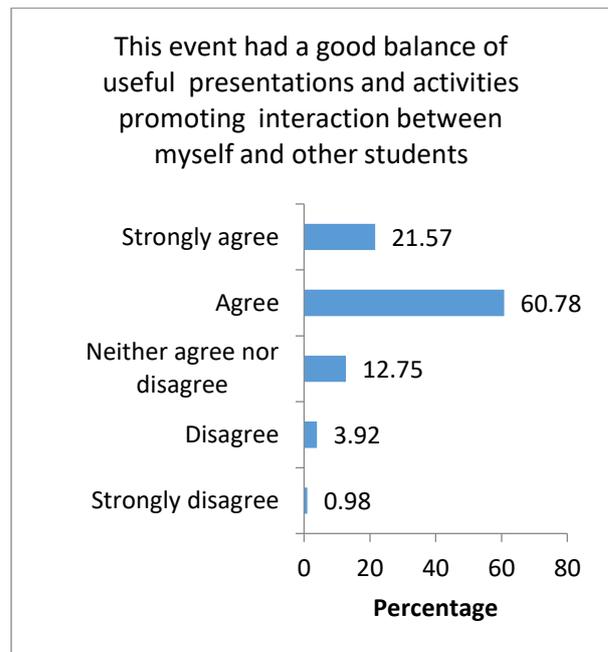


Figure 7. Summary of Responses to the Question "This event had a good balance of useful presentations and activities promoting interaction between myself and other students"

As previously mentioned, a significant portion of the event, constituting over 55 percent of the total duration, was dedicated to student engagement. At the same time, we were careful to impart only the most pertinent information necessary for students to commence their university journey without overwhelming them. This approach was validated by our survey results, where more than 81% of respondents (as detailed in Figure 7) concurred that the event struck an effective balance between informative presentations and activities that fostered interaction among students. Similar reflections were also echoed in some of the students' comments.

*"Information about support, hearing from senior students, getting to know the people will be studying with"*

*"Meeting people on my course Better understanding of the campus lay out Less anxious about starting lectures from information provided and the representation of staff"*

*"Meeting new people, gathered a lot of information about the course, and spoke to senior students with great information about the future of my education"*

## 6. Conclusion

This paper concludes by highlighting two key aspects. Firstly, the project's adaptability, as noted in (Saha, 2023), demonstrates its applicability across various departments. The informational lecture segment can be easily replicated by any department, with adjustments to include relevant program details, but keeping it concise. The student-focused activities are also adaptable but can incur additional workload. For example, the senior student discussion session is always challenging to conduct due to the hesitancy of new students to engage; but this can be effectively managed through

prior planning and using suitable methods like question submission. This event, though tailored to the spirit of a mathematics department, should be noted for its adaptability to various departmental themes, necessitating inventive input and extra effort from the educational staff. One other important thing to consider while planning is that the date should not coincide with any other major welcome event of the university as it might affect the attendance.

In concluding this paper, the second aspect to consider is the potential for enhancement. The activities were generally well-received by the students, but this does not preclude the possibility of further improvements. As we plan to continue similar welcome day activities in upcoming academic years, we will also explore areas for refinement. Feedback indicated that many students found the event lengthy. A viable solution could be to shift a portion of the informational sessions and talks to an asynchronous format. Additionally, the suggestion of splitting the event over two days merits consideration, provided that each day offers enough engaging activities to maintain student interest. Along the same line and in response to requests for more outdoor activities, incorporating more in-campus experiences like a library tour or meeting academic advisors could enrich the event's appeal.

## 7. Acknowledgements

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