UNIVERSITY OF CAMBRIDGE
Department of Computer Science & Technology

Athena SWAN Bronze Award

Outreach Committee Meeting

10:00 - 11:30, Monday 21 October
William Gates Building, Room GC22

Agenda

Committee Membership:
Jeremy Yallop (Chair, JDY)
Aga Niewiadomska, Outreach Administrator (Secretary, AN)
Celia Burns, Faculty Administrator (Notetaker, CB)
Laurie Gale (LPG)
Rachel Gardner, Communications Manager (RG)
Lise Gough, Postgraduate Education Manager (LMG)
Neel Krishnaswami (NK)
Peter Ochieng (PO)
Sue Sentence (SS)
Becky Straw, Undergraduate Teaching Manager (RS)
Jamie Vicary (JV)

1. **Apologies for Absence**

2. **Conflicts of interest**

3. **Updates on current outreach projects**

    a. **Women in CS**
    Programme evaluation report is attached.

    b. **DeepMind internships**

    c. **Sutton Trust summer school**
    Summary of feedback is attached.

    d. **STEM SMART**

    e. **Cambridge Festival**

4. **Outreach strategy**
    To review the attached strategy document for discussion in the next meeting.

5. **Any Other Business**

6. **Date of Next Meeting**

Women in Computer Science Programme 2024 Evaluation Report

In order to evaluate the effectiveness of the programme, students were asked to complete surveys before the programme began, before the residential and after the residential. They were asked questions about their knowledge of higher education (HE), Computer Science at university, their sense of belonging and top two subject choices. The students' data was also added to the Higher Education Access Tracker (HEAT) meaning that we will be able to see whether they apply to Cambridge. However, there is quite a large delay in this data coming through, so we will not be able to see which students applied until Lent 2025.

Most of the questions asked in the surveys were taken directly from the TASO Access and Success Questionnaire (ASQ), which is designed to evaluate HE access initiatives. The questions referring to Computer Science were modelled on more general questions from the ASQ. These questions were chosen based on a recommendation by the university's Access and Participation Evaluation Manager.

The tables below show the questions that were asked and the responses for each round of the survey. Unfortunately, the response rate dropped significantly across the surveys: 100% for the first, 65% for the second and only 35% for the third. Therefore, it is difficult to extract trends directly from the data since the results are not directly comparable.

The subject choices did not change very much between the surveys. Each time the most popular subject choice was Computer Science (or related fields e.g. AI), followed by Engineering, Mathematics and Economics (or related courses).

Before programme

Questions - answered by all 20 participants	**Strongly disagree (1)**	**Disagree (2)**	**Neither agree nor disagree (3)**	**Agree (4)**	**Strongly agree (5)**	**Average**
I am thinking about going to university in the future.	2	0	2	4	12	**4.2**
I know what studying at university would be like.	0	1	9	7	3	**3.6**
I know how studying at university is different from studying in school or at college.	0	2	3	12	3	**3.8**
I believe that if I apply to university, I will get a place.	0	0	6	11	3	**3.85**
University is for people like me.	0	1	4	12	3	**3.85**
I would fit in well academically with others at university.	0	1	1	12	6	**4.15**
I would fit in well socially with others at university.	0	3	6	10	1	**3.45**
I know what studying Computer Science at university would be like.	0	8	6	5	1	**2.95**
I believe that if I apply to university for	0	1	5	12	2	**3.75**

Computer Science, I will get a place.						
Studying Computer Science at university is for people like me.	0	3	8	9	0	**3.3**
I would fit in well academically with other Computer Science students at university.	0	1	4	13	2	**3.8**
I would fit in well socially with other Computer Science students at university.	0	3	7	9	1	**3.4**

Before residential

Questions - answered by 13 participants	**Strongly disagree (1)**	**Disagree (2)**	**Neither agree nor disagree (3)**	**Agree (4)**	**Strongly agree (5)**	**Average**
I am thinking about going to university in the future.	0	0	2	2	9	**4.54**
I know what studying at university would be like.	0	0	1	10	2	**4.08**
I know how studying at university is different from studying in school or at college.	0	0	1	8	4	**4.23**
I believe that if I apply to university, I will get a place.	0	0	2	9	2	**4**
University is for people like me.	1	0	2	5	5	**4**
I would fit in well academically with others at university.	0	1	2	3	7	**4.23**
I would fit in well socially with others at university.	0	0	4	5	4	**4**
I know what studying Computer Science at university would be like.	0	1	4	7	1	**3.62**
I believe that if I apply to university for Computer Science, I will get a place.	0	1	6	4	2	**3.54**
Studying Computer Science at university is for people like me.	0	2	6	4	1	**3.31**
I would fit in well academically with other Computer Science students at university.	0	1	4	6	2	**3.69**
I would fit in well socially with other	0	0	7	5	1	**3.54**

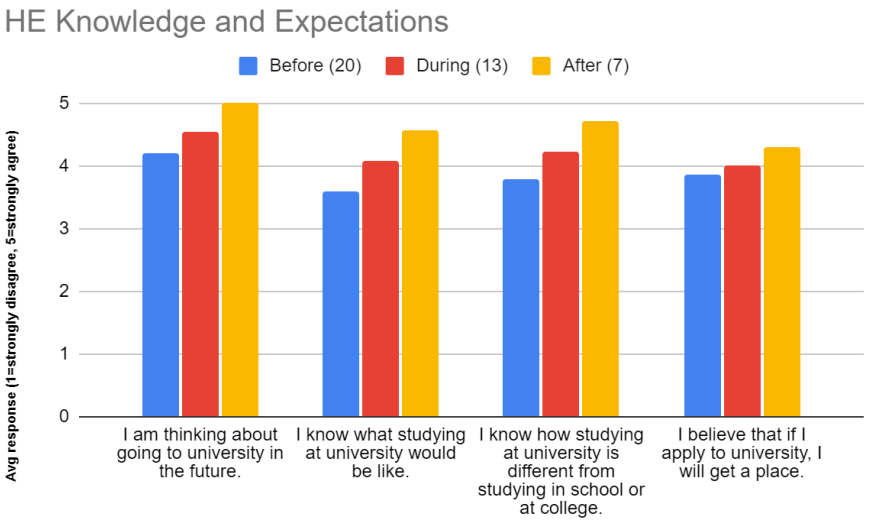
Computer Science students at university.						

After programme

Questions - answered by 7 participants	**Strongly disagree (1)**	**Disagree (2)**	**Neither agree nor disagree (3)**	**Agree (4)**	**Strongly agree (5)**	**Average**
I am thinking about going to university in the future.	0	0	0	0	7	**5**
I know what studying at university would be like.	0	0	0	3	4	**4.57**
I know how studying at university is different from studying in school or at college.	0	0	0	2	5	**4.71**
I believe that if I apply to university, I will get a place.	0	0	2	1	4	**4.29**
University is for people like me.	0	0	2	2	3	**4.14**
I would fit in well academically with others at university.	0	0	0	2	5	**4.71**
I would fit in well socially with others at university.	0	0	1	3	3	**4.29**
I know what studying Computer Science at university would be like.	0	0	0	3	4	**4.57**
I believe that if I apply to university for Computer Science, I will get a place.	0	0	3	1	3	**4**
Studying Computer Science at university is for people like me.	0	1	2	2	2	**3.71**
I would fit in well academically with other Computer Science students at university.	0	0	1	3	3	**4.29**
I would fit in well socially with other Computer Science students at university.	0	0	1	4	2	**4.14**

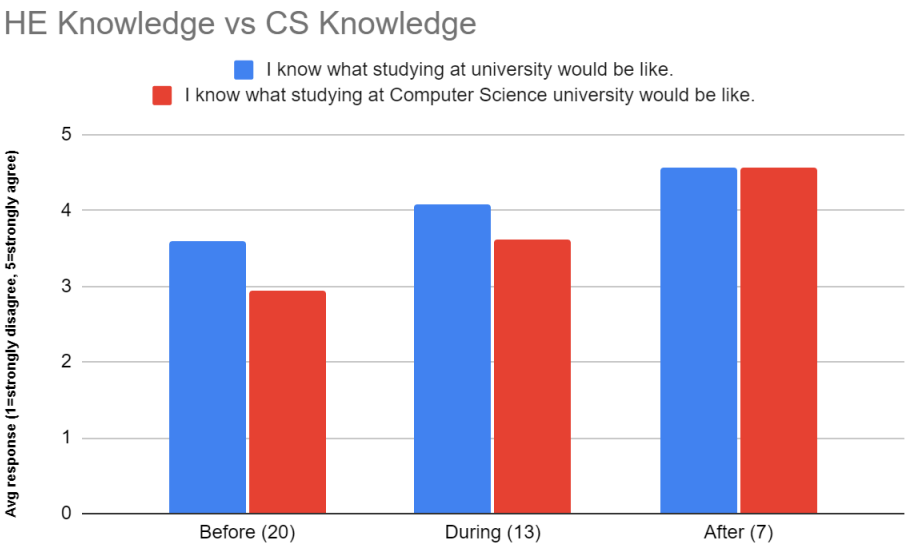
HE expectations, Knowledge of HE

As you can see from the graph below, over the course of the programme, the participants HE knowledge and expectations improved slightly. However, it is also important to note that fewer participants took part in the surveys during and after the programme. Therefore, this trend may be due to the more unsure students dropping out. Since the surveys were anonymous, there is no way to account for these differences.



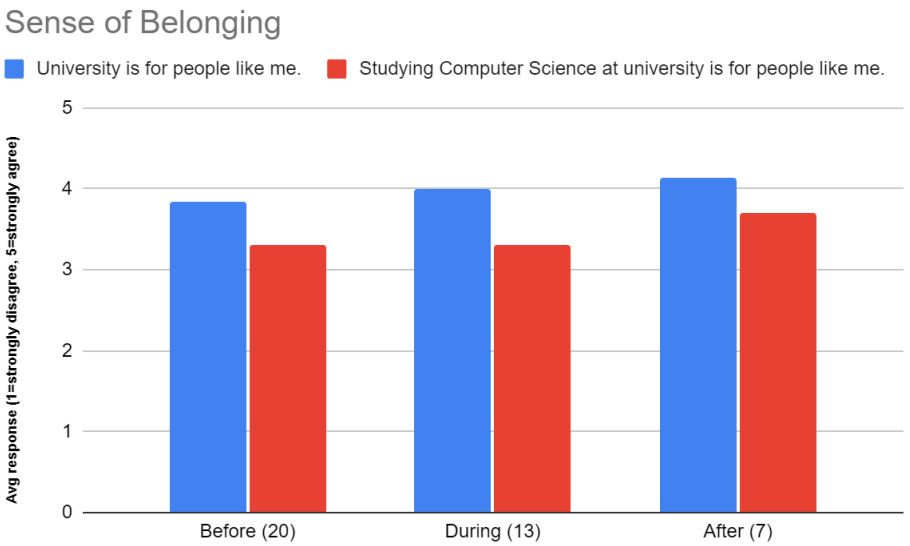
Knowledge of HE vs Knowledge of CS

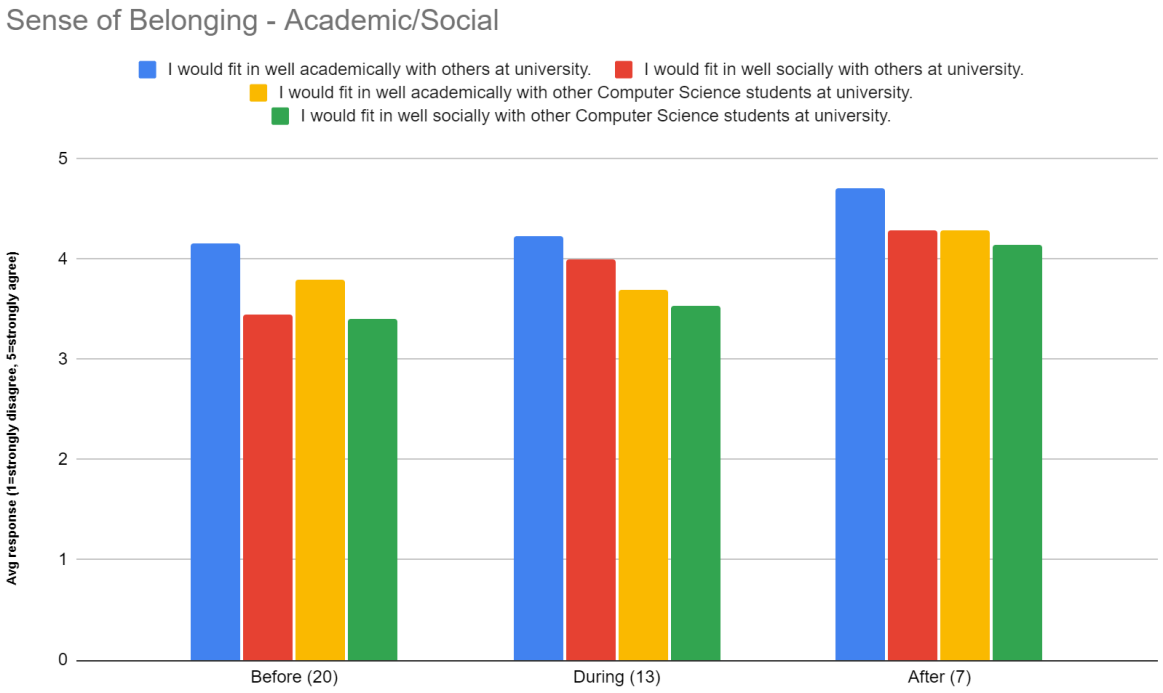
It is interesting to note that before the programme, participants on average had a better understanding of what studying at university would be like compared to what studying Computer Science would be like. However, this gap narrowed over the course of the programme with the final survey results showing an equal level of understanding of studying Computer Science and studying at university more generally.



Sense of belonging

Over the course of the surveys, participants' sense of belonging to university and to Computer Science improved. However, the scores for university were consistently slightly higher than those for Computer Science.





Strengths of the programme

All aspects of the programme were reported as most beneficial by at least one participant, with the number of votes spread roughly equally between them.

Participants left the following comments about each part of the programme:

- Mentoring
    - "My mentor was really helpful and answered all of my questions and queries."

- Discussion group sessions
    - “I really enjoyed being able to share my knowledge on subjects as well as growing it. I felt like it was a judgement free zone and I really liked the fact that we could ask questions in the end and send in questions that we had after.”
    - “It exposed me to a wide range of topics I had not explored before.”
    - “It gave me a taste of studying computer science which really interested me.”

- Independent research project
    - “It allowed me to explore a topic in depth and write at length, and is something I talked about at length in my personal statement.”
    - “I really enjoyed being able to delve into a specific area of interest with the support of a mentor.”

- Residential
    - “The residential really helped me to put things into perspective about whether Cambridge could be the place for me.”
    - “I was able to experience Cambridge in person as well as talk to current students about their experience, which really helped me feel that I could also fit in at Cambridge unlike what I previously thought.”

Learning points
In their feedback, several participants said that they would have liked to have received more general application advice (e.g. how to write a personal statement), clearer deadlines for the research project and more sessions (discussion groups and mentoring).

One of the main problems we faced was engagement. Out of 20 participants, 15 submitted a completed research project and only 13 attended the full residential. Attendance at discussion groups was also an issue, with only 13 students attending three or more sessions (out of five), and very few ever switching on their cameras.

Before the programme started, we also faced issues with parents allowing the students to take part in the programme due to reservations that they had about the residential component.

Lastly, many students had to leave sessions early due to Ramadan. In future, running the sessions earlier (finishing by 6pm) should resolve this.

Possible changes for next time
Perhaps a phased approach (like STEM SMART) where only the students who engage the most are able to participate in later stages would help with the issue of engagement.

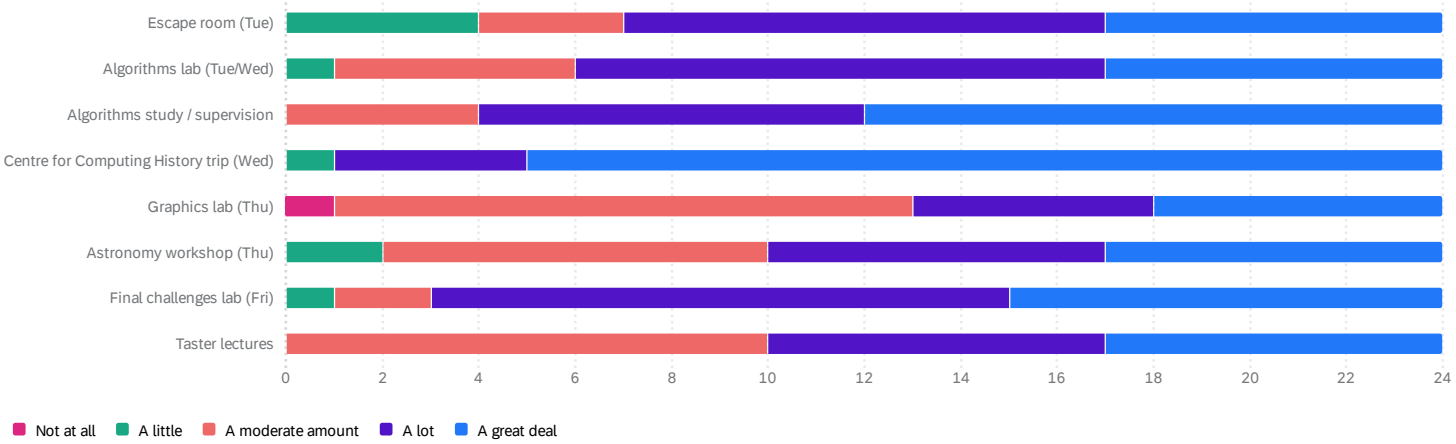
It may be wise to anticipate that some students will drop out of the programme. This year we had four students drop out, and one student who did not engage at all after the first online event. The students who dropped out cited a lack of time as a barrier, in particular two students highlighted their caring responsibilities as the reason for this.

As a way to make the programme more inclusive to those who do not have the time to take part in mentoring, writing a research project and the residential, perhaps we could offer that students join only certain parts of the programme, notably the discussion groups. These sessions could easily have a much larger capacity, while the mentoring and residential have a strict limit.

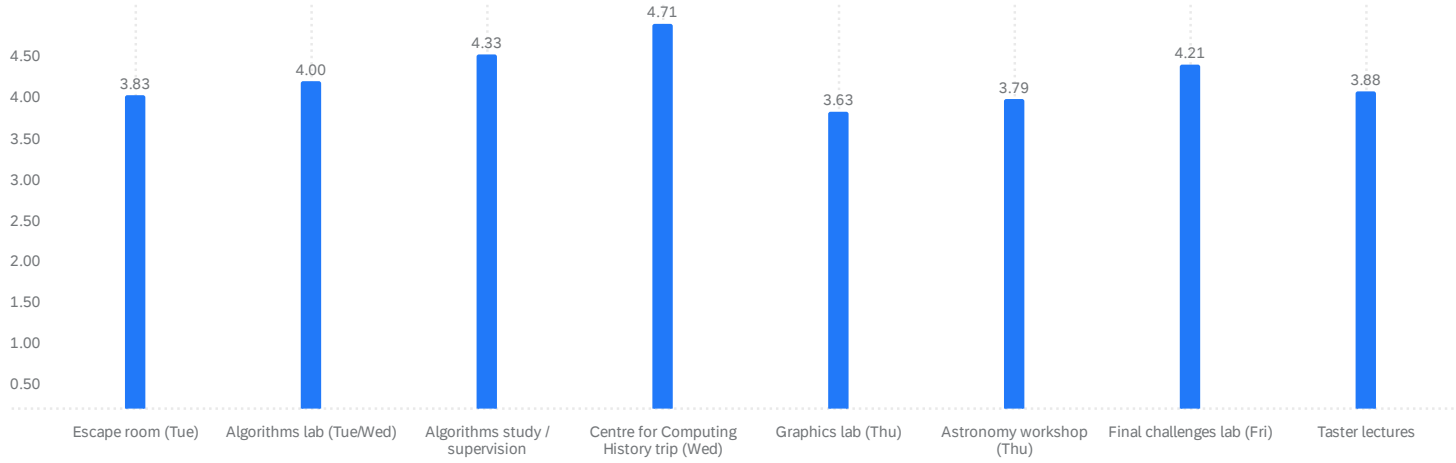
STSS feedback / Page 1

Responses: 24

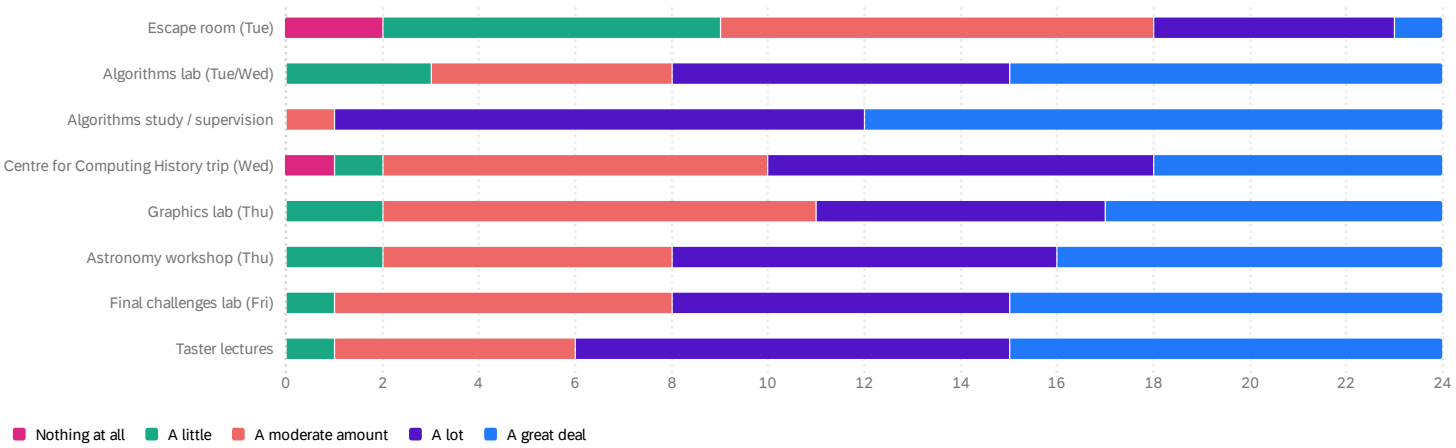
Please rate the following sessions based on how much you enjoyed them 24



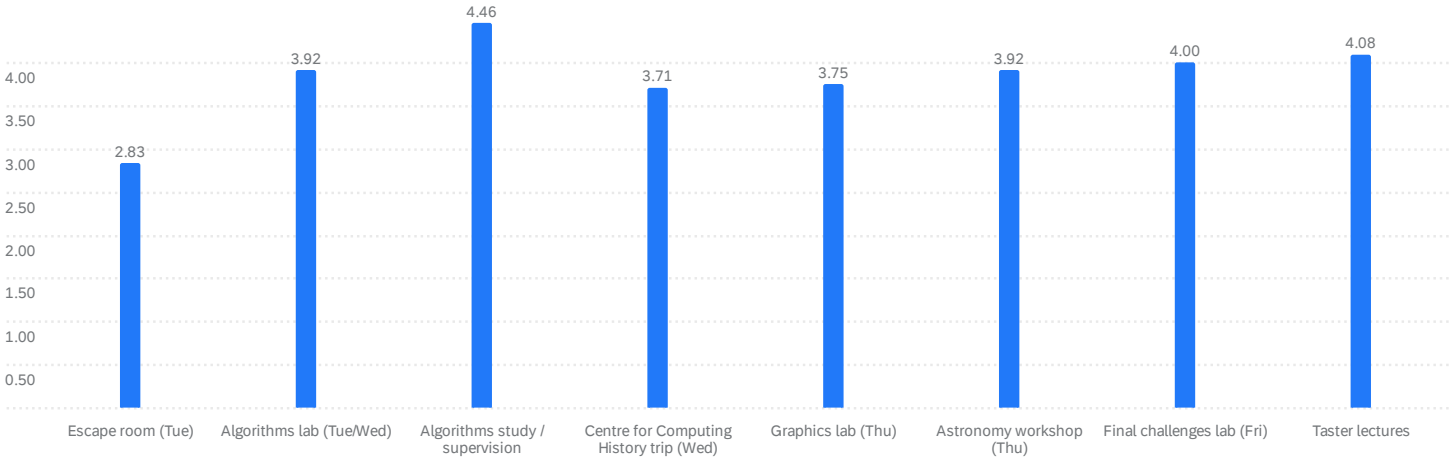
Please rate the following sessions based on how much you enjoyed them



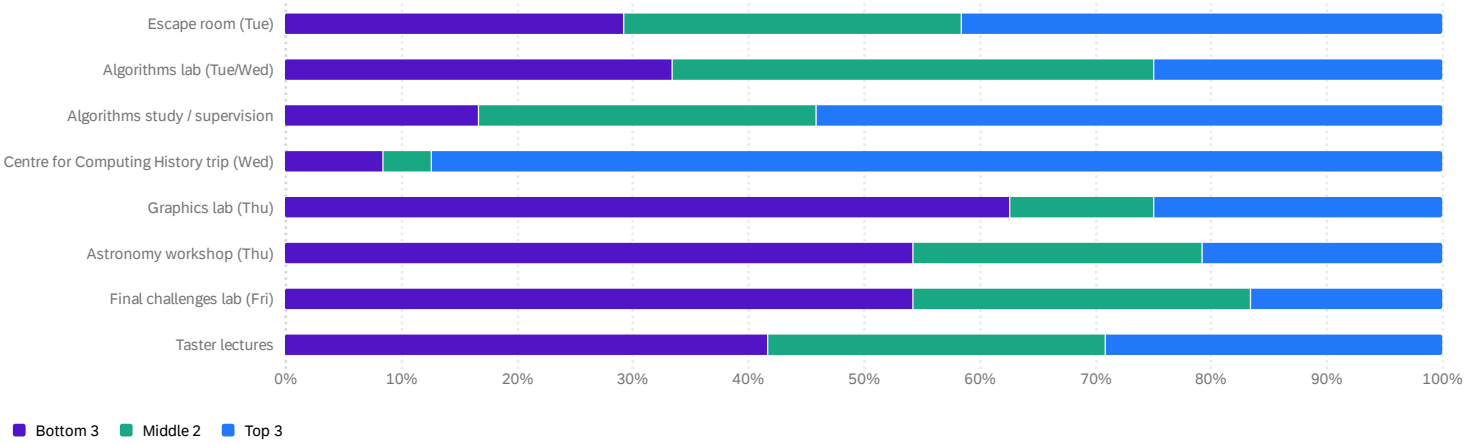
Please rate the following sessions based on how much you learnt 24



Please rate the following sessions based on how much you learnt



Rank the sessions with your favourite on top and least favourite on the bottom 24



Rank the sessions with your favourite on top and least favourite on the bottom 24

Rank the sessions with your favourite on top and least favourite on the bot...	Ranked in the top 3 positions	Ranked in the centre (middle 2 positions)	Ranked in the bottom 3 positions
Escape room (Tue)	42%	29%	29%
Algorithms lab (Tue/Wed)	25%	42%	33%
Algorithms study / supervision	54%	29%	17%
Centre for Computing History trip (Wed)	88%	4%	8%
Graphics lab (Thu)	25%	13%	63%
Astronomy workshop (Thu)	21%	25%	54%
Final challenges lab (Fri)	17%	29%	54%
Taster lectures	29%	29%	42%

How would you rate the difficulty of the material you learnt in the lab sessions? 1 = "Too easy, I knew it already" 5 = "Too hard, I couldn't understand any of it"
24

How would you rate the difficulty of the material you learnt in the lab ses...	Average	Minimum	Maximum
Algorithms lab	2.54	1.00	4.00
Graphics lab	3.00	2.00	5.00
Final challenges lab	2.96	1.00	5.00

What was the best thing about the summer school? 24

What was the best thing about the summer school?

Being actually treated like a University student. Really informative experience.

Computing history centre trip

All the lecturers and supporting staff were very kind, supportive and welcoming. The students were also fun to get along with. It was really helpful to get an insight to what uni is like so the lectures and coding were probably the best.

talking to ambassadors about compsci content and student life at cambridge, the taster lecturs were amazing and really insightful.

Learning about how Cambridge works as a whole and talking to the CAMbassadors, They were super friendly and informative. They were a blessing to have in this journey.

I really enjoyed making new friends and discovering different sides of Computer Science.

The best thing was the Algorithms Supervision as it was amazing to get feedback straight away and felt more confident asking questions in small groups.

learning more about what compsci looks like as a degree and coding!

Lectures about quantum computing and algorithms

learning about algorithms and their applications to all areas of computer science.

the algorithms supervision

I really liked the lectures on the different topics. It gave a glimpse into undergraduate life and how you are taught. Other than that, the overall experience of typical university life was great . The independence given to us for meeting at certain times and tending your own needs made it feel realistic.

The computing history trip was very fun.

formal dinner

chance to learn code and experience lectures

the wide range of activities and topic we experienced and learned. Getting a taste for the university life.

What was the best thing about the summer school?

Academically, The Supervisions and Escape room. It allowed us to engage with the questions at a high-level in a group setting.

Culture and atmosphere

Experiencing student life at the college

Meeting other people

Feeling how student life will be like in an average week at Cambridge and seeing if it appeals to you

My favourite part activity was the trip to the Centre of Computing History, being both educational and incredibly fun. The lectures were also really enjoyable, the one I liked the most being about quantum computers. The talks were also really useful, I now feel even more confident about applying to Cambridge. Formal dinner was yummy!

I really enjoyed the trip to the computing history museum and i think the formal dinner was also really good

The computing history trip and the taster lecture about the underground markets

Was there anything that we could have done better? 17

Was there anything that we could have done better?

Make the days less compact. Like some of the days were completely full of activities/events. Even though majority of them were really useful I think they could have been spaces out more and we could have had some more time to ourselves to relax and chill. Also some transport from the college to the Computer Science buildings. A half an hour walk there and half an hour walk back is quite tiring to do everyday.

I think the Comp Sci students could've been given a small break after returning to college as all other students get downtime in their room whereas we have to go straight into other workshops which left most of us exhausted.

Transportation between the college and Computer Science department.

I wish the taster sessions were a bit more entertaining.

Wi-fi doesn't work at Saint John's.

more instructions for challenge tasks for those who haven't coded before

Book coach rides from the college to the lab instead of walking

maybe more supervision work

I think that the journeys to and from the computer lab was quite tiring for each day, however it did let us look around the city while on the walk.

Games competition

more examples of codes for beginners

Was there anything that we could have done better?

Dont make us walk for soooooo long to the department

Higher choice and diversity of food

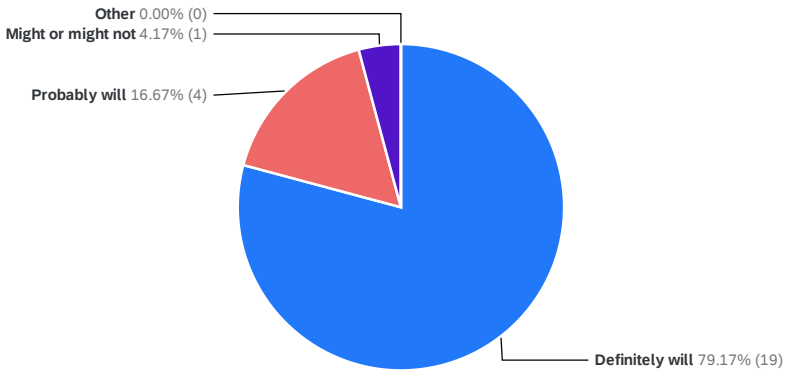
Make all people wear formal clothing for formal dinner; Let us take Raspberry pi's to our rooms so we could play around with them during free time

The queues for meals were long

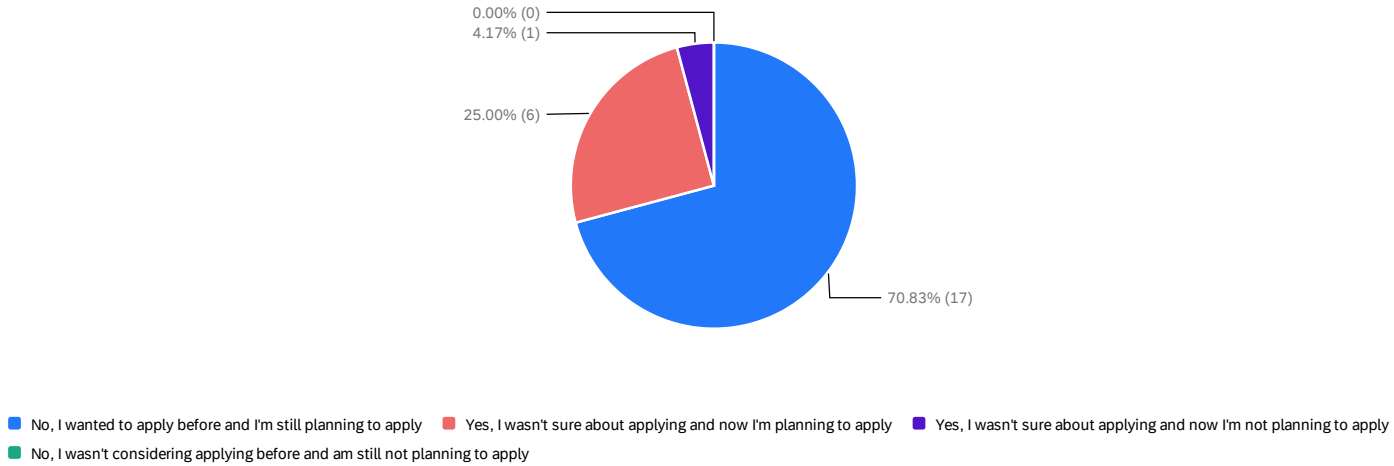
Not enough time to explore the city

there wasn't a lot of free time to really explore the city during the trip, it felt like there wasn't a lot of time spent actually in my room and i didn't sleep as much as i am used to because of how fast paced and packed every day was, there never really was a time to unwind.

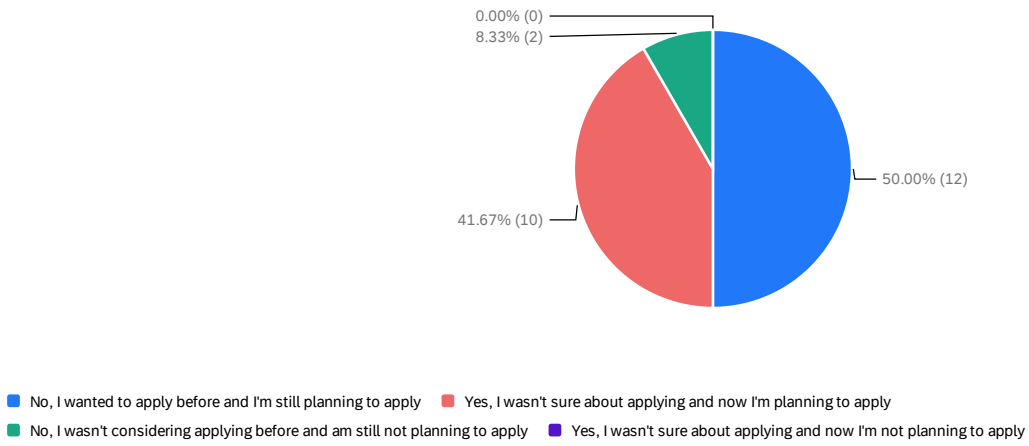
Will you apply to study Computer Science at university?



Has being a part of this summer school changed your mind about applying to study Computer Science?



Has being a part of this summer school changed your mind about applying to Cambridge?



Do you have any other comments? 6

Do you have any other comments?

Thanks for setting up an amazing experience :)

Bless the CAMbassadors

not really but thanks for everything that you have done for us.

i appreciate the support and lectures from Cambridge and the summer school

The highlight of my summer

this was a really memorable week, thank you so much for it :)

Outreach strategy

The Outreach Committee Terms of Reference state:

> *'The Outreach Committee aims to promote Computer Science at Cambridge, and the subject more broadly, to a diverse range of potential applicants to our undergraduate and postgraduate degrees. The overall goal is to improve diversity in the student population, raising aspirations and encouraging participation from all applicants, in particular those from disadvantaged and underrepresented backgrounds.'*

Undergraduate and postgraduate outreach require different strategies, so we distinguish between these two types of programme in our outreach strategy. At both undergraduate and postgraduate levels, the key cohort from underrepresented backgrounds are female students, so one component of our outreach strategy targets this group, with another focusing those from disadvantaged backgrounds more generally.

The Department admits postgraduate students and it is natural for them to visit the Department's website for information about admissions. Whilst undergraduate students are admitted by colleges, they will also typically look at the Department's website to find out about their course and admissions more generally. The website should therefore be seen as a strategic asset to further outreach aims for all groups of students.

Undergraduate students

It should be noted that not all outreach programmes need to target students directly and that providing outreach activities and classroom resources for teachers can be a cost-effective method (both financially and in terms of time) to reach a large number of students.

Students from disadvantaged backgrounds

Our strategy for outreach to this cohort aims to raise aspiration. This could mean giving students the confidence to apply to Cambridge by demystifying the university or providing them with the tools to make competitive applications to university more broadly.

Within this category could be programmes that give students experience of university life, alongside learning Computer Science concepts and especially those that provide opportunities to find out more about the University of Cambridge.

Female students

Our belief is that female students in the UK lose interest in Computer Science early in secondary education, and thus our strategy here aims to maintain interest in the subject by targeting outreach activities to cohorts of students at a point where they are still interested. This could mean starting to work with primary school pupils, or those in years 7 & 8. It also implies that there needs to be regular interaction with students engaging with the outreach programmes, so as to continuously reaffirm interest in the subject and provide positive role models.

Postgraduate students

Outreach programmes for postgraduate students aim to diversify the student population in postgraduate degrees, both at Master's level and PhD. Aside from programmes that we run ourselves, there may be opportunities to work with non-research universities to target certain cohorts of students. Funding postgraduate study is of particular concern given high course fees and the lack of student loans and thus information should be provided on funding sources, to avoid costs being a barrier to applicants.

The main aim of outreach for this group of students is to provide opportunities for them to consider further study and research as a realistic career choice beyond their undergraduate degrees. This may mean introducing students to research and what life as a research student entails, or it may mean giving them greater opportunities to experience a research environment and advanced topics they may not have already had access to. For female students, in particular, there is a need to provide role models whose stories can show potential applicants that postgraduate study could be an option for them.

Funding and partnerships

While many activities can be delivered on the Department's outreach budget, we need to recognise that funds are limited. We should, therefore, pursue opportunities for additional funding where that will increase the reach or quality of our programmes, or make them viable in the first place, provided that the time and effort spent obtaining funding is commensurate with the benefits that the extra funding brings. This may mean seeking donations for specific programmes through the Department's contacts (such as alumni or industry, both in conjunction with CUDAR) or applying to advertised funding streams from third parties, provided that any conditions attached are acceptable to the Department and aligned with this outreach strategy.

In a similar vein, partnerships with outside organisations can provide additional capacity for outreach programmes or an opportunity to leverage their links with target groups of students. There may be times where organisations approach us to run joint activities or, in contrast, there may be situations where we wish to engage with others to help deliver a programme. In either case, as with additional funding streams, any activities delivered with third parties should be aligned with this strategy, be acceptable to the Department and their viability evaluated alongside all other activities given the Department's capacity to run and set priorities for outreach programmes.