

S1: Survey sent to the students at the end of their report submission

Remote Labs Survey 2020/21 - Undergrad... [projects](#) [Contacts](#) [Actions](#) [Library](#) [Help](#) 9+

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Remote Labs Survey 2020/21 - Undergraduate questions

IQ Score: Fair

Block 4 Block Options

CREATE Labs-Student Survey

Q25 We are conducting this survey to get your feedback on the implementation of CREATE Labs. Your responses will be confidential and any identifying information will not be shared or made public. Your participation is entirely voluntary and you can terminate the survey at any point without giving any reason. You will not be disadvantaged or advantaged by providing your feedback. Your anonymous responses will be analysed by Dr. Vijesh Bhute (who is not involved in UG Teaching Lab) and analysis will be shared with the UG Teaching Lab team.

This survey should not take more than 5 minutes. Your feedback will help us understand the relevance of different aspects of CREATE lab. We really appreciate your participation in this survey.

Q27 Please choose your year of study:

1st year

2nd year

3rd year

Display This Question:
If Please choose your year of study: 1st year is Selected

Q27 Please choose your your experiment:

Cooling loop conundrum

Display This Question:
If Please choose your year of study: 2nd year is Selected

Q35 Please choose your your experiment:

Continuous water purification problem

Display This Question:
If Please choose your year of study: 3rd year is Selected

Q28 Please choose your your experiment:

Mixing system design

[Add Block](#)

▼ Default Question Block

Block Options ▼

- Q1 What is your internet download speed?
(Can be checked at: <https://www.speedtest.net>)
- ⚙️
- <10 Mb/s
 - >10Mb/s

- Q33 What is your internet upload speed?
(Can be checked at: <https://www.speedtest.net>)
- ⚙️
- <1 Mb/s
 - 1-5 Mb/s
 - 6-10 Mb/s
 - >10 Mb/s

- Q3 What device did you use throughout the experiment?
- ⚙️
- Laptop - college issued
 - Laptop - personal - Windows
 - Laptop - personal - Mac
 - Tablet
 - Phone - Android
 - Phone - IOS

Add Block

▼ Block 6

Block Options ▼

■ Q29 How effectively were you able to :

⚙️

📷

	Not effective at all	Slightly effective	Moderately effective	Very effective	Extremely effective
	0	1	2	3	4
Communicate with your team members?					
Communicate with the GTA					
Complete the required tasks					
Access all the resources					

◀ ▶

How confident are you that you can :

Q41

Not at all Slightly confident Somewhat confident Quite confident Extremely confident

0 1 2 3 4

Apply engineering concepts in labs					
Understand the key concepts used in your experiment					
Fix issues if something goes wrong in your experiment					
Analyse data collected from CREATE labs					

Add Block

Block 4 Block Options

Display This Question:
If Please choose your year of study: 1st year is Not Selected

Q32

Reflect on your experience from previous year(s) for in-person lab, please rate your ability to do the following:

Much worse Slightly worse Neither worse nor better Slightly better Much better


0 1 2 3 4

Communicate with your team members?					
Communicate with the GTA					
Complete the required tasks					
Access all the resources					


Add Block

Block 3 Block Options ▾


Q22 Please express how the hybrid lab experience can be improved in the future



Q24 Please highlight what part(s) of the hybrid lab you liked a lot



Q26 Please highlight what part(s) of the hybrid lab you did not like



[Add Block](#)

End of Survey [Survey Termination Options...](#)

S2: Survey sent to the GTAs at the end of their experiments

Remote Labs Survey 2020/21 - GTA Que... jects Contacts Actions Library Help 9+

Survey Actions Distributions Data & Analysis Reports

You are currently making edits to this survey. Changes won't be live until you publish. ✕

Remote Labs Survey 2020/21 - GTA Questions

iQ Score: Fair ● Draft Version

▼ Default Question Block Block Options ▼

Q16 CREATE Labs-GTA Survey

We are conducting this survey to get your feedback on the implementation of CREATE Labs. This survey should not take more than 10 minutes. Your participation is entirely voluntary and you can terminate the survey at any point without giving any reason. You will not be disadvantaged or advantaged by providing your feedback. Your individual responses will be seen and analysed by Dr. Vijesh Bhute (who is not involved in UG Teaching Lab). The analyzed data will be shared with co-investigators of the study (Dr. Umang Shah, Dr. James Campbell, and Sampad Sengupta) after You can email Dr Vijesh Bhute (v.bhute@imperial.ac.uk) anytime before this date, if you wish to withdraw your responses. Please select the below consent checkbox if you agree to participate in this study.

Q43 I consent to participate in the study and I understand that I can withdraw my responses prior to if I do not wish my data to be included in the study.

Yes, take me to survey

No, end the survey

Condition: No, end the survey is Selected. Skip To: End of Survey.

[Add Block](#)

▼ Block 4 Block Options ▼

Q36 Please select which Undergraduate Labs are you supporting as a GTA this year

Knowledge Labs

Discovery Labs

Q1 Have you previously been a GTA for undergraduate labs?

Yes

No

Q3 What best describes the role of a GTA in CREATE labs now?

Teacher

Facilitator

Supervisor

Q6 Which visual medium did students prefer to use?

- HoloLens view
- PTZ camera view
- MS Teams view

Q8 What proportion of the entire duration of the experiment was the HoloLens being used as a means of visualisation (showing something)?

- >80% of the time
- <80% and >60% of the time
- <60% and >40% of the time
- <40% and >20% of the time
- <20% of the time

Q14 What proportion of the entire duration of the experiment was the HoloLens being used as a means of communication?

- >80% of the time
- <80% and >60% of the time
- <60% and >40% of the time
- <40% and >20% of the time
- <20% of the time

[Add Block](#)

▼ Block 1 Block Options ▼

Display This Question:

If Please select which Undergraduate Labs are you supporting as a GTA this year Knowledge Labs Is Selected ▼

Q15 Please choose the experiment you are responsible for




















Continuous water purification problem ▼

Display This Question:

If Please select which Undergraduate Labs are you supporting as a GTA this year Discovery Labs Is Selected ▼

Q33 Please choose the experiment you are responsible for

Mixing system design ▼


	Display This Question: If Have you previously been a GTA for undergraduate labs? Yes Is Selected 
	Q2 Were you responsible for the same experiment previously as you are now? <input type="radio"/> Yes <input type="radio"/> No
	Display This Question: If Have you previously been a GTA for undergraduate labs? Yes Is Selected 
	Q9 Based on your previous experience, please rate your agreement with the following statement - Students were more responsive whilst carrying out labs in-person.
	Strongly disagree Somewhat disagree Neither agree nor disagree Somewhat agree Strongly agree <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
	Display This Question: If Have you previously been a GTA for undergraduate labs? Yes Is Selected 
	Q10 Based on your previous experience, please rate your agreement with the following statement - The need for teamwork and coordination within lab groups is higher in CREATE labs than previous in-person labs.
	Strongly disagree Somewhat disagree Neither agree nor disagree Somewhat agree Strongly agree <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
	Display This Question: If Have you previously been a GTA for undergraduate labs? Yes Is Selected 
	Q11 Based on your previous experience, please rate your agreement with the following statement - You as a GTA had to familiarise yourself with the experiment more than you had needed to in previous years.
	Strongly disagree Somewhat disagree Neither agree nor disagree Somewhat agree Strongly agree <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>
	Display This Question: If Have you previously been a GTA for undergraduate labs? Yes Is Selected 
	Q12 Based on your previous experience, please rate your agreement with the following statement - The time required to carry out each experiment has significantly increased compared to previous years.
	Strongly disagree Somewhat disagree Neither agree nor disagree Somewhat agree Strongly agree <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>

Display This Question:

If Were you responsible for the same experiment previously as you are now? Yes Is Selected ▼

Q41 Please choose the option which best represents how well the students are able to fulfil their learning outcomes compared to previous years for the same experiment.

Much worse
 Somewhat worse
 About the same
 Somewhat better
 Much better




Display This Question:

If Were you responsible for the same experiment previously as you are now? Yes Is Selected ▼

Q42 Please choose the option which best represents how well the students are able to communicate and work as a group compared to previous years for the same experiment.

Much worse
 Somewhat worse
 About the same
 Somewhat better
 Much better




[Add Block](#)

▼ Block 3 Block Options ▼


Q4 Please rate the ability of students to communicate their instructions to you.

Not well at all
 Slightly well
 Moderately well
 Very well
 Extremely well




Q13 Please rate the ability of students to coordinate with each other via Teams (and their preferred media)

Not well at all
 Slightly well
 Moderately well
 Very well
 Extremely well




Q5 Please rate the ability of students to work well as a team

















Not well at all
 Slightly well
 Moderately well
 Very well
 Extremely well



Q7 Please rate this statement: All students engaged with experiments in CREATE Labs

Strongly disagree
 Somewhat disagree
 Neither agree nor disagree
 Somewhat agree
 Strongly agree



<p>■ Q22</p> <p> </p>	<p>Please rate how well the following features worked throughout the experiment - Hololens view</p> <p>Not well at all Slightly well Moderately well Very well Extremely well</p> <p><input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>
<p>■ Q24</p> <p> </p>	<p>Please rate how well the following features worked throughout the experiment - Mounted camera (PTZ camera) view</p> <p>Not well at all Slightly well Moderately well Very well Extremely well</p> <p><input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>
<p>■ Q28</p> <p> </p>	<p>Please rate how well the following features worked throughout the experiment - QR codes</p> <p>Not well at all Slightly well Moderately well Very well Extremely well</p> <p><input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>
<p>■ Q30</p> <p> </p>	<p>Please rate how well the following features worked throughout the experiment - Remote access using MS Teams</p> <p>Not well at all Slightly well Moderately well Very well Extremely well</p> <p><input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>
<p>■ Q32</p> <p> </p>	<p>Please rate how well the following features worked throughout the experiment - Two way communication</p> <p>Not well at all Slightly well Moderately well Very well Extremely well</p> <p><input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>
<p>■ Q34</p> <p> </p>	<p>Please rate your agreements with the following statements - I've experienced dizziness during the experiment</p> <p>A great deal A lot A moderate amount A little None at all</p> <p><input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>
<p>■ Q36</p> <p> </p>	<p>Please rate your agreements with the following statements - I've experienced eye soreness during the experiment</p> <p>A great deal A lot A moderate amount A little None at all</p> <p><input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>
<p>■ Q38</p> <p> </p>	<p>Please rate your agreements with the following statements - I've experienced back pain during the experiment</p> <p>A great deal A lot A moderate amount A little None at all</p> <p><input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/></p>

[Add Block](#)

▼ Block 2

Block Options ▼



Please share if something didn't work very well in your experiment in relation to Technology

Q17



Please share if something worked very well in your experiment in relation to Technology

Q19



Please suggest how we can improve the delivery of CREATE Labs

Q20



[Add Block](#)



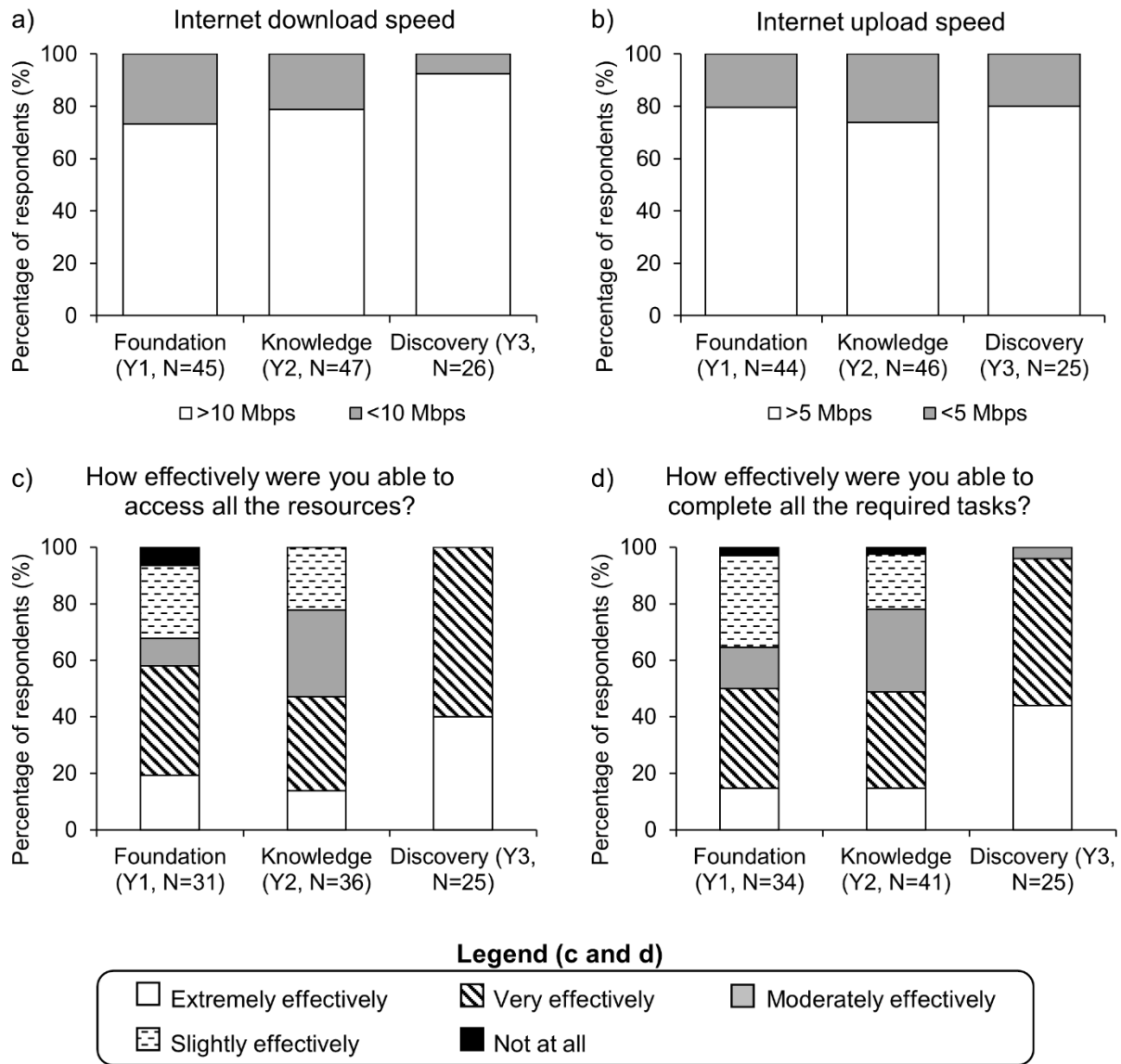
[End of Survey](#)

[Survey Termination Options...](#)

S3: The ability to access resources and complete the tasks was not influenced by internet speed

The technical advancements introduced in CREATE labs meant that a reliable internet connection was important for the delivery. While students had been made aware of minimum requirements before the start of the labs, it was not known in advance whether these had been met, hence a part of the survey was dedicated to assessing internet connection quality. Across the years, the majority of students reported to have at least 10 Mbps download speed (79.66%) and 5 Mbps upload speed (77.4%) (Supplementary Figure 1a, b). The percentage of students who reported to have greater than 10 Mbps download speed was higher in third year (92.31%) as compared to first year (73.33%) and second year (78.72%). The percentage of students who reported more than 5 Mbps upload speed was similar across the three years with slightly lower percentage in second year.

We also asked students to rate their ability to access different resources as well as accomplish the tasks (Supplementary Figure 1c, d). Both these aspects can be potentially influenced by internet connectivity. Surprisingly, we did not observe any significant correlation between internet speed and student responses to these questions. Instead, there was a year-dependent increase in perceived effectiveness with the majority of third year students rating high levels of effectiveness in accessing resources and completing tasks. Further discussion with GTAs and the teaching team revealed that issues with resource access were likely due to the need to install different software in the first- and second-year labs which was not essential for third-year labs.



Supplementary Figure 1: Majority of students can access resources effectively. Student responses to questions related to internet a) download speed, b) upload speed, effectiveness in c) accessing all the resources, and d) completing all the required tasks.