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# NATIONAL DESIGN STUDIO SURVEY

## Findings

October 2020

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## 1. INTRODUCTION

### 1.1 Introduction to the research

The University of Bath has undertaken a survey of the impact of COVID-19 on studio teaching in architectural education. 798 students and 120 teaching staff at 29 schools of architecture responded to the questionnaire. This allowed us to construct an overview of the challenges and opportunities faced in a post COVID-19 world and provide insight into how schools of architecture might respond.

We wish to thank the Standing Conference of Heads of Schools of Architecture (SCHOSA) for their financial support of the survey and the use of their network in distributing the questionnaires. We would also like to thank all respondents. Without your time and effort, we would not have such a rich and extensive set of data.

Across all items surveyed, satisfaction among students had decreased following the move to remote teaching. Most significantly affected was the ability for students to learn from each other, to feel part of a community and to access the emotional and motivational support of their peers. This was echoed in responses from tutors.

While in many cases universities were commended for adapting to online teaching, the absence of a physical workplace resulted in an overall detrimental impact on student learning. There was a 58% fall in student satisfaction after the move to online learning and only 7% of students preferred online delivery over its face-to-face equivalent.

The story was similar for teaching staff. While 39% of tutors were satisfied with their online teaching experience, this fell from 95% satisfaction of in person delivery. Only 4% of tutors preferred online delivery to its face-to-face equivalent.

This report describes the findings of the largest design studio survey of its kind. It examines the challenges faced by students and staff in responding to the national closure of physical design studios and explores opportunities for the future. In the likelihood that social distancing measures will continue into 2021, these findings provide information that may help schools of architecture develop appropriate responses in the post-COVID 19 environment.

## 1.2 Background

The design studio is the primary learning environment for architectural education in the UK. The accreditation provided by the Royal Institute of British Architects (RIBA) explicitly requires that all validated RIBA part 1 and part 2 courses should have design studio projects constitute a minimum of half of all assessment (RIBA, 2014). It is the “signature pedagogy” of the profession, dominating the preparation of future architects encouraging them to think (like an architect), perform (like an architect) and to act with integrity (Shulman, 2005).

Yet the design studio is more than just the site for this learning. While Donald Schön’s seminal work (Schön, 1985) focussed on the formal interactions between student and tutor in the studio setting, more recent scholars have critiqued this limited conception of learning (Webster, 2008) and emphasised the complex, interdependent pedagogy of the studio (Brown, 2020). In a meta-study of design studios in architecture and the arts, Corazzo (2019) identified six key themes that the material space of the design studio enabled: a place to make artefacts; a bridge between academic and professional contexts; to provide meaning to educational activities; to enable or constrain experience and interaction; to provide the background to learning; and to shape disciplinary identities. An implicit belief in a resultant “studio culture” has governed the pedagogic approaches of architectural education institutions in the UK despite a limited definition of its parameters (Vowles, Low and Doron, 2012). Nevertheless, the design studio is widely accepted to be a rich learning medium which nurtures peer interaction and independent learning (McClean, 2009; Vowles, Low and Doron, 2012).

The closure of design studios in March 2020 in response to the COVID-19 pandemic posed a unique threat for architectural education. Modern digital communications technologies have allowed many formal teaching interactions to move to online. Tutorials and seminars are conducted through *Skype*, *MS Teams* or *Zoom*, while recording technologies such as *Panopto* have allowed lectures to be recorded, streamed or recycled. Many students also engage in predominantly digitised workflows. 2D drafting and 3D modelling software has in many cases negated the need for large scale drawings or even physical modelling. Despite the increasing prevalence of virtual design processes, the spatial dimension of the studio has remained central to the signature pedagogy of the architectural profession (Corazzo, 2019; Brown, 2020).

Attempts to replicate the design studio experience remotely have often focussed on generating digital spaces where students can share work and interact asynchronously (Lotz, Jones and Holden, 2015). While there have been reported success in virtual online studios (Abbasi et al.; Lahti and Seitamaa-Hakkarainen, 2014; Salman et al., 2017; Lotz, Jones and Holden, 2019; Jones, Lotz and Holden, 2020) and blended approaches (Mohammed, 2017; Rodriguez, Hudson and Niblock, 2018), these typically utilise formal online spaces (such as e-portfolios or Moodle databases) to simulate peer interaction. The authors are unaware of any studies which take a sample of students familiar with the physical design studio and compare this with a move to remote learning. This provides a unique opportunity to enhance both remote and face-to-face learning through a comparative understanding of the successes of each mode of delivery.

### 1.3 Methods

#### 1.3.1 Sampling

A sample of 798 students and 120 tutors from 29 UK universities were surveyed. The questionnaire was sent to all members of SCHOSA to distribute in their respective schools. Demographic data were also collected to enable categorisation and re-sampling after collection.

#### 1.3.2 Survey questionnaire

The survey utilised a range of different question types depending on the data being collected. These are outlined in table 1.1.1. All surveys were administered online through an independent online platform.

Table 1.1.1: Question types and uses.

Question type	Use
<b>Multiple choice</b>	Used for questions with limited number of possible options (such as types of teaching activity) or questions with predefined categorisation (such as gender or ethnic group).
<b>Likert scales and items</b>	Used for comparative questions on satisfaction. Individual items focussed on specific activities or event. These were grouped to form multi-item Likert scales relating to a theme.
<b>Limited text</b>	Used for questions requiring continuous scales (such as time or distance) or short answer responses (such as which University the respondent attended).
<b>Open text</b>	Used for open ended responses to questions about the student and tutor experience.

The primary mode of data collection was through Likert scales, a collection of individual items based around a single theme which can be aggregated to form an overall opinion (Harpe, 2015). Each item was divided into a 'stem statement' and a 'response scale' (Johns, 2010), in most cases asking for the respondent's level of satisfaction with each metric. These metrics were grouped into themes which constituted individual Likert scales.

#### 1.3.3 Analysis

This report presents an initial analysis focussing on cumulative responses to individual items and treats the data as ordinal (Boone and Boone, 2012). Data are presented in mostly graphical form. Likert items are assumed to be non-parametric and are presented using descriptive statistical measures such as cumulative responses, differences between related items and total satisfaction. When using terms such as satisfaction, the survey sums all positive responses ("fairly satisfied" and "very satisfied") without weighting them which would imply magnitude or interval data.

#### 1.3.4 Qualitative data

Over 4000 individual qualitative free text responses were analysed. Thematic analysis was used adopting the the six stages described by Braun and Clarke (2006). Familiarisation was achieved through reading through the comments, and these were then categorised into initial codes. In many



cases, a single response might contain multiple pieces of coded data. Codes were then collated into themes. These themes were then reviewed once all data had been coded. This enhanced the definition of each theme. Finally, the report sought to concisely capture these themes. Coding was done at a semantic level (i.e. hidden meaning in the was assumed). This was appropriate to the concise and precise nature of the comments. The themes were quantified (Boyatzis, 1998) to identify the most common trends.

#### *1.3.5 Research ethics*

All data were collected anonymously, and responses contained no data which could identify individuals. Individuals were made aware of the data storage practices at the start of the research and it was made clear they could withdraw from the survey at any point before submitting. Due to the anonymous collection procedure, data could not be removed relating to an individual after submission. Individuals could not be directly nor indirectly identified so the data were excluded from the GDPR.

## 1.4 Key findings

*1. Teaching in the physical design studio is considered integral to architectural education by students and staff.*

The findings show that the design studio is still central to architectural education. Total satisfaction fell in the move to online learning across every metric surveyed. Only 7% of students and 4% of staff preferred remote delivery to face-to-face teaching. This was despite only 25% of students surveyed being offered a permanent workspace in the studio. Students and staff commonly described the perceived loss of “studio culture”.

*2. Peer learning and support networks were particularly affected by the closure of design studios.*

The move to remote learning severed peer networks and support systems. Students described a lack of community, poor motivation and being unable to benchmark their progress. For example, total satisfaction with seeing the work of students in their year group fell by 72% following the move to online learning; the largest fall in any metric. These concerns were echoed by teaching staff. The loss of peer support networks also had impacts on student mental health and wellbeing; the move to remote studio teaching inducing a sense of isolation in many of the respondents.

*3. Previous studio provision correlated with the overall satisfaction of remote teaching.*

Where students typically worked was seen to correlate with changes in satisfaction. Students who typically worked full-time in their studio reported the largest fall in satisfaction (76%). Those who typically worked at home still reported a 2% fall in satisfaction after the move to online working.

*4. There was no significant difference in the demographic groups surveyed.*

The survey found that the demographic groups of gender, ethnic group, study status (home, EU or overseas), were not statistically significant different in changes in overall satisfaction.

*5. The practicality and convenience of remote learning was considered its biggest advantage*

Both students and staff reported some practical aspects of remote teaching and learning as being advantageous. These included no need to commute, savings in cost and time, flexible working and enhance work life balance.

*6. The quality of student and staff interactions was compromised.*

While both students and staff perceived the quality of formal teaching interactions (reviews, juries, crits and tutorials) to have fallen after the move to online teaching, staff highlighted a concern with the nature of these interactions. Being able to “teach through drawing” was considered essential to architectural tutorials and significantly compromised through the move to remote teaching. Establishing relationships with students was also seen to be adversely affected by the move.

*7. Remote delivery offers new teaching opportunities which could be exploited.*

For students, working remotely offered the opportunity to develop digital skills, improve online resources and enhance course organisation. For staff, teaching remotely removed geographic limitations and offered opportunities to introduce global voices to the local design studios.

*8. Enabling access to physical and digital resources for students and staff is essential for the success of remote teaching.*

Staff and students reported that providing access to digital and physical resources would significantly enhance their remote learning experience. This included access to hardware and the necessary software that previously would have been provided on campus. Staff frequently articulated the need for the resources and training to replicate in person teaching methods, particularly being able to draw remotely.

## 2. STUDENT SATISFACTION

### 2.1 Summary

798 students responded to the survey from 25 universities. On average, they spend 26.4 hours a week in the design studio, before COVID-19 restrictions were implemented. Overall satisfaction with learning fell by 58% following the move to remote teaching and only 7% of students preferred remote delivery to face-to-face teaching.

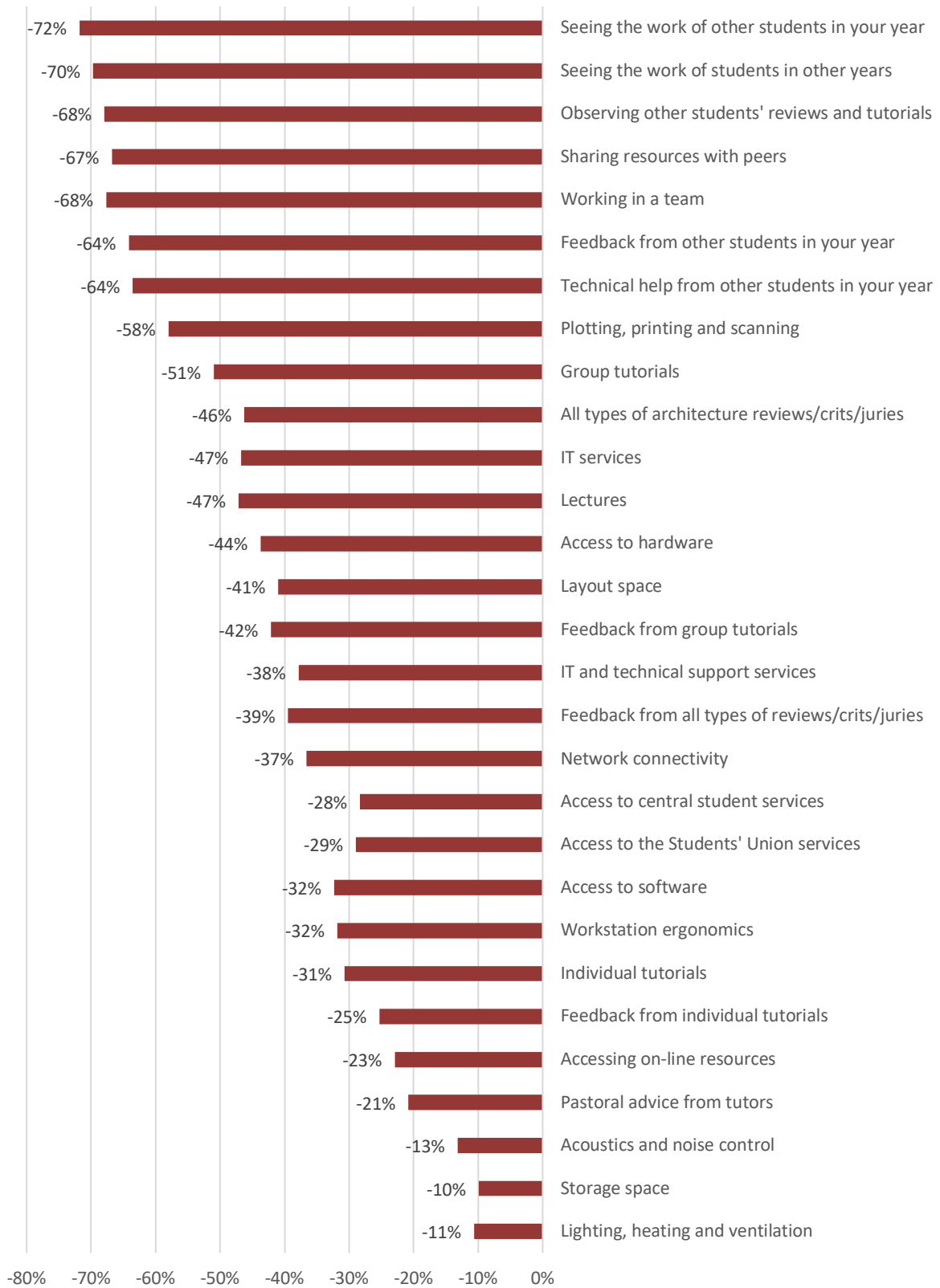
Every factor questioned was considered to have been negatively affected by the move to online teaching. Peer learning and peer support were most negatively affected by the closure of the design studios.

All aspects of studio life surveyed were significantly negatively impacted. Students' sense of being part of a community, interacting with other year groups and motivational support from others were especially impacted. Students highlighted the essential social nature of architectural education facilitated by the design studio and recognised it as necessary to their learning.

The impacts on mental health brought about through isolation and lack of peer support were emphasised.

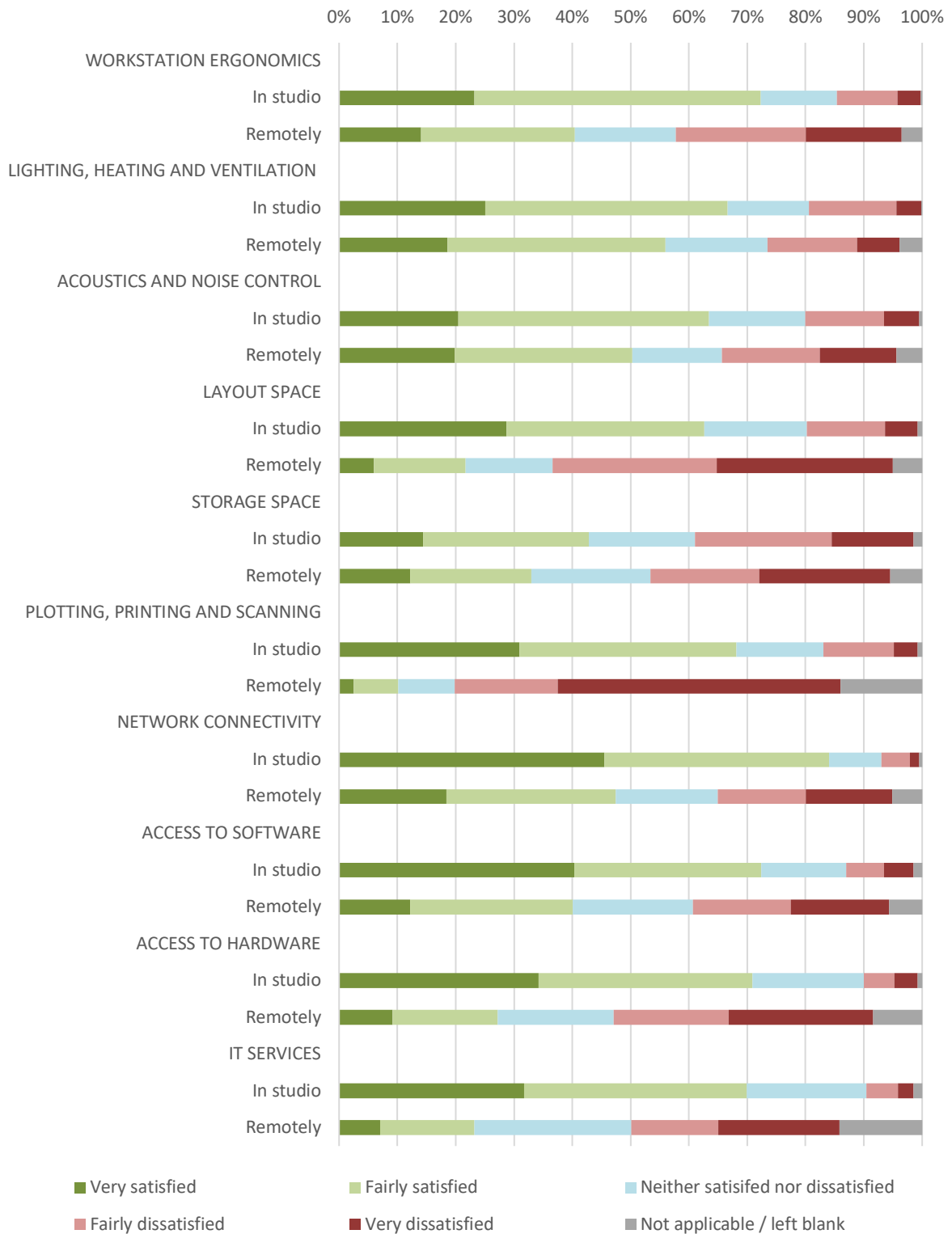
Working remotely also highlighted the disparity in resources available to students and the issue of digital poverty faced by some students after the introduction of remote working.

Figure 2.1.1: Change in student satisfaction of all metrics after moving from the physical architecture studio to remote working.



## 2.2 The studio environment

Figure 2.2.1: Student satisfaction with environmental factors in the architecture studio and working remotely.



*Table 2.2.1: Percentage of students satisfied with their working environment in the architecture studio and working remotely.*

Factor	Satisfaction *	
	In studio	Remotely
Workstation ergonomics	72%	40%
Lighting, heating and ventilation	67%	56%
Acoustics and noise control	63%	50%
Layout space	63%	22%
Storage space	43%	33%
Plotting, printing and scanning	68%	10%
Network connectivity	84%	47%
Access to software	72%	40%
Access to hardware	71%	27%
IT services	70%	23%

\* respondents answered very satisfied or fairly satisfied

*Representative quotes*

“...it is unfair to assume we all have the resources to do this. The difference in access to resources creates inequality in terms of the work we are able to produce.” (1<sup>st</sup> year, Part 2 student)

“[The biggest disadvantage is] no resources or space to work. No laptop or computer so very difficult to do work I would normally do using the university computers.” (1<sup>st</sup> year, Part 1 Student)

“...if we do not have the software at home it is a massive handicap, from talking to a few people this has massively effected the output of their final work.” (1<sup>st</sup> year, Part 2 student)

### 2.3 Learning opportunities

Figure 2.3.1: Student satisfaction with learning opportunities in the architecture studio and working remotely.

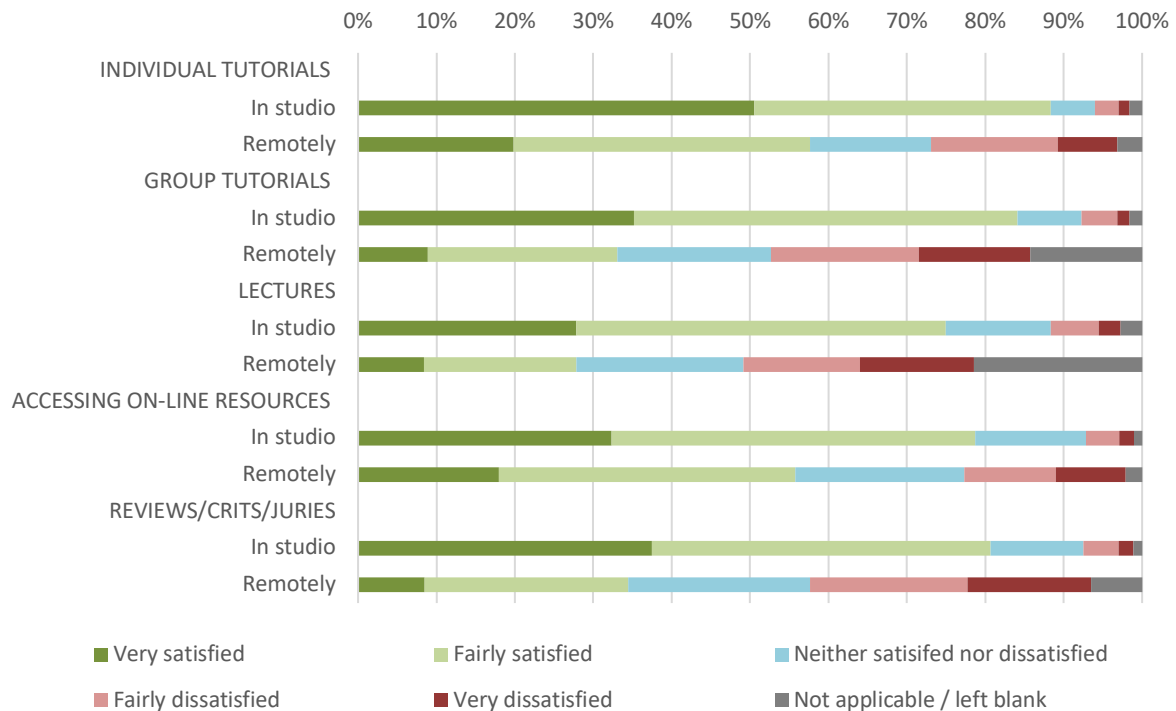


Table 2.3.1: Percentage of students satisfied with different learning opportunities in the architecture studio and working remotely.

Factor	Satisfaction*	
	In studio	Remotely
Individual tutorials	88%	58%
Group tutorials	84%	33%
Lectures	75%	28%
Accessing on-line resources	79%	56%
All types of architecture reviews/crits/juries	81%	34%

\* respondents answered very satisfied or fairly satisfied

#### Representative quotes

“Online school is not the same. There is not the same connection between tutor and student. Harder to communicate ideas. IT IS NOT THE SAME.” (1<sup>st</sup> year, Part 1 student)

“I think the studio days are really not working well and many tutors are not technically advanced enough.” (3<sup>rd</sup> year, Part 1 student)

“[The biggest challenge is] not [being] able to have proper crits or presentations in person, can’t present physical models effectively.” (2<sup>nd</sup> year, Part 1 student)

“[The biggest challenge is to enable] contacting/speaking to tutors in depth at any point, not having to schedule a meeting.” (3<sup>rd</sup> year, part 1 student)



## 2.4 Feedback activities

Figure 2.4.1: Student satisfaction with feedback activities in the architecture studio and working remotely.

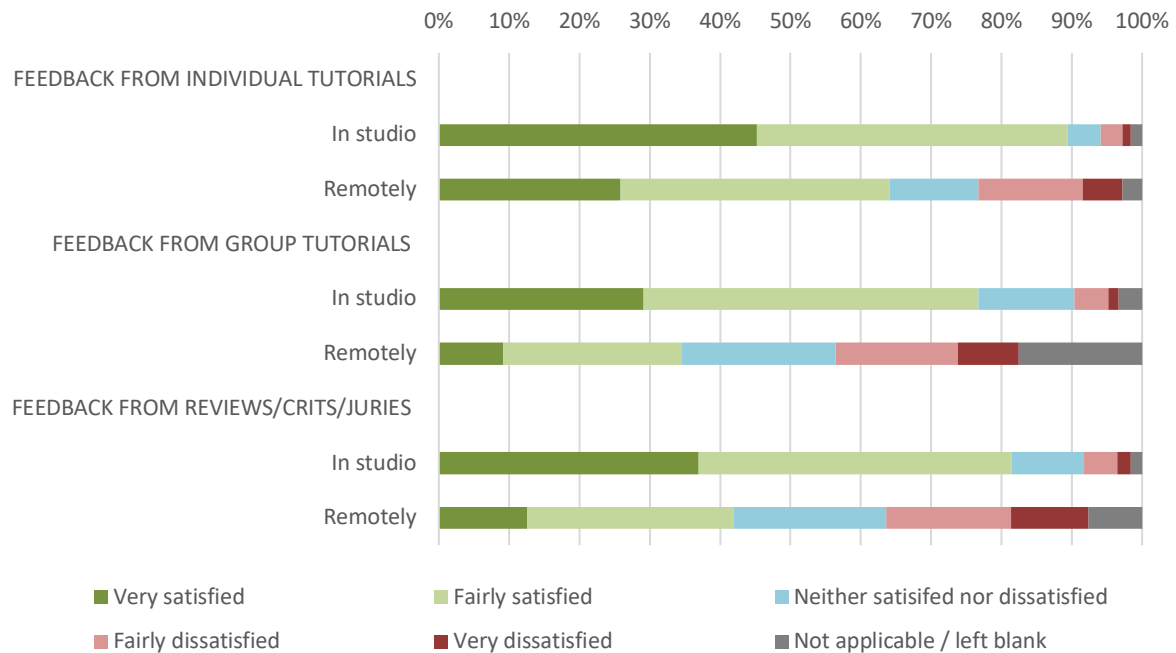


Table 1.4.1: Percentage of students satisfied with feedback activities in the architecture studio and working remotely.

Factor	Satisfaction*	
	In studio	Remotely
Feedback from individual tutorials	89%	64%
Feedback from group tutorials	77%	35%
Feedback from all types of reviews/crits/juries	81%	42%

\* respondents answered very satisfied or fairly satisfied

### Representative quotes

“[The biggest challenge is] the level of feedback on tutorials and the ability to explain ideas and get good advice.” (1<sup>st</sup> year, Part 2 student)

“Tutors’ feedbacks are delayed and difficult to understand when not explained thoroughly as would be in studio.” (2<sup>nd</sup> year, Part 1 student)

“[The biggest challenge is the] lack of being able to see presented work as a collective pin up and receive feedback and critique, the process of crits seems much more disjointed online.” (2<sup>nd</sup> year, Part 2 student)

“No feedback, no discussion, poor university experience.” (2<sup>nd</sup> year, Part 1 student)

## 2.5 Student support

Figure 2.5.1: Student satisfaction with support services in the architecture studio and working remotely.

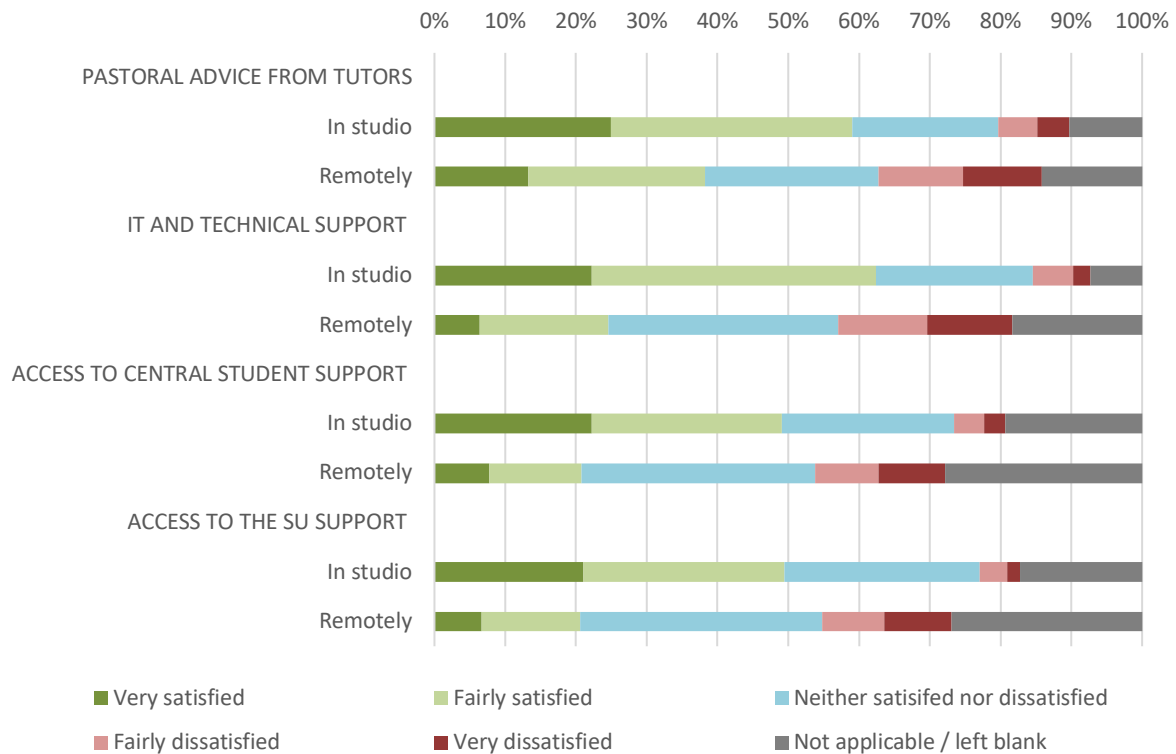


Table 2.5.1: Percentage of students satisfied with support services in the architecture studio and working remotely.

Factor	Satisfaction*	
	In studio	Remotely
Pastoral advice from tutors	59%	38%
IT and technical support services	62%	25%
Access to central student services	49%	21%
Access to the Students' Union services	49%	21%

\* respondents answered very satisfied or fairly satisfied

### Representative quotes

"[The biggest disadvantage is] my mental health deteriorating resulting in less motivation to work and not being able to do anything about it because it got brushed off as "we're all in this together so let's just give everyone the same extension cuz we're all the same" (1<sup>st</sup> year, Part 2 student)

"My mental health has massively deteriorated, my understanding of what I'm doing has dropped and I am in a constant state of confusion." (2<sup>nd</sup> year, Part 1 student)

"At uni I had people around me to help with things I find difficult because I'm registered blind." (1<sup>st</sup> year, Part 1 student)

"Cannot build a personal relationship with the tutor. Heart breaking!" (2<sup>nd</sup> year, Part 2 student)

## 2.6 Peer interaction, learning and support

Figure 2.6.1: Student satisfaction with peer learning in the architecture studio and working remotely.

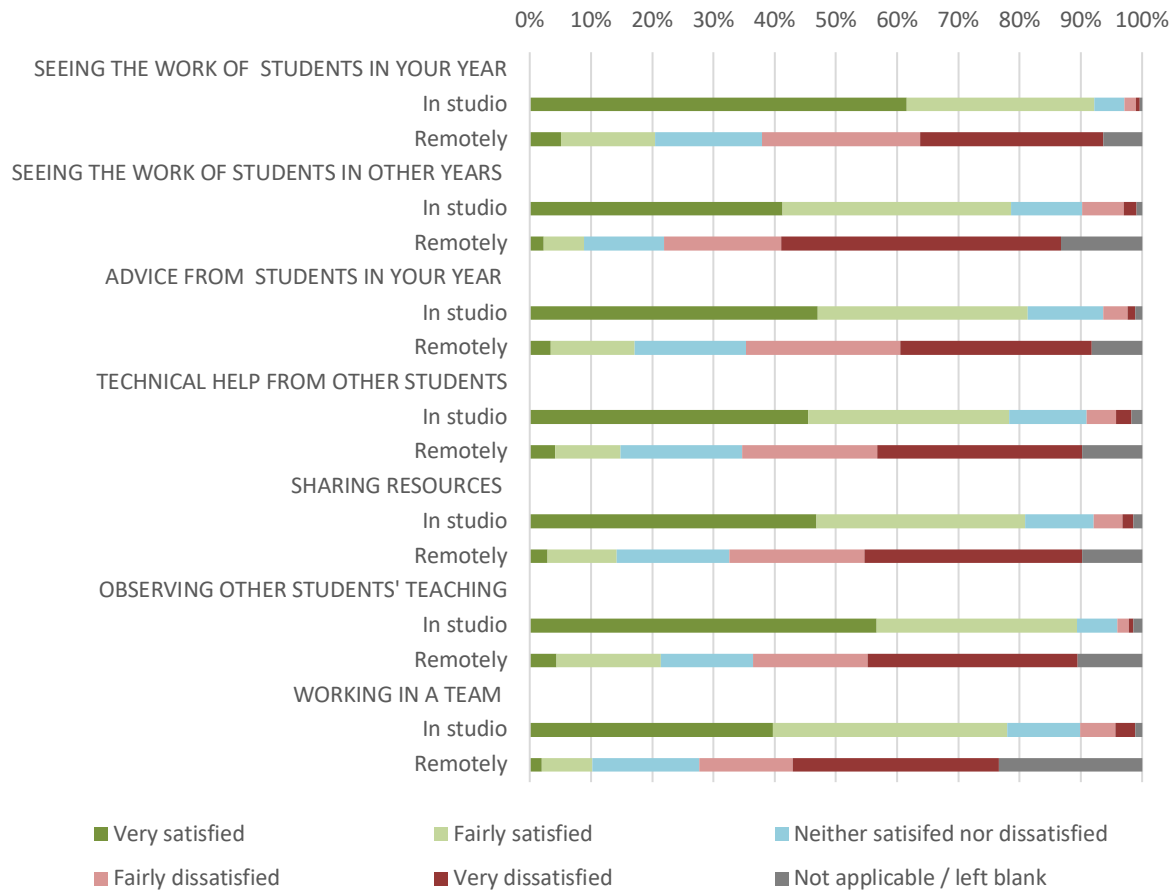


Table 2.6.1: Percentage of students satisfied with peer learning opportunities in the architecture studio and working remotely.

Factor	Satisfaction*	
	In studio	Remotely
Seeing the work of other students in your year	92%	20%
Seeing the work of students in other years	79%	9%
Feedback from other students in your year	81%	17%
Technical help from other students in your year	78%	15%
Sharing resources with peers	81%	14%
Observing other students' reviews and tutorials	89%	21%
Working in a team	78%	10%

\* respondents answered very satisfied or fairly satisfied

### Representative quotes

“Not having friends/other students surrounding you. We're taught from the very early stages of our architecture education that working within the studio is highly important to benefiting our studies. "Studio culture" is often referenced when talking about architecture education. It's a hard enough course to be doing, and without the moral support, help and advice of your peers, it's been very difficult to 'continue as normal' which I feel is being expected of us.” (2<sup>nd</sup> year, Part 2 student)

“I miss studio culture, being able to bump into fellow students and tutors. See random models as you walk around uni. Being inspired by other people’s work and helping each other. Also being able to gauge other people’s progress to see if you are on track.” (2<sup>nd</sup> year, Part 1 student).

“Working remotely as a whole is a disadvantage, it dulls and plateaus creativity, it doesn't allow the spontaneous conversations about projects which could better your work that the studio provides.” (1<sup>st</sup> year, Part 2 student)

“I don't want to work remotely from home, honestly it's the worst experience anyone can have. It's too distracting, there's no motivation and I can't see other people's work. How is this a good solution? How am I supposed to learn like this? ... I fear this will be the main reason I will drop out of Architecture, because no one wants to work like this.” (1<sup>st</sup> year, Part 1 student)

“Any group work next year will be very challenging both to set up and get to know the group and to organise effectively without meeting face to face.” (1<sup>st</sup> year, part 2 student)

## 2.7 Studio life

Figure 2.7.1: Perceived importance of aspects of studio life.

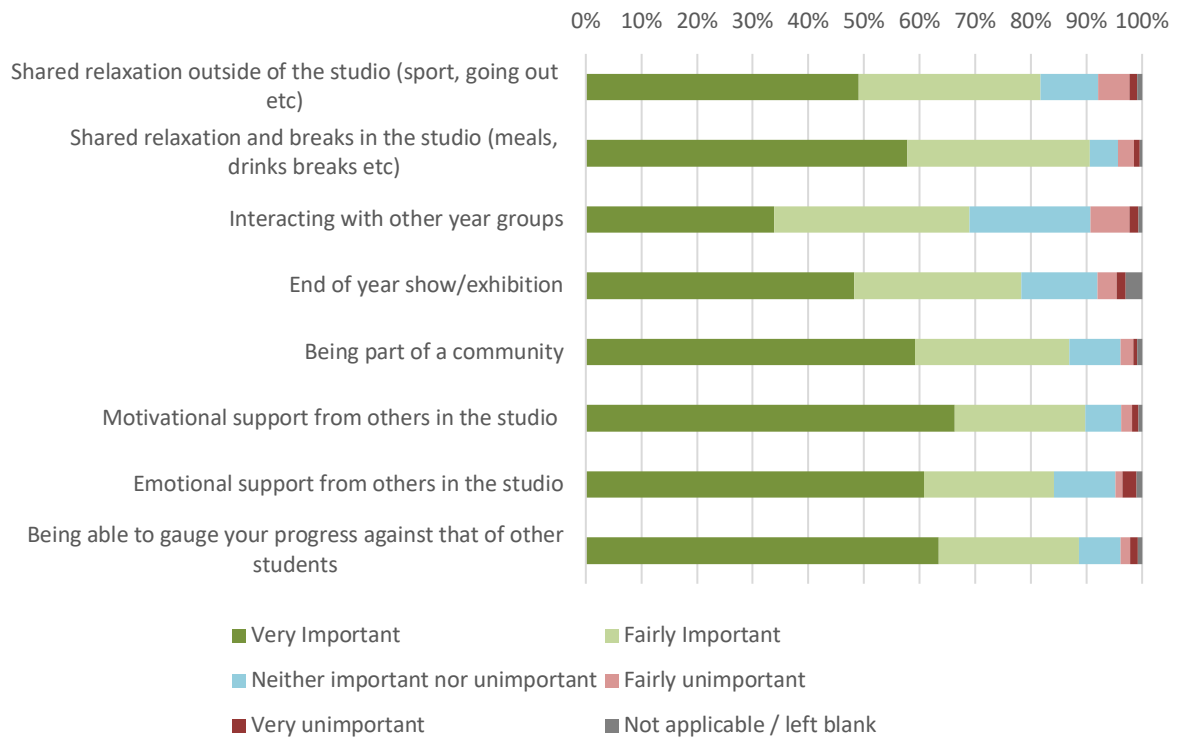
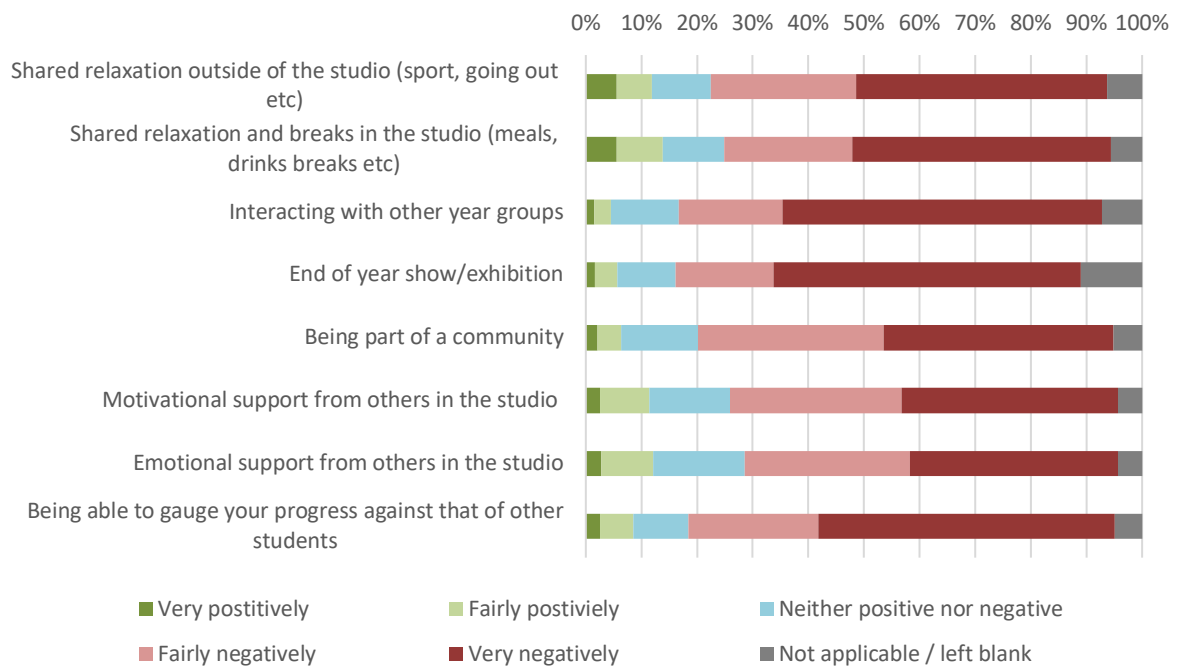


Figure 2.7.2: Perceived impact on aspects of studio life.



## 2.8 Overall satisfaction

Figure 2.8.1: Student preference for studio delivery.

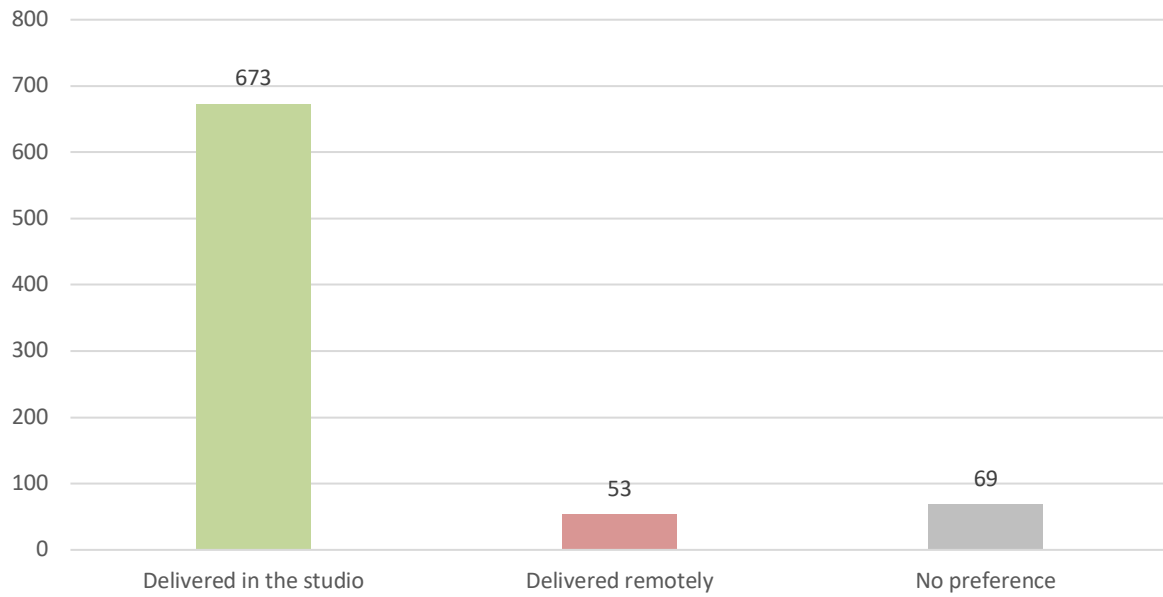
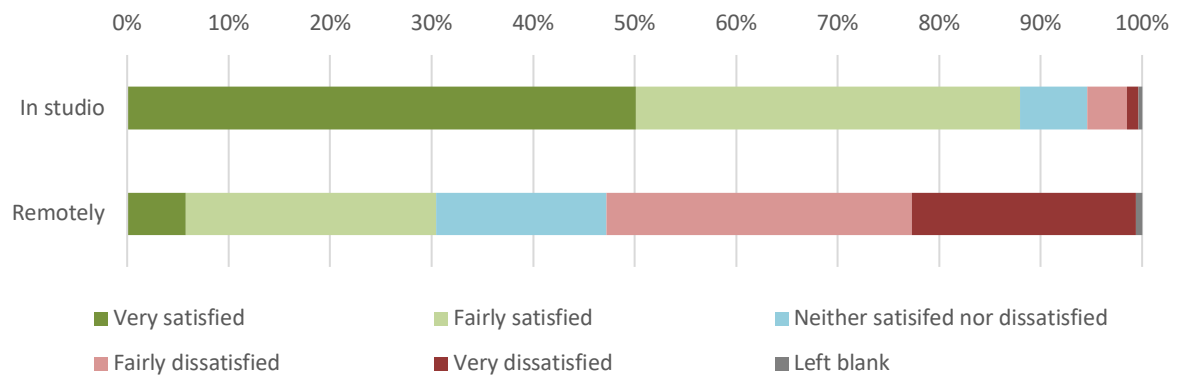


Table 2.8.1: Overall student satisfaction in the design studio and remotely.

	Satisfaction*	
	In studio	Remotely
Overall satisfaction	88.0%	30.5%

\* respondents answered very satisfied or fairly satisfied

Figure 2.8.2: Overall student satisfaction with the architectural studio and working remotely.



### 3 TUTOR SATISFACTION

#### 3.1 Summary

120 tutors responded to the survey from 29 universities. Overall satisfaction with learning fell by 56% following the move to remote teaching. Only 4% of tutors preferred remote delivery to face-to-face teaching.

Most factors questioned were considered to have been negatively affected by the move to online teaching. Students' ability to learn from each other and share resources were most negatively affected by the closure of the design studios.

All aspects of studio life surveyed were significantly negatively impacted by the move to online teaching. Tutors considered shared social activities between students to have been most significantly changed.

The limitations of technology, developing a sense of studio culture, building equal relationships with students and the fatigue of online tutoring were highlighted as key challenges for tutors.

Several tutors cited improved lifestyles including reduced commutes as positive impacts. Others found the move to remote tutorials aided their organisation and their ability to share resources and ideas. Moving to online teaching had a positive impact on acoustics and noise control, student punctuality and keeping to time in tutorials.

### 3.2 The working environment

Figure 3.2.1: Tutor satisfaction with environmental factors in the architecture studio and working remotely.

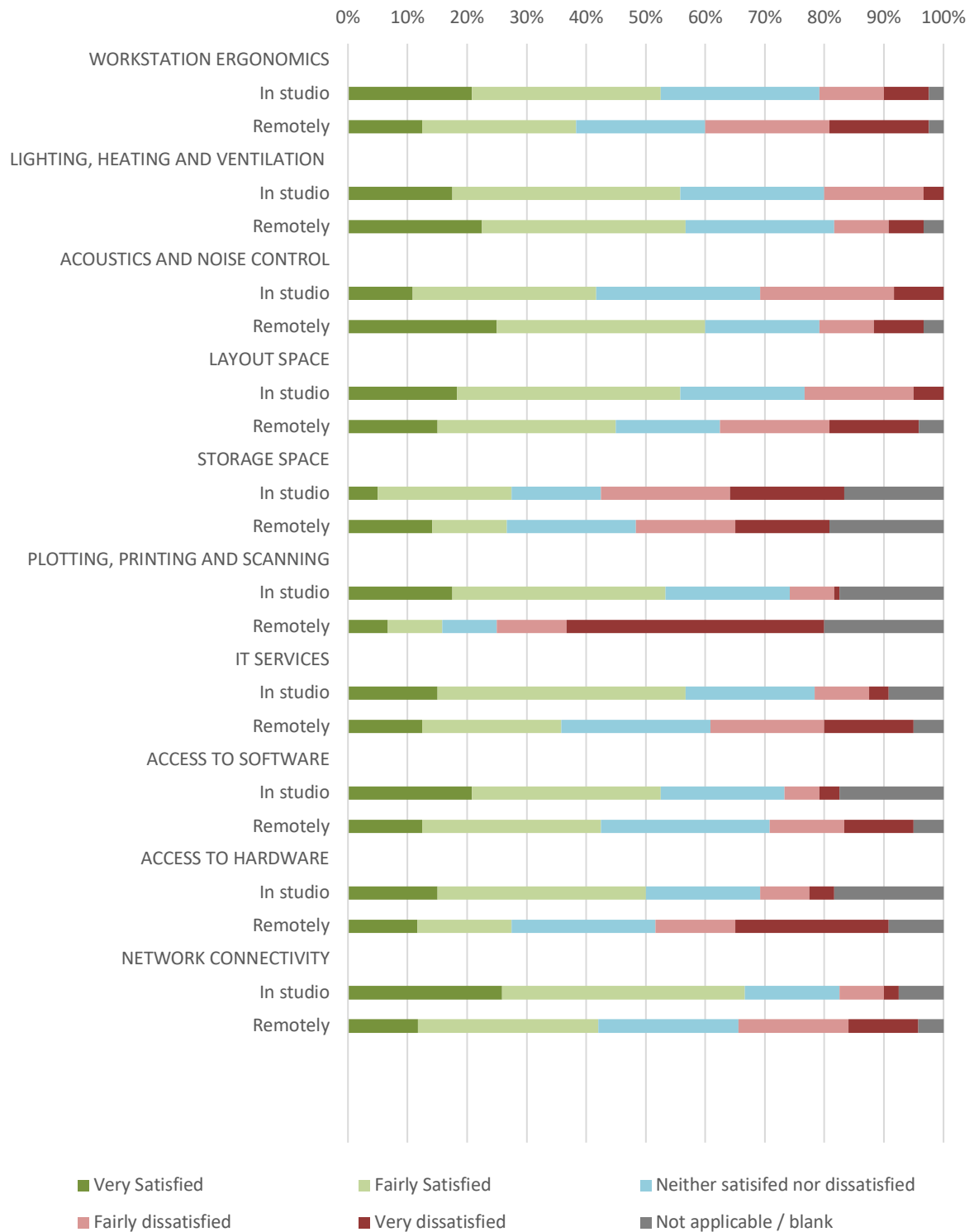


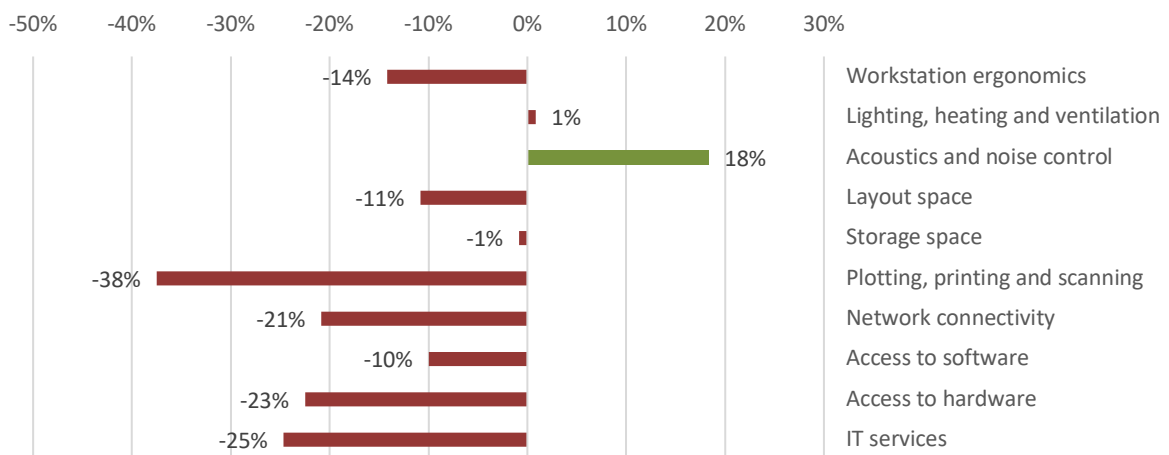


Table 3.2.1: Percentage of tutors satisfied with their working environment in the architecture studio and working remotely.

Factor	Satisfaction*	
	In studio	Remotely
Workstation ergonomics	53%	38%
Lighting, heating and ventilation	56%	57%
Acoustics and noise control	42%	60%
Layout space	56%	45%
Storage space	28%	27%
Plotting, printing and scanning	53%	16%
Network connectivity	57%	36%
Access to software	53%	43%
Access to hardware	50%	28%
IT services	67%	42%

\* respondents answered very satisfied or fairly satisfied

Figure 3.2.2: Change in tutor satisfaction with environmental factors in the architecture studio and working remotely.



### Representative quotes

“It has been very stressful and time consuming. My computer had technical issues.” (Undergraduate tutor)

“[The main challenges are] connectivity issues and needing to adapt to a myriad of challenges students face that tend to be levelled when they have access to studio and school facilities/resources.” (Undergraduate tutor)

“[The biggest challenge is] being able to discuss work with sketches, diagrams. Software and hardware not currently able to deal with this. Limited physical modelling.” (Undergraduate and MArch tutor)

### 3.3 Student engagement

Fig 3.3.1: Tutors' perceived quality with student engagement in the architecture studio and working remotely.

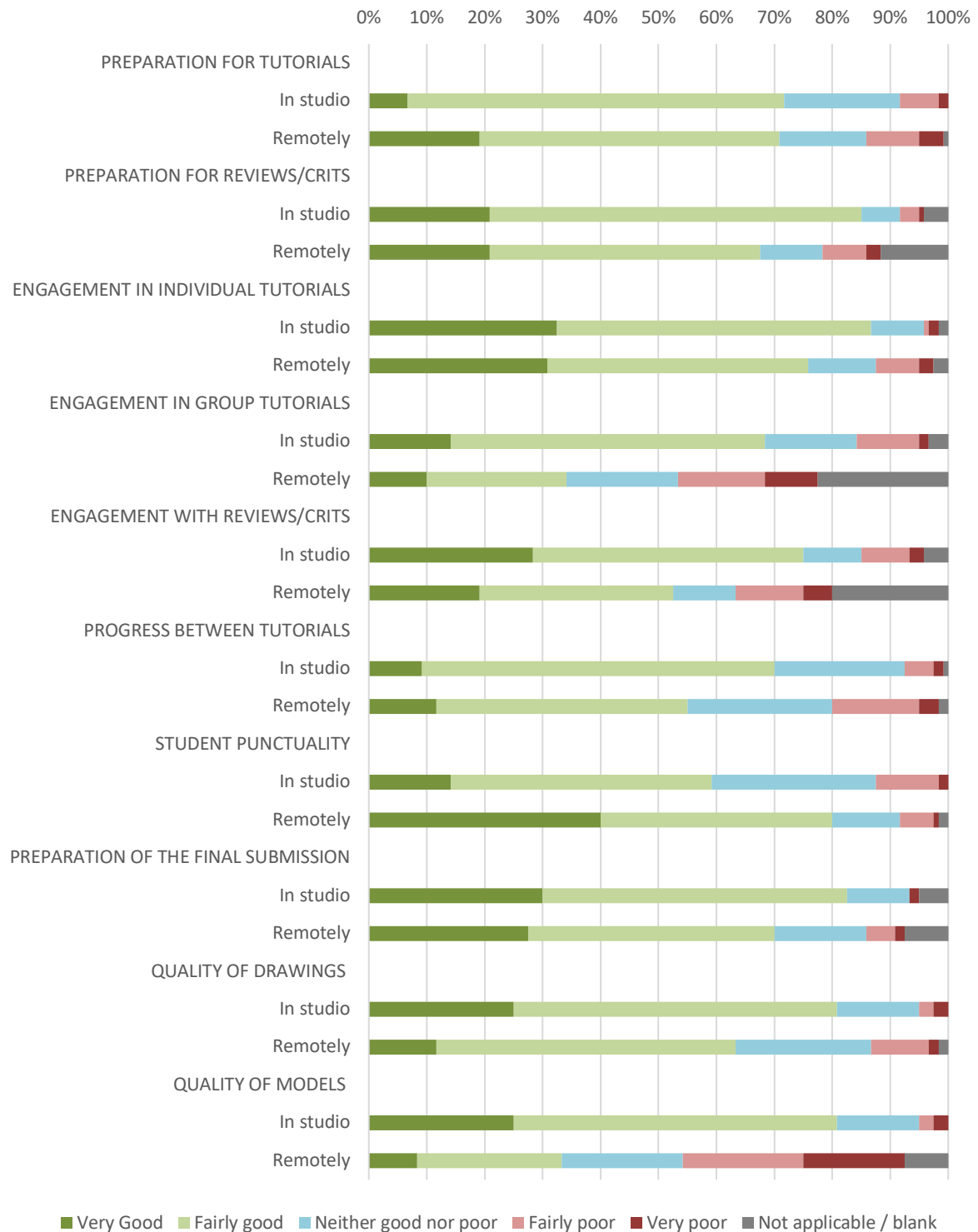
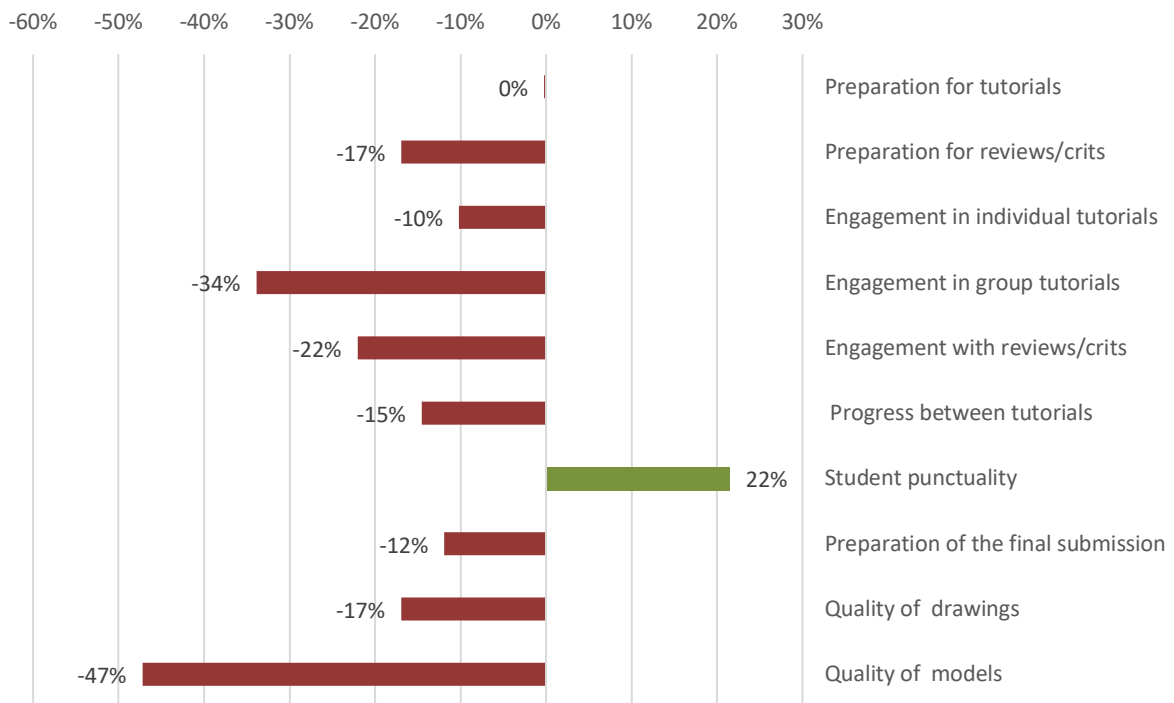


Table 3.3.1: Percentage of tutors who considered student engagement in the architecture studio and working remotely to be of good quality (answered very good or fairly good).

Factor	Considered of good quality*	
	In studio	Remotely
Preparation for tutorials	72%	71%
Preparation for reviews/crits	85%	68%
Engagement in individual tutorials	87%	76%
Engagement in group tutorials	68%	34%
Engagement with reviews/crits	75%	53%
Progress between tutorials	70%	55%
Student punctuality	59%	81%
Preparation of the final submission	83%	71%
Quality of drawings	81%	64%
Quality of models	81%	34%

\* respondents answered very fairly good or very good

Fig 3.3.2: Change in tutors' perceived quality with student engagement in the architecture studio and working remotely.



Representative quotes

“Not all students attended tutorials, perhaps a more flexible approach would work here.”  
(Undergraduate tutor)

“[The biggest disadvantage is the] the lack of stretched discussions and sharing opinions in small groups discussions.” (MArch tutor)

[The biggest disadvantage is] the resultant static interaction with each student. i.e. not being able to draw and discuss fluidly, but instead having to assess student work for each individual tutorial in advance and then wrestle with the confines of technology.” (Undergraduate tutor)

“Students are more prepared for weekly tutorials [after the move to remote teaching] and give better presentations.” (Undergraduate tutor)

[The advantages are] too many to count. I am only a few years off retirement and am not a digital native...but I have found on-line tutorials very positive and easier than face to face (though I miss seeing students and colleagues in social terms). Students come better prepared, I can draw directly on work non-destructively, I can upload images of precedents directly into real-time files, students engage better in group tutorials – it’s all good in my experience.” (Undergraduate and MArch tutor)

### 3.4 Practicality and ease of delivery

Fig 3.4.1: Perceived ease of educational delivery by tutors in the architecture studio and working remotely.

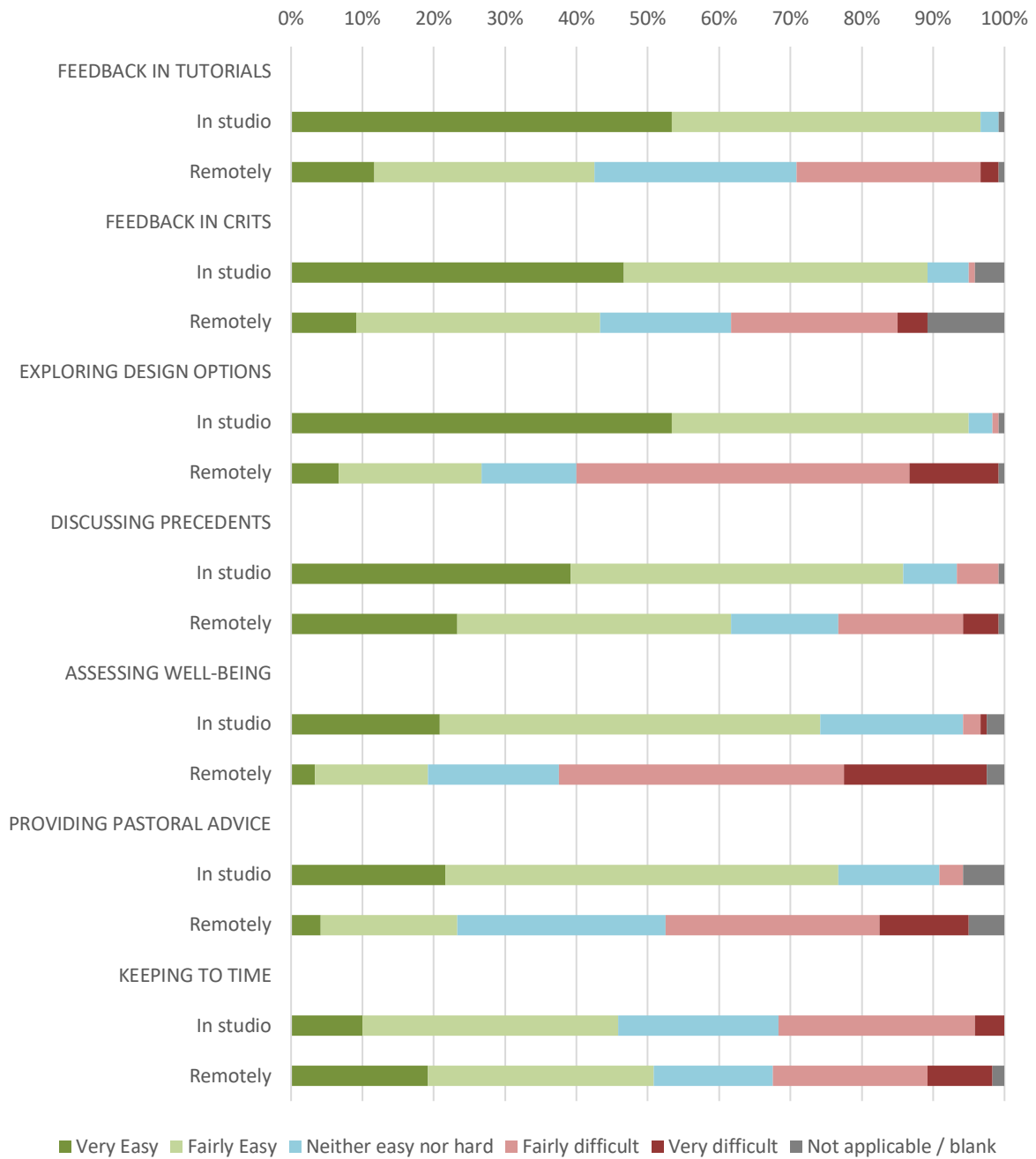
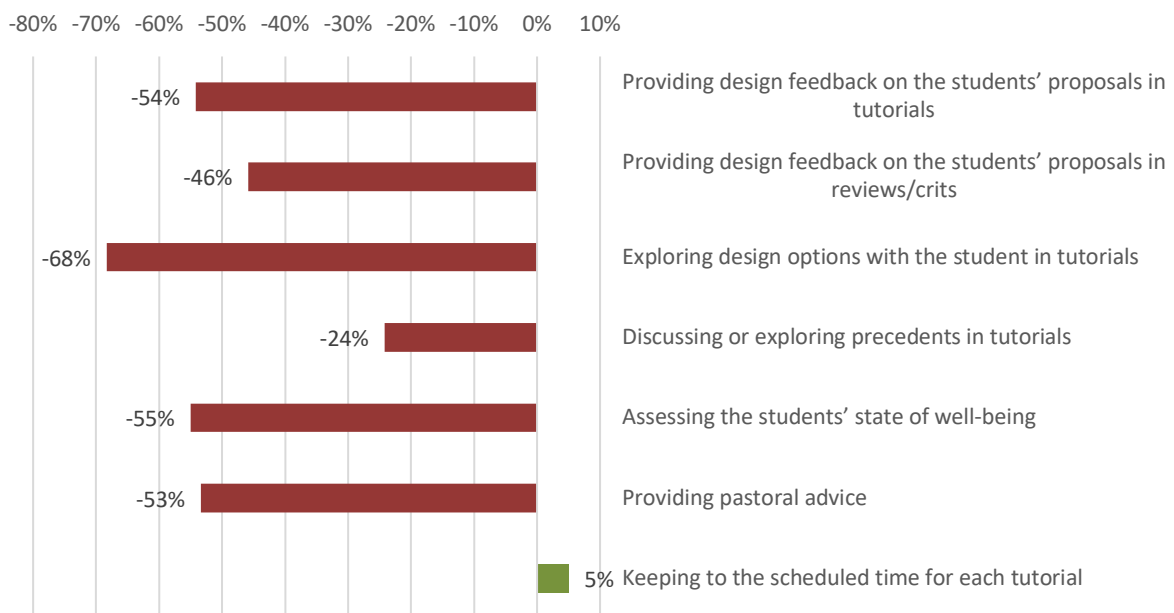


Table 3.4.1: Percentage of tutors who considered different teaching interactions in the architecture studio and working remotely to be fairly or easy or very easy to deliver.

Factor	Considered easy*	
	In studio	Remotely
Providing design feedback on the students' proposals in tutorials	97%	43%
Providing design feedback on the students' proposals in reviews/crits	89%	43%
Exploring design options with the student in tutorials	95%	27%
Discussing or exploring precedents in tutorials	86%	62%
Assessing the students' state of well-being	74%	19%
Providing pastoral advice	77%	23%
Keeping to the scheduled time for each tutorial	46%	51%

\* respondents answered very easy or fairly easy

Figure 3.4.2: Change in perceived ease of educational delivery by tutors in the architecture studio and working remotely.



### Representative quotes

“[The biggest disadvantage was] simply talking to the students and gauging their progress or asking how they are. Being able to motivate my students verbally, as sometimes emails can be taken in different ways. I found video calling uncomfortable.” (Undergraduate tutor)

“Exhaustion. 8+hr days of focussed 1 to 1 teaching are physically tiring in a way in studio teaching isn't - this is draining and affects working and life on non-teaching days.” (Undergraduate and MArch tutor)

“Stilted/more protracted communication methods with students in tutorials; everything takes longer. Not being able to get 'the big picture' by being able to 'see' a whole project on the wall in one go. The shift in presentation mode part way through the year from 'on the wall exhibition' to a digital submission has been hard for staff and students to transition to.” (Undergraduate tutor)

“It actually became easier to carry out tutorials as groups were given a slot to adhere to, rather than an ad hoc approach in the studio in which often many students wanted a long time to chat rather than keep it concise and to the point.” (Undergraduate tutor)

### 3.5 Feedback and assessment

Figure 3.5.1: Tutor satisfaction with feedback and delivery mechanisms in the architecture studio and working remotely.

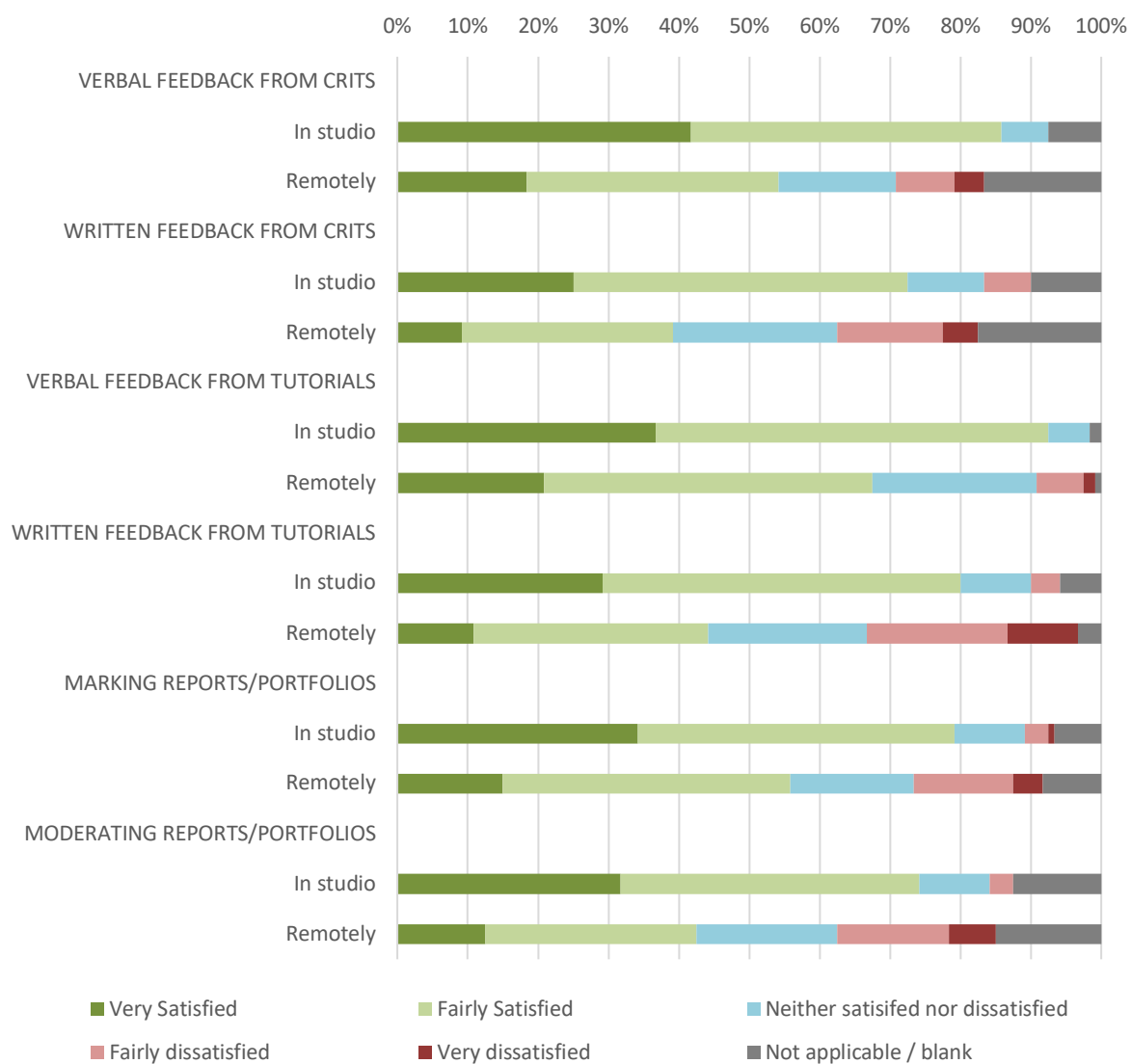


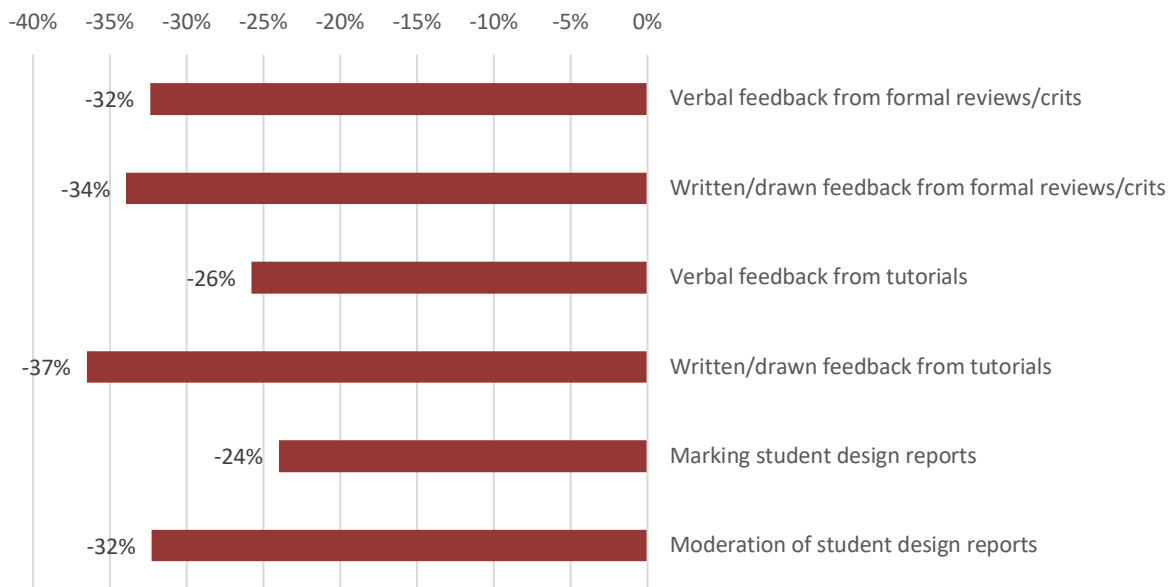
Table 3.5.1: Percentage of tutors satisfied with feedback and assessment mechanisms in the architecture studio and working remotely.

Factor	Satisfaction*	
	In studio	Remotely
Verbal feedback from formal reviews/crits	87%	54%
Written/drawn feedback from formal reviews/crits	73%	39%
Verbal feedback from tutorials	93%	68%
Written/drawn feedback from tutorials	81%	44%
Marking student design reports	80%	56%
Moderation of student design reports	75%	43%

\* respondents answered very satisfied or fairly satisfied



Figure 3.5.2: Change in tutor satisfaction with feedback and delivery mechanisms in the architecture studio and working remotely.



*Representative quotes*

“Working remotely has forced increasingly didactic frameworks for briefing, assessment and review to be deployed” (Undergraduate and MArch tutor)

“[The biggest challenge is] the extra time needed to discuss, demonstrate and provide drawn feedback to students.” (Undergraduate tutor)

### 3.6 Learning from others

Figure 3.6.1: Tutors' perceived quality of peer learning mechanisms in the architecture studio and working remotely.

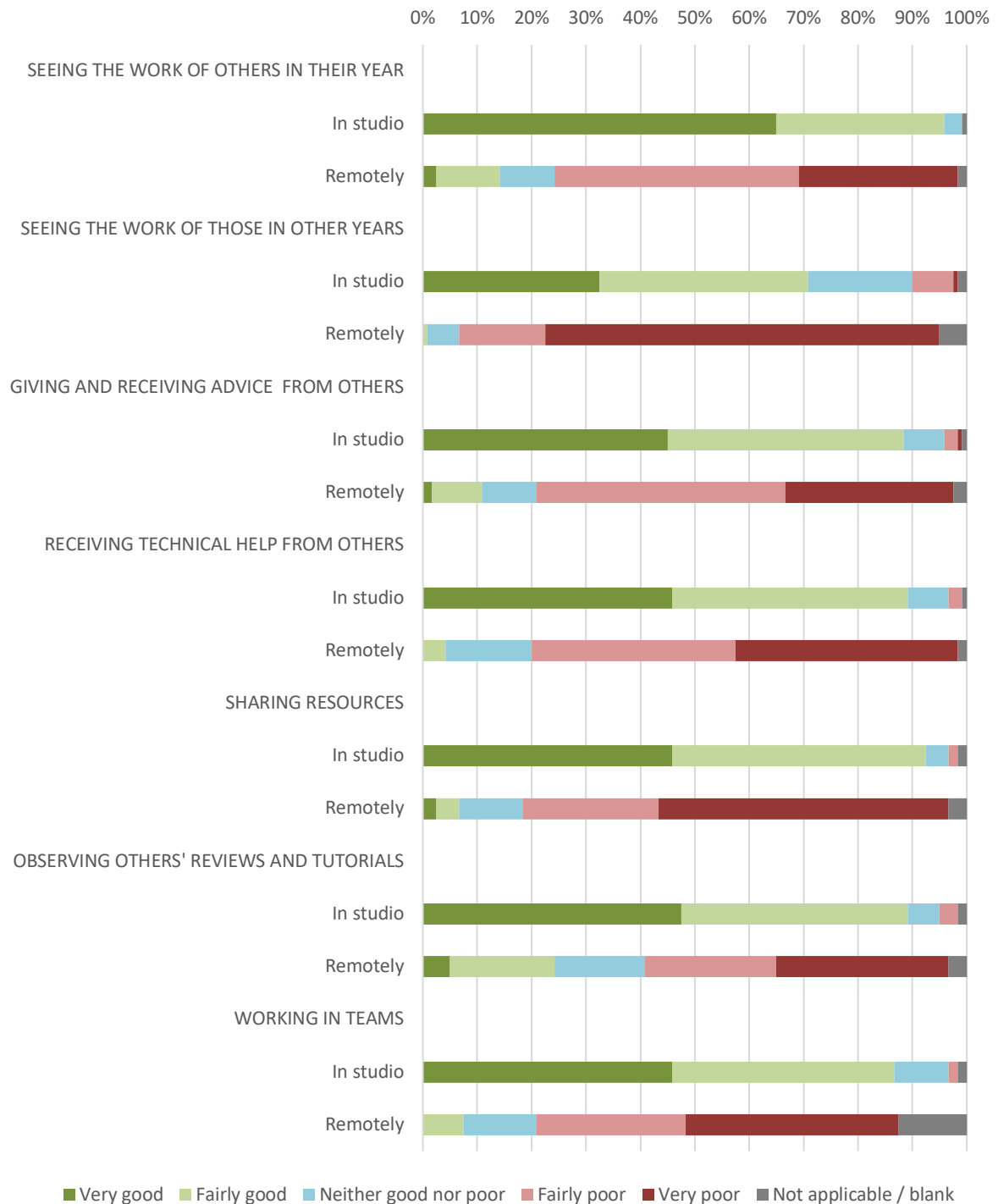
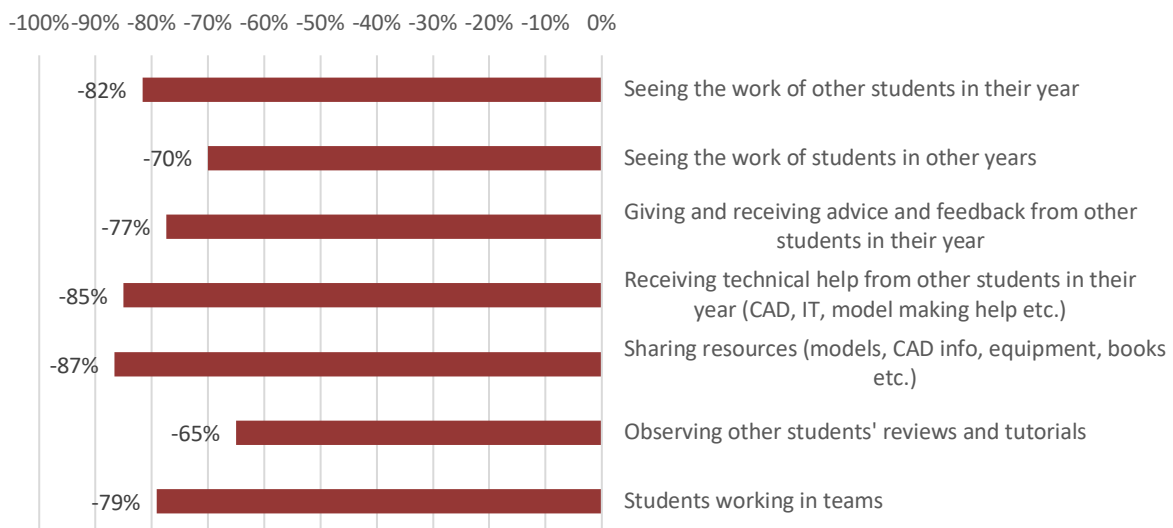


Table 3.6.1: Percentage of tutors who considered peer learning mechanisms in the architecture studio and working remotely to be of good quality (answered very good or fairly good).

Factor	Considered of good quality*	
	In studio	Remotely
Seeing the work of other students in their year	96%	14%
Seeing the work of students in other years	71%	1%
Giving and receiving advice and feedback from other students in their year	88%	11%
Receiving technical help from other students in their year (CAD, IT, model making help etc.)	89%	4%
Sharing resources (models, CAD info, equipment, books etc.)	93%	7%
Observing other students' reviews and tutorials	89%	24%
Students working in teams	87%	8%

\* respondents answered very good or fairly good.

Figure 3.6.2: Change in perceived tutor quality of peer learning mechanisms in the architecture studio and working remotely.



#### Representative quotes

“[The biggest disadvantage was] the lack of studio culture- social engagement, learning from each other, taking pride and ownership of space and work.” (MArch tutor)

“[The biggest challenge was] students not supporting each other as simply as they could in a studio. I found a way for students to upload their work so others could see it, I think this was important to inform the other students where they should be in terms of progress. For me first year is an extremely important year for social networking and adopting a studio environment and a productive one. I doubt that can be recreated.” (Undergraduate tutor)

“Studio experience is an identifiable loss. With everything that goes along with it: interpersonal relationships, friendships, camaraderie, as well as peer to peer learning, spatial engagement, etc.” (Undergraduate and MArch tutor)

### 3.7 Studio life

Figure 3.7.1: Tutors' perceived importance of aspects of studio life.

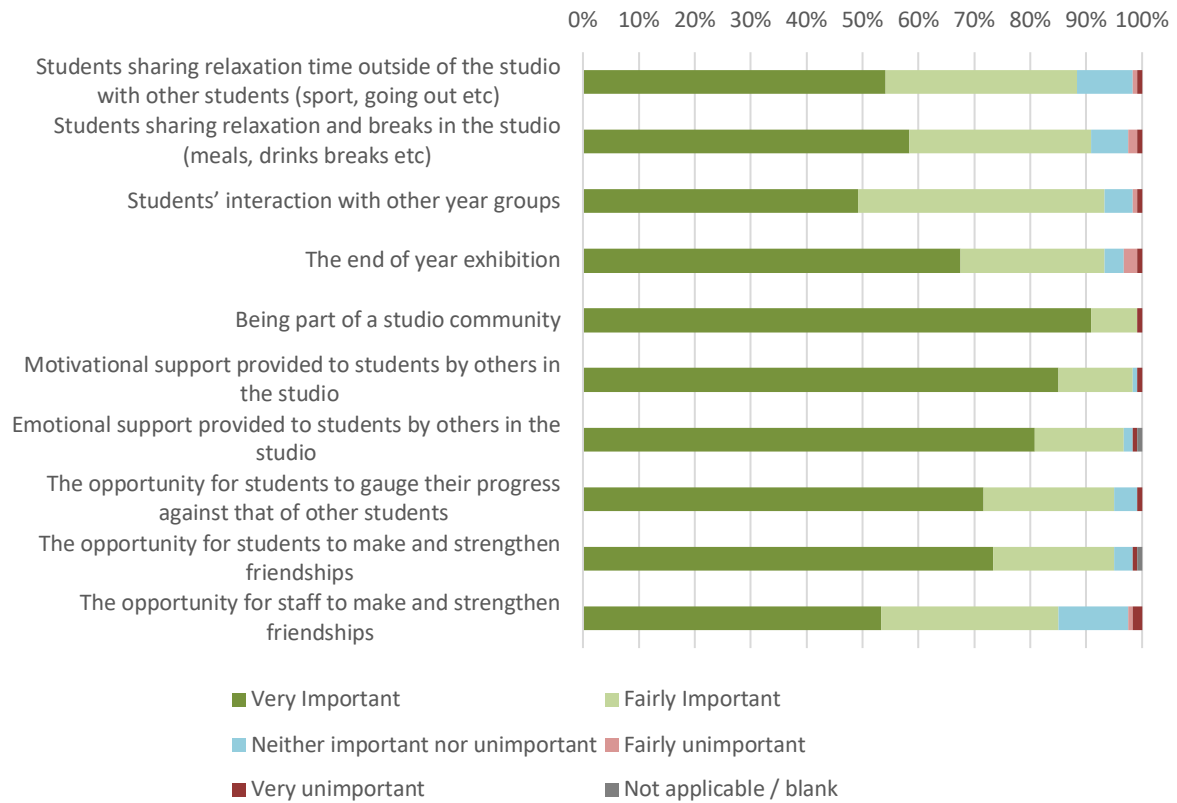
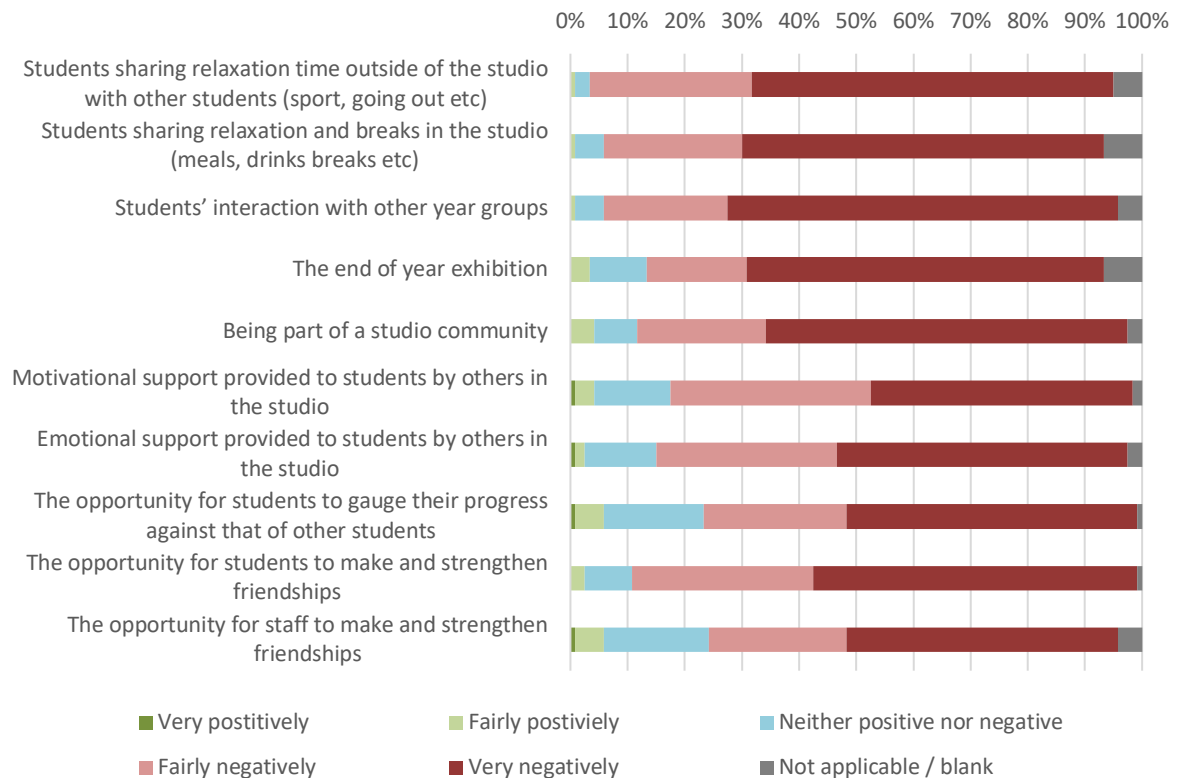


Figure 3.7.2: Tutors' perceived impact of remote working on aspects of studio life.



### 3.8 Overall satisfaction

Figure 3.8.1: Tutors' preferred mode of delivery of architectural education.

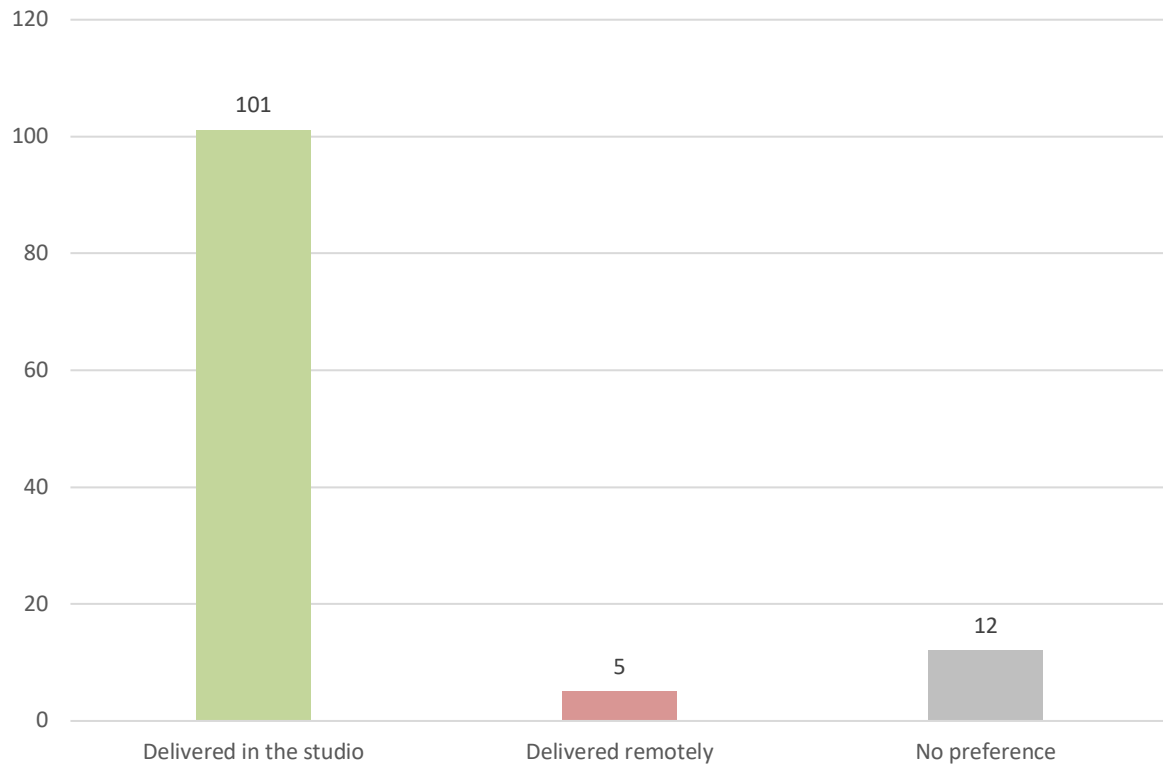


Figure 3.8.2: Tutors' satisfaction with modes of delivery of architectural education.

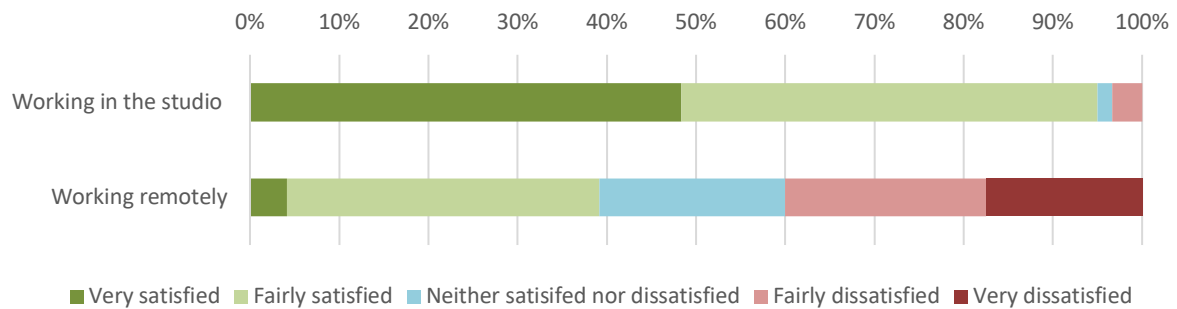


Table 3.8.1: Tutors' satisfaction with modes of delivery of architectural education.

	Satisfaction*	
	In studio	Remotely
Overall satisfaction	95%	39%

\* respondents answered very satisfied or fairly satisfied

## 4. INFLUENCING FACTORS

### 4.1 Summary

Demographic factors of gender, ethnic group, study status (home, EU or overseas), year of study and pre-COVID-19 studio provision were considered.

There were no statistically significant differences in responses by gender, ethnic group, study status (home, EU or overseas) or year of study in change in overall satisfaction from in person teaching to remote teaching.

A significant difference in the change in overall satisfaction of the design studio correlated to pre-COVID-19 studio provision. Students who generally worked at home only experienced a 2% drop in satisfaction while those who were used to a permanent studio space experienced a 76% drop in overall satisfaction. Those who shared workspaces or worked at another space on their university campus experienced smaller, but significant, drops in overall satisfaction (60% and 45% respectively).

## 4.2 Gender

Figure 4.2.1: Students' overall satisfaction with design studio units being delivered in the design studio and remotely, by gender.

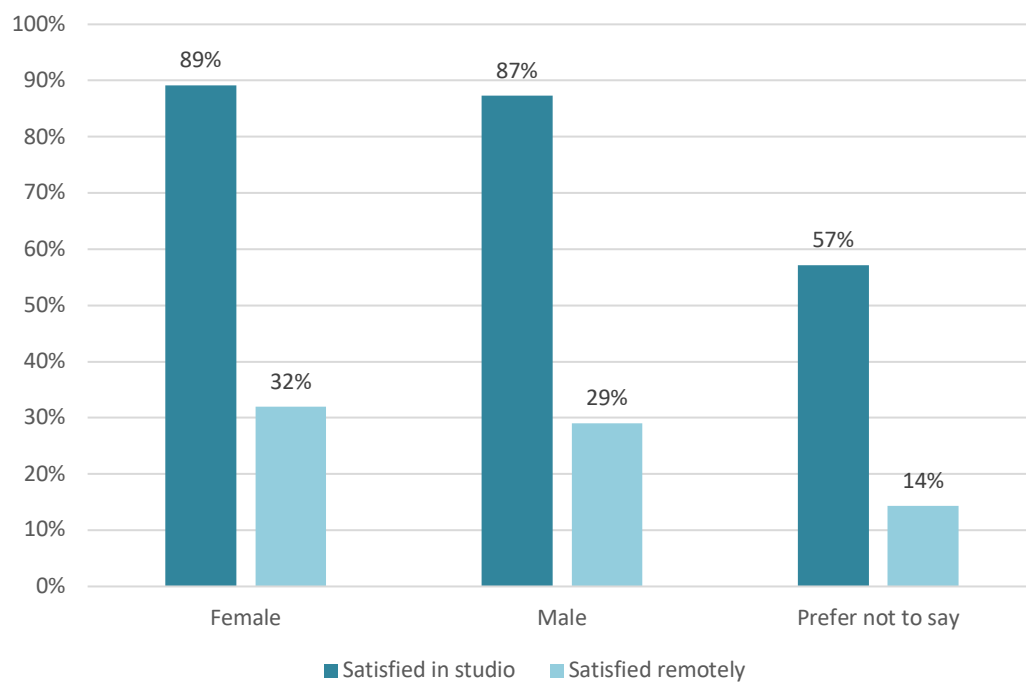


Table 4.2.1: Percentage of student who were satisfied overall (responded satisfied or fairly satisfied) in the studio and remotely by gender.

	Female	Male	Prefer not to say
Overall satisfaction in studio	89%	87%	57%
Overall satisfaction remotely	32%	29%	14%

### 4.3 Ethnic group

Figure 4.3.1: Students' overall satisfaction with design studio units being delivered in the design studio and remotely, by ethnic group.

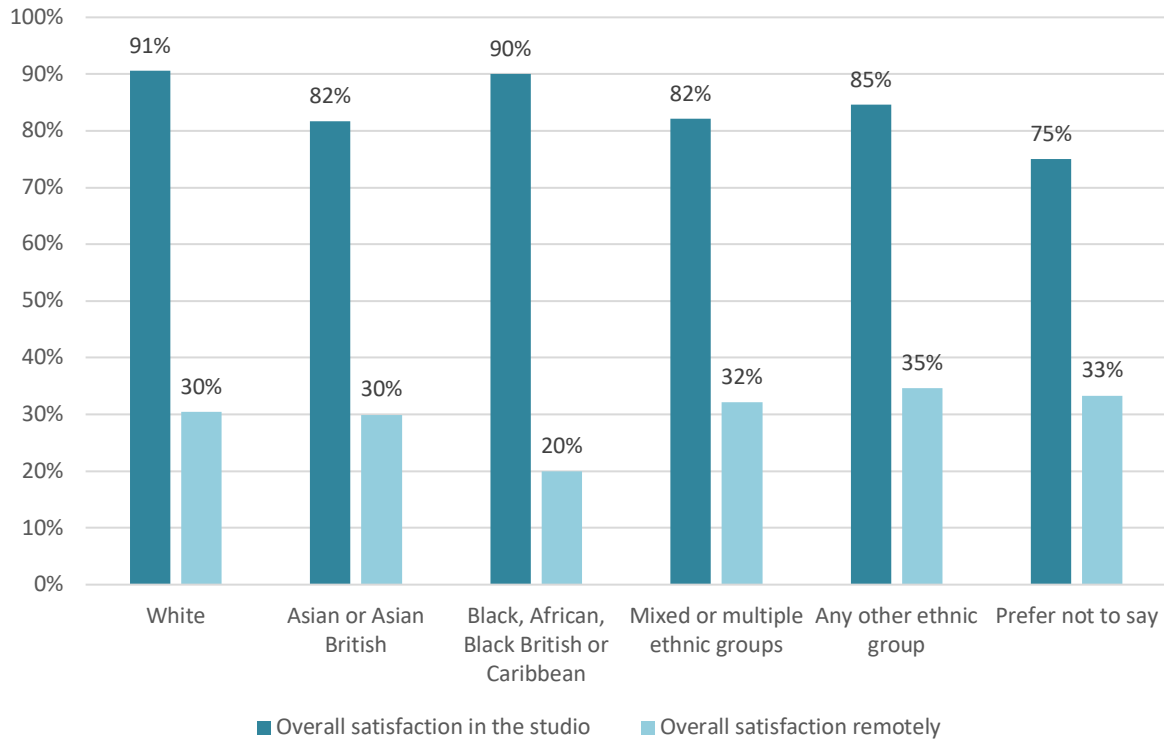


Table 4.3.1: Percentage of student who were satisfied overall (responded satisfied or fairly satisfied) in the studio and remotely by ethnic group.

	White	Asian or Asian British	Black, African, Black British or Caribbean	Mixed or multiple ethnic groups	Any other ethnic group	Prefer not to say
Overall satisfaction in the studio	91%	82%	90%	82%	85%	75%
Overall satisfaction remotely	30%	30%	20%	32%	35%	33%



#### 4.4 Home, EU and Overseas students

Figure 4.4.1: Students' overall satisfaction with design studio units being delivered in the design studio and remotely, home, EU and overseas status.

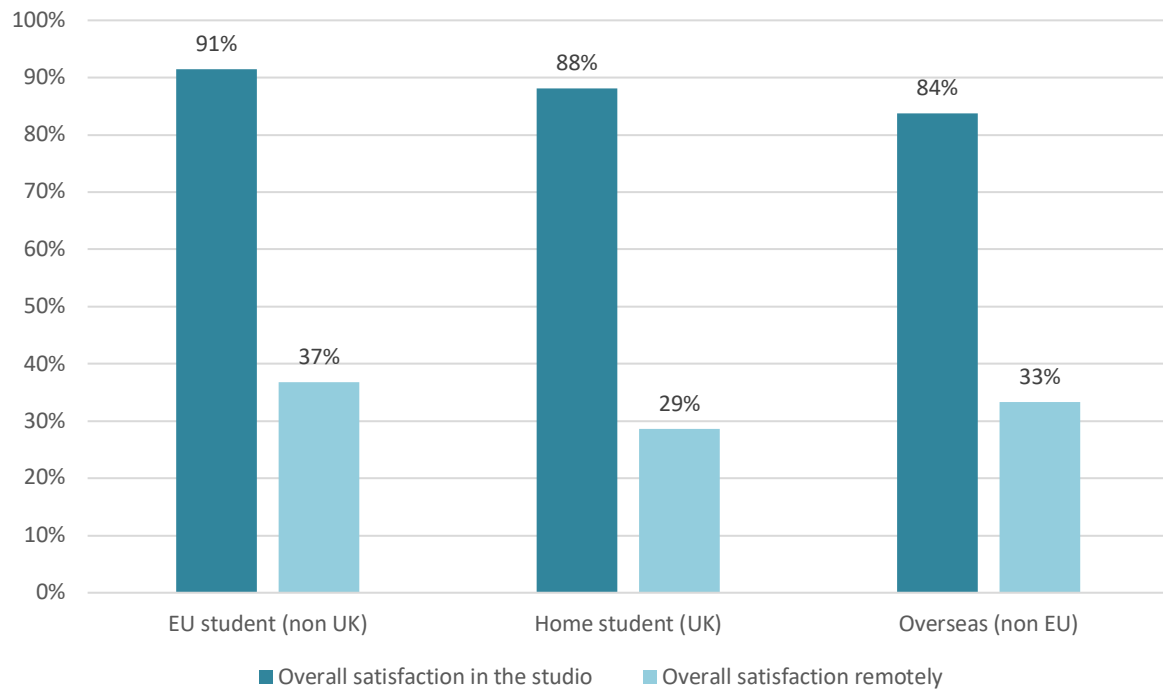


Table 4.4.1: Percentage of student who were satisfied overall (responded satisfied or fairly satisfied) in the studio and remotely by home, EU or overseas status.

	Home student (UK)	EU student (non UK)	Overseas (non-EU)
Overall satisfaction in the studio	88%	91%	84%
Overall satisfaction remotely	29%	37%	33%

#### 4.5 Year of study

Figure 4.5.1: Students' overall satisfaction with design studio units being delivered in the design studio and remotely, by year of study.

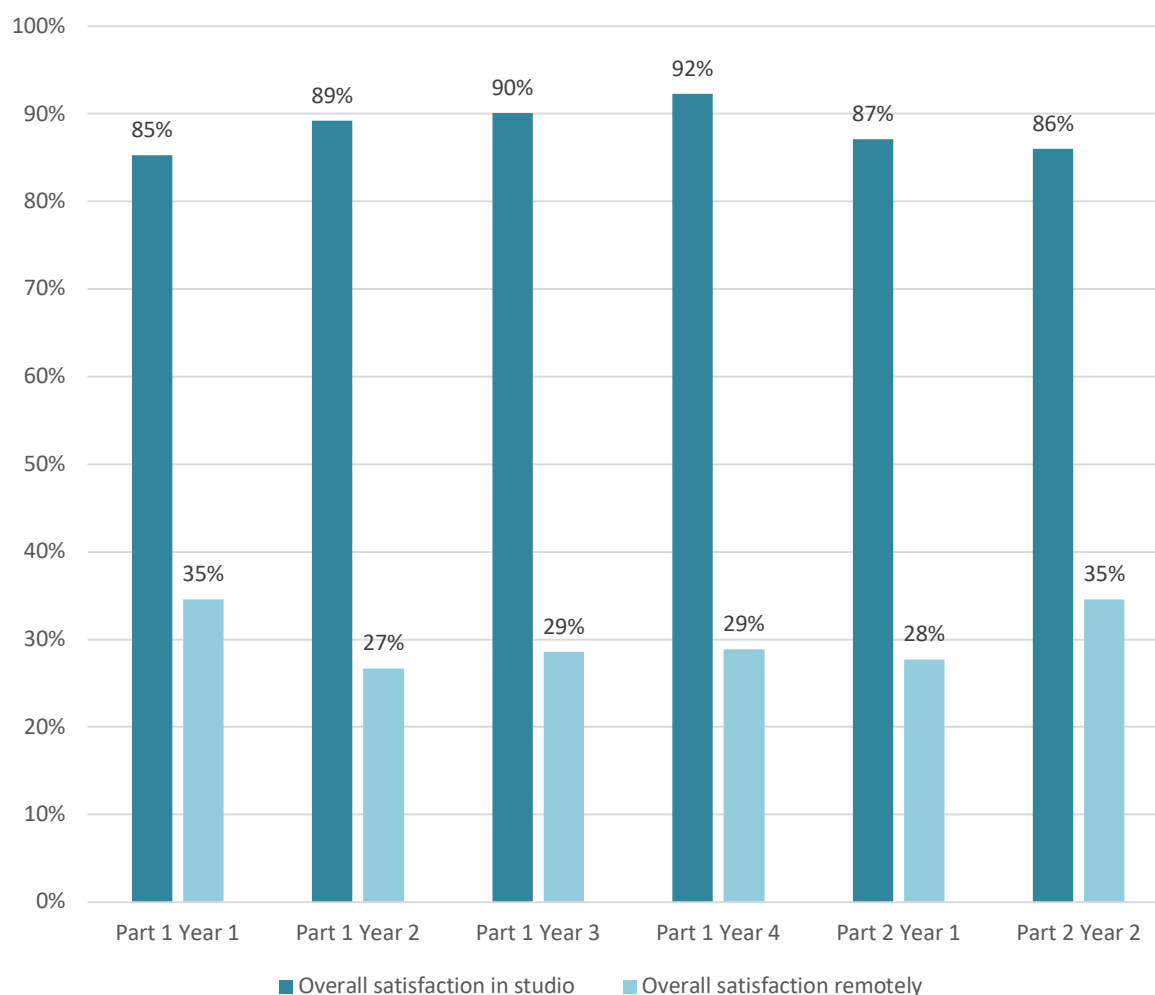


Table 4.5.1: Percentage of student who were satisfied overall (responded satisfied or fairly satisfied) in the studio and remotely by year of study.

	Part 1 Year 1	Part 1 Year 2	Part 1 Year 3	Part 1 Year 4	Part 2 Year 1	Part 2 Year 2
<b>Overall satisfaction in studio</b>	85%	89%	90%	92%	87%	86%
<b>Overall satisfaction remotely</b>	35%	27%	29%	29%	28%	35%

#### 4.6 Existing studio provision

Figure 4.6.1: Students' overall satisfaction with design studio units being delivered in the design studio and remotely, by pre-COVID-19 studio provision.

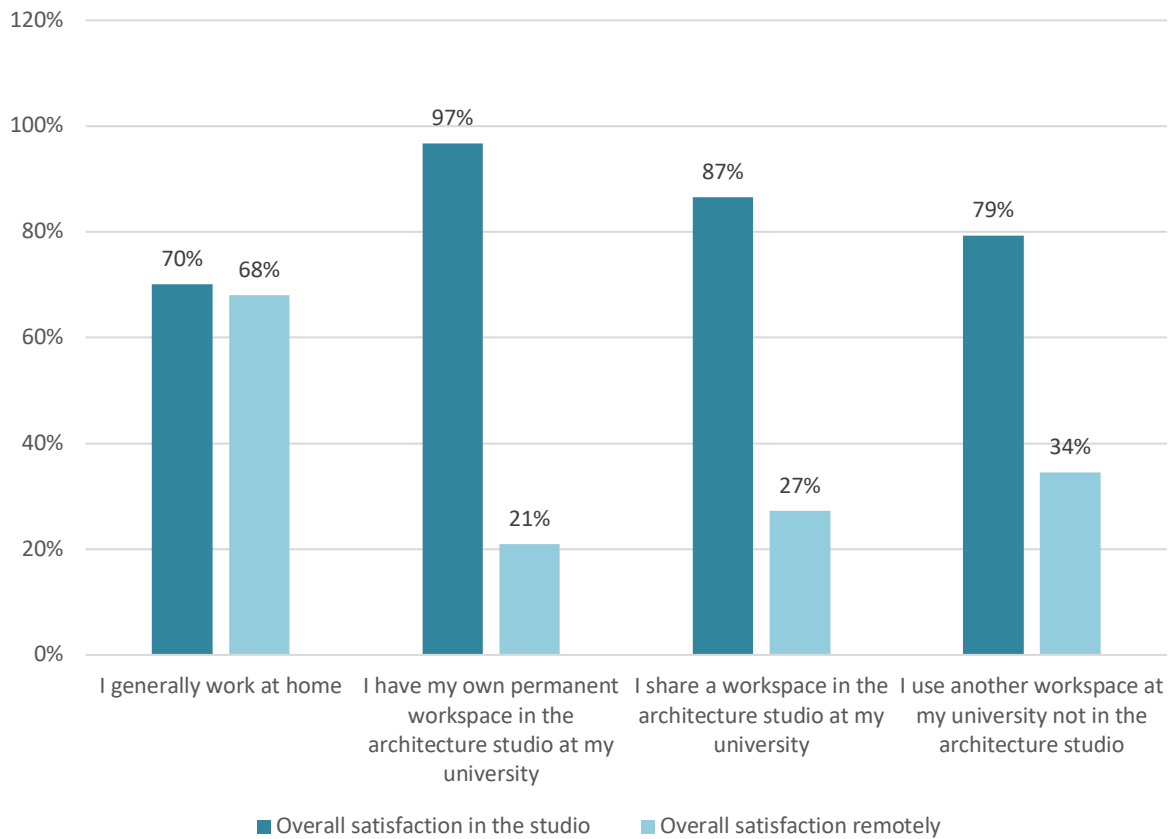


Table 4.2.1: Percentage of student who were satisfied overall (responded satisfied or fairly satisfied) in the studio and remotely by pre-COVID-19 studio provision.

	I generally work at home	I have my own permanent workspace in the architecture studio at my university	I share a workspace in the architecture studio at my university	I use another workspace at my university not in the architecture studio
Overall satisfaction in the studio	70%	97%	87%	79%
Overall satisfaction remotely	68%	21%	27%	34%

## 5. QUALITATIVE DATA

### 5.1 Summary

Both staff and students described how the main advantages of remote working were practical. These included not having to travel, preferring to work at home, convenience, time efficient and cost effective. For many it also enhanced their lifestyles, creating healthier work-life balances and giving more time for family.

Loss of peer learning and support was the biggest disadvantage for students of the move to remote teaching. Many spoke about how “studio culture” and the learning community had been compromised. This was reflected in the responses by staff who also highlighted student-staff interactions as being compromised. The loss of face-to-face contact was of concern and inhibited chances to build meaningful relationships with students.

For students, the main opportunities of remote working were centred around lifestyle, particularly being more time and cost-efficient allowing space for extracurricular activities. Opportunities for teaching were most frequently mentioned by staff, particularly in the improved access to online resources.

The primary challenges of remote working for students were centred around peer interaction and learning. Most notably, building a sense of community was very frequently mentioned. For staff, the biggest risk was also to student engagement, particularly the ability for students to interact in social and informal ways as well as learning from each other. The challenge posed to “studio culture” and the studio community were also commonly mentioned by staff.

For students, access to resources was most frequently described as the biggest improvement that could be made in the remote studio. Particularly this included access to software, technology and online resources that could support and enable learning and designing. For staff, there was a similar picture. Over half of staff described how access to hardware and software that could enable better communication, especially through drawing, would enhance the remote teaching and learning experience.

## 5.2 Advantages of remote learning

### 5.2.1 Advantages from a student perspective

Below is a summary of the free text responses to the question, “What has been the main advantage of working remotely compared to working in the architecture studio at your university?” Many students described multiple themes. The percentages reflect the percentage of respondents who cited each theme in response to the question above.

#### *Practicality and convenience*

32% of students mentioned how the move to remote studio had advantages in terms of practicality and convenience. Not having to commute meant many students could save time and money. For some it liberated time in their day allowing them more time for relaxation, hobbies, or spending time with families. Other students were able to save money through being at home, either by living with family to reduce living costs or avoiding spending when at the university.

12% of students found the physical environment they were working in to be preferable to the studio. For many it was more comfortable or convenient and avoided having to move equipment or work to and from the studio. A small number (2%) found they had better access to resources when at home. This included high powered IT equipment or better internet connection.

#### *Lifestyle and wellbeing*

32% of students said the move to remote learning had improved their lifestyles, work-life balance and mental health. 16% of students were more focussed, productive and had fewer distractions when compared with working in the studio.

Spending time at home or with family was the biggest advantage for 6% of students. Lifestyle improvements (such as more exercise or a better diet) was cited by 4% of respondents. 5% of students found working remotely meant they were more relaxed or had more rest. 6% of students reported lower levels of stress, anxiety or pressure as being the biggest advantage.

#### *No advantages*

9% of students left the comment blank or said it was not applicable while and 12% overall explicitly said there were no advantages that had come about from the move to remote working.

#### *Learning*

18% of students described how their own learning and working had improved since the move to remote teaching. Most notably, 10% of students enjoyed the greater freedom and flexibility to organise their day and their workload. Other advantages cited by a small number of students included better time management, the ability to learn new skills, more independent learning, better workflows, and enhanced peer-to-peer learning.

#### *Teaching interactions*

8% of students stated how teaching interactions had improved since the move to online learning. 3% stated how recorded lectures and enhanced online resources had a positive impact on their learning. Other advantages cited by about 2% of students included better tutorials or reviews, improved staff organisation, better communication from staff, improved feedback (often through proving more formal feedback) and changes or extensions to submissions.

### 5.2.2 Advantages from a staff perspective

Below is a summary of the free text responses to the question, “What has been the main advantage of working remotely compared to working in the architecture studio at your university?” Many staff described multiple themes. The percentages reflect the percentage of respondents who cited each theme in response to the question above.

#### *Practical advantages*

The most cited advantages were themed around the practical improvements that remote working offered. This was mentioned by 54% of staff. 28% of staff described not having to commute as one of the biggest advantages while others mentioned time management (6%) and flexibility to organise and undertake their teaching (8%). Other factors described by five or fewer tutors included the lower carbon footprint, more efficient teaching, convenience, structure, their home or office working environments (both physical comfort and with fewer distractions), the ability to learn digital skills, the students’ pre-submission of work (easing organisation) and the expansion of geographic limits that remote working offered.

#### *Teaching interactions*

25% of staff commented on how teaching interactions had improved in different ways since the change to remote learning. These included the access to, and ability to share online resources (12%) and improvements in tutorials and reviews due to remote working (7%). A few tutors spoke about how group tutorials had improved, feedback mechanisms were better, they could afford greater attention to detail, tutorials could be recorded, and non-destructive drawing was easily possible.

#### *Organisational benefits*

19% of staff described how organisational factors had improved. 13% said how students were more prepared for tutorials while 5% commented on how punctuality had improved. Others mentioned how general student organisation was better, documenting the process had improved and how costs might reduce for students.

#### *Engagement and learning*

11% of tutors described how student engagement had improved since the move to remote learning. 3% said student engagement and attendance in tutorials had improved and 4% said how the students were more focussed on their work. Other comments included improvements in work sharing and peer discussion, better quality work from students and students acquiring new digital skills.

#### *No advantages or left blank*

8 tutors (7%) said explicitly there were no advantages while 3% did not comment.

#### *Relationships*

4 tutors (3%) mentioned how their relationships with students had improved. This also included a better sense of community.

### 5.3 Disadvantages of remote learning

#### 5.3.1 Disadvantages from a student perspective

Below is a summary of the free text responses to the question, “What has been the main disadvantage of working remotely compared to working in the architecture studio at your university?” Many students described multiple themes. The percentages reflect the percentage of respondents who cited each theme in response to the question above.

##### *Peer learning and peer support*

51% of students cited the lack of peer learning and support as a major disadvantage. 28% of students said their ability to learn from their peers had been negatively impacted. Often this was through the loss of being able to see the work of other students. A similar number cited the loss of peer support. Many talked about the loss of *studio culture*, lack of informal learning experiences and the motivational support provided by other students. The loss of a sense of community was also a major concern. A smaller number (2%) said how group projects were challenging or impossible through remote learning.

##### *Practical issues*

39% of students cited practical issues with working remotely. Lack of access to physical or digital resources was a major concern (cited by 29% of students). 12% reported that their working environment was unsuitable or impractical. Smaller numbers mentioned the absence of non-digital working was a big disadvantage and 6 students of 798 said technical issues (internet connection, software problems etc.) was a significant issue.

##### *Teaching interactions*

The reduced quality of teaching interactions and teaching effectiveness was described as a major disadvantage by 21% of students. Primary disadvantages included ineffective tutorials or reviews, juries and crits (9%) and poor staff communication, support or contact time (8%). Other issues centred around the lack of informal contact with staff, inconsistencies in teaching by different staff and poor staff organisation (such as missed tutorials).

##### *Personal and well being*

18% of students reported impacts on the personal health and well-being as a significant disadvantage from remote teaching. 11% described how the move to working from home had significantly reduced their motivation, productivity or focus. 2% of students directly referred to the impact on their mental health while 4% cited isolation as a major disadvantage. Other impacts included lack of exercise, the challenges of transitioning environments, impacts on routine and time management and a loss of confidence.

##### *No disadvantages*

Only 3 students of 798 respondents explicitly said there were no disadvantages. 5% of students did not respond or said it was not applicable.

### 5.3.2 Disadvantages from a staff perspective

Below is a summary of the free text responses to the question, “What has been the main disadvantage of working remotely compared to working in the architecture studio at your university?” Many staff described multiple themes. The percentages reflect the percentage of respondents who cited each theme in response to the question above.

#### *Interactions with students*

43% of staff described how their interactions with students had been compromised since the move to remote learning. 22% wrote about a sense of disconnection and lack of face-to-face encounters was a major disadvantage. 10% directly described how communication with students was more challenging remotely. Other comments included a perceived lack of student engagement (5%), the inability to assess student’s capabilities (4%) and a focus on linear or didactic teaching methods (4%). Other comments described how group tutorials, pastoral care, student parity and student support had all been compromised.

#### *Studio culture*

39% of staff described how the move to remote tutoring had impacted negatively various aspect of “studio culture”. 8% of staff used this term directly while other spoke about the loss of peer interaction (16%) lack of informal engagement (8%) and low levels of social interaction (5%). The loss of the professionalism of the studio, the notion of a “shared experience” and the ability for students to see the work of their peers were also mentioned.

#### *Technology*

The use of technology and its limitations were a major disadvantage for 31% of tutors. Most commonly, the challenge of drawing live in a tutorial on a screen was highlighted (26%). Technical and software issues were mentioned by 6% of tutors while digital poverty of students and being able to get a holistic view of work were described by one staff member each.

#### *Practical and personal concerns*

19% of tutors reported practical and personal disadvantages of moving to remote studio working. These included the work being more time consuming (8%), more stressful (3%), poorer working environment (3%) and too much screen time (3%). Other issues included a lack of flexibility, exhaustion, privacy, home distractions, staff isolation, mental health and cost.

#### *Students’ working*

10% of staff wrote how the move to remote working had disadvantaged students. These included a lack of physical modelling, challenges communicating and presenting work, no facilities, producing final submissions and no workshops available.

#### *None and left blank*

No tutor said there were no disadvantages. 1 person left the box blank.



## 5.4 Opportunities for remote learning

### 5.4.1 Opportunities from a student perspective

Below is a summary of the free text responses to the question, “Looking ahead what is the biggest opportunity which working remotely offers compared to working in the architecture studio at your university?” Many students responded with multiple factors which were all coded and themed. The percentages reflect the percentage of respondents who cited each theme in response to the question above.

#### *No opportunities*

34% of students either felt there were no opportunities for remote working, did not respond or left it blank. 18% explicitly said there were no opportunities.

#### *Lifestyle opportunities*

24% of students identified improvements in their lifestyle as a key opportunity of remote working. This included greater time efficiency (6%), cost savings (4%), reduced travelling and commuting (5%) and a better work-life balance (4%). Several students relished the chance to be at home or with their family (4%). Others suggested lower stress, improvements in physical health and living more sustainably were all opportunities for remote working.

#### *Opportunities for working*

19% of respondents described how remote working had opportunities for their working processes. 8% said the freedom and flexibility that remote working allowed was a big opportunity. A better working environment either through improved physical space (3%) or by fewer distractions allowing greater focus (6%) was also highlighted. Others saw opportunities in the availability of resources (digital and physical), the ability to work at their own pace and learning to adapt to different environments.

#### *Opportunities for learning and skills*

The opportunity to develop learning and new skills was identified by 18% of respondents. This included improving independent learning (6%), embracing and learning digital technologies (8%) and the chance to develop alternative design and representation methods (3%). A smaller number of students also saw opportunities to develop self-discipline. 8 students described how not seeing the work of their peers was an opportunity to reduce stress or to develop independence.

#### *Opportunities for teaching*

4% of students saw opportunities for teaching including enhancing accessibility of teaching materials (through online provision), the need for greater organisation, and enhanced teaching support.

#### *Other opportunities*

A small number of students cited a range of other opportunities including (but not limited to) the chance to provide greater equality in provision, easier methods for submitting work and the chance to appreciate the studio.

#### *5.4.2 Opportunities from a staff perspective*

Below is a summary of the free text responses to the question, “Looking ahead what is the biggest opportunity which working remotely offers compared to working in the architecture studio at your university?” Many staff responded with multiple factors which were all coded and themed. The percentages reflect the percentage of respondents who cited each theme in response to the question above.

##### *Opportunities for teaching and delivery*

33% of staff described opportunities for teaching and delivery. Most commonly, this involved ease of access and sharing of resources through online platforms (13%). 8% wrote how communication could students had improved enabling greater student inclusion. Other potential opportunities included the possibility to enhance tutorials, increase time spent per student, enhance dialogue, embed “authentic” learning, improve record keeping and better student dialogue. Some saw the creation of hybrid teaching environments a key opportunity while enhancing global networks and international teaching approaches was also seen as a possibility.

##### *Practical and lifestyle opportunities*

27% of staff described practical and lifestyle opportunities. These included the chance to reduce their commute (8%), better time management (5%) and the added flexibility of working remotely (4%). Other less popular opportunities were seen for better workspaces, fewer interruptions, personal health, cost effective, better work life balance, better organisation, mental space away from campus, lower carbon impacts and timetabling improvements.

##### *Opportunities for staffing*

18% saw opportunities for staffing. Most notably this included 15% who described how remote work had removed digital limitations allowing staff to be employed from anywhere in the world. Other possible opportunities included enhancing staff relationships, simplification of processes, the ability to attend meetings and question assumptions about teaching delivery.

##### *Opportunities for student working*

Opportunities for students’ working practices were cited by 13% of tutors. These included better online sharing, better student engagement, cheaper student costs, better student preparation, innovative design processes, more independence, better student communities and more chances for model making.

##### *None, not sure or not applicable*

11% of staff explicitly said how there were no opportunities for remote learning or that it was not applicable. 4% were unsure.

## 5.5 Challenges for remote learning

### 5.5.1 Challenges from a student perspective

Below is a summary of the free text responses to the question, “Looking ahead what is the biggest challenge which working remotely presents compared to working in the architecture studio at your university?” Many students responded with multiple factors which were all coded and themed. The percentages reflect the percentage of respondents who cited each theme in response to the question above.

#### *Peer interaction*

Peer interaction was identified as the biggest challenge (33% of students cited this theme). Specifically, the challenge to create a vibrant studio community, in which peers could interact and learn from each other was widely considered challenging to replicate remotely. 4% of students also described the challenge undertaking group work when remote learning.

#### *Access to resources and facilities*

31% of students said that accessing resources and facilities would be a challenge. This included access to digital resources and physical facilities (such as workshops) (24%) as well as accessing suitable spaces to work (7%). 4% cited technical knowledge as a challenge to operate in a remote learning environment.

#### *Teaching and delivery*

Teaching and delivery were seen as a challenge by 24% of respondents. Most notably, communication with staff was of concern (13%) as well as the effectiveness of tutorials and reviews (10%). Feedback quality and equitable provision of teaching were also seen as challenging by a smaller minority.

#### *Personal and wellbeing*

21% of students foresaw personal and wellbeing challenges in remote teaching. Most referenced included anticipated stress and mental health issues (6%) and the ability to concentrate and maintain motivation (12%). Other factors included anticipated issues with engagement, work-life balance, managing childcare, increased costs and a lack of routine or structure.

#### *Working*

8% of students identified challenges relating to their working processes. These included making physical models or drawings (5%) and their ability to produce high quality work or achieve success (3%). A small number also lamented and perceived inevitable shift to digital working.

#### *No challenges or not applicable*

6% of students did not complete the free text or deemed it not applicable. 5 students of 798 said there were no challenges for remote studio teaching in the future.

#### *Other challenges*

4% of students cited other challenges including, but not limited to, the provision of pastoral care, placements and site visits.

### *5.5.1 Challenges from a staff perspective*

Below is a summary of the free text responses to the question, “Looking ahead what is the biggest challenge which working remotely presents compared to working in the architecture studio at your university?” Many staff responded with multiple factors which were all coded and themed. The percentages reflect the percentage of respondents who cited each theme in response to the question above.

#### *Student engagement and support*

37% of staff described challenges in student engagement and support. Most notably, group and peer interaction were seen as under threat by 22% of respondents. 5% thought that student engagement would be a future challenge while 4% mentioned student parity and digital poverty. Other challenges included isolation for students, mental health issues and student motivation.

#### *Studio culture*

26% of respondents explicitly described challenges to the “studio culture” or sense of community embedded within the design studio. The physicality of the studio, the informal encounters and social aspects were all seen as both essential and under threat.

#### *Personal and practical challenges*

Personal or practical challenges were cited by 23% of respondents. Inadequate equipment and resources were most frequently mentioned (12%). Other challenges included workspace, “over management”, staff mental health, fatigue, personal commitments, staff training, technical issues and extended time for preparation and interactions.

#### *Relationships with students*

18% described how developing relationships with students was a key challenge. This included developing a personal connection (13%) as well as informal contact with students, monitoring progress and providing pastoral care.

#### *Teaching interactions*

Challenges for teaching interactions with students were described by 14% of staff. 8% said how communication through drawing was a particular challenge. Vertical teaching, transmitting knowledge, site visits and ensuring student understanding in tutorials were all concerns.

#### *Student learning*

13% identified threats to student learning. This included 9% who said who new students or beginning a project remotely would be a special challenge. Others saw threats to the students developing their own design processes, student understanding of concepts and skill acquisition were remote teaching to continue.

#### *Student working methods*

9% perceived challenges to traditional working methods. 7% of staff saw a particular threat to model making, while the quality of student work, their working environment, and a connection to real world issues were also perceived as threats.

## 5.6 Improvements for remote learning

### 5.6.1 Improvements from a student perspective

Below is a summary of the free text responses to the question, “What single improvement would most enhance remote architecture studio working in the future?” Many students responded with multiple factors which were all coded and themed. The percentages reflect the percentage of respondents who cited each theme in response to the question above.

#### *No improvements, not sure or left blank*

9% of students said there were no improvements that could be made to remote studio teaching. In most cases this was because either they were fundamentally opposed to remote studio teaching or that it was too flawed to be further improved. 3% of students were unsure what could be improved while 15% left the answer blank.

#### *Access to resources*

23% of students mentioned the accessibility of resources as a major improvement that might be made in remote studio delivery. 17% described how improvements to remote access to resources, software and technology would enhance their remote learning experience. Access to physical facilities was cited by 4% of students as a key improvement. Other students also mentioned the need for student training and for there to be a greater focus on digital representation. Conversely, 3 students mentioned how the ability to work physically would improve their remote experience.

#### *Improving peer learning*

17% of students spoke about the need to replicate the tacit learning opportunities of the virtual studio. This included enabling peer learning opportunities through greater peer-to-peer contact (8%) and facilitating a sense of community (5%). Many students were also keen to improve how they could see the work of their peers (3%) or to use virtual pin-up spaces (2%). Discussion boards and social events were also suggested.

#### *Course organisation*

Improving course organisation was a concern for 16% of respondents. 10% wanted a greater quantity of, or more regular, tutor and staff contact. 3% wanted better overall communication while 2% wanted better overall organisation. Tutor training, empathetic tutors and tutor support was also mentioned.

#### *Teaching*

Teaching improvements were described by 13% of students. These included the provision of remote group tutorials (5%), remote individual tutorials (2%) and a blend of in-person and remote teaching (3%). Other suggestions included enhancing feedback, attempting to replicate in person delivery and employing more guest teachers.

#### *Curriculum changes*

4% of students suggested some structural changes in their course to improve deliver. These included changed workload and submission expectations, more time and interim submissions to keep students on track. 10 students also suggested providing funding or reducing fees for remote learning.

### *Course materials*

3% of students described how their course materials could be enhanced. Suggestions included more live lectures, recording lectures, improving online resources and providing clear course materials and procedures.

#### *5.6.1 Improvements from a staff perspective*

Below is a summary of the free text responses to the question, “What single improvement would most enhance remote architecture studio working in the future?” Many staff responded with multiple factors which were all coded and themed. The percentages reflect the percentage of respondents who cited each theme in response to the question above.

#### *Improvements in technology*

The most suggested improvements were centred around technology (53% of respondents). 24% said how they were looking for a technical solution that could replicate the ability to communicate through drawing in a natural manner, during remote tutorials. A tablet (and stylus) was the most common suggestion. 23% described how improving their general IT setup would help. 8% mentioned improvements to internet connection with smaller numbers wanted more online resources and cameras for all students.

#### *Staff working*

21% of staff suggested improvements in the working practices. These covered a range of issues including better support and training (7%), better home work setup (3%), a coherent IT approach (3%) and collaboration with other staff (3%). Other improvements included allowing flexibility in approaches to teaching, better physical resources (such as stationery), better workload distribution, more pay and more time to prepare.

#### *Improvements in teaching*

18% described improvements in teaching. Ideas included better interaction from students in tutorials (5%), better student work sharing (3%) and recreating the collaborative nature of the studio environment digitally (3%). Other improvements suggested were more group teaching, a concerted effort to introduce flipped classrooms, changing parameters of coursework, including some face-to-face teaching, and better work sharing.

#### *Student working*

8% suggested improvements to student working practices. These included ensuring they all had appropriate hardware, were adequately trained, were well supported and were socially active.

#### *None, not sure or not applicable*

1 staff member thought there were no improvements while another said not applicable. 3% were not sure.

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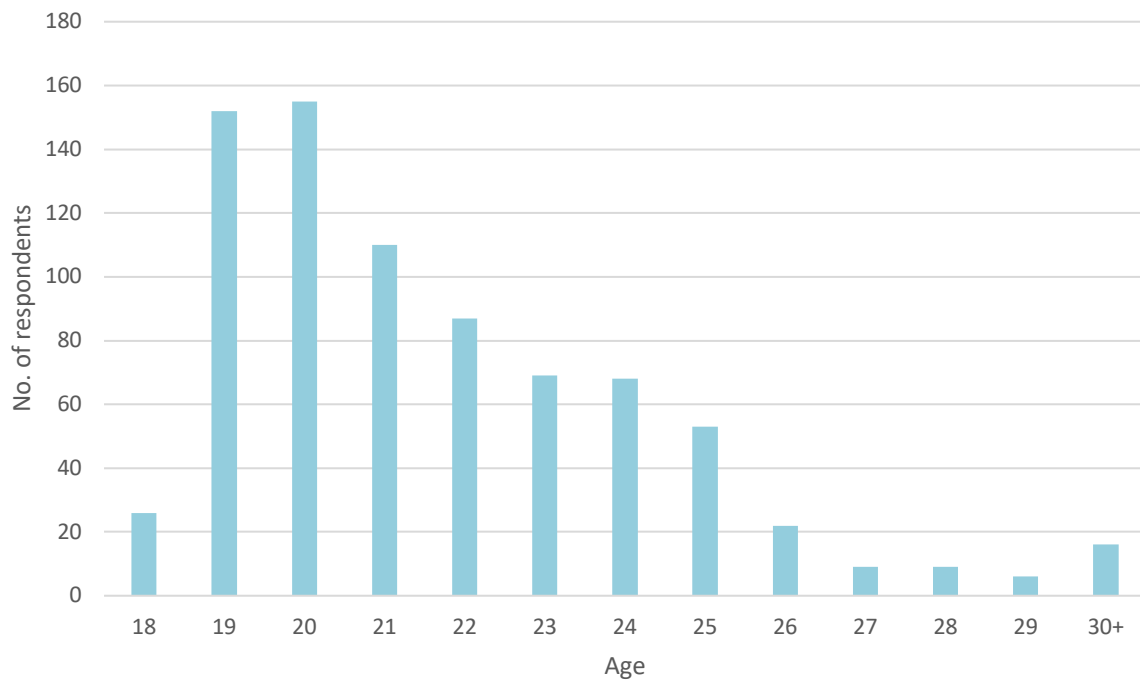
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**APPENDIX A: Student Demographic Data**

*Figure A1: Age of student respondents.*



*Figure A2: Genders of student respondents (no students responded "other").*

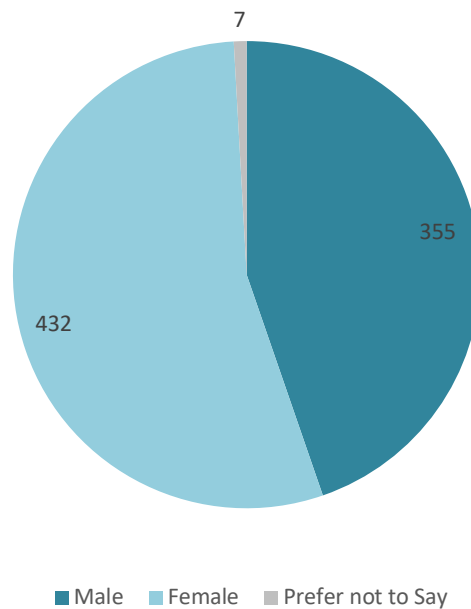


Figure A3: Ethnic groups of students by student status.

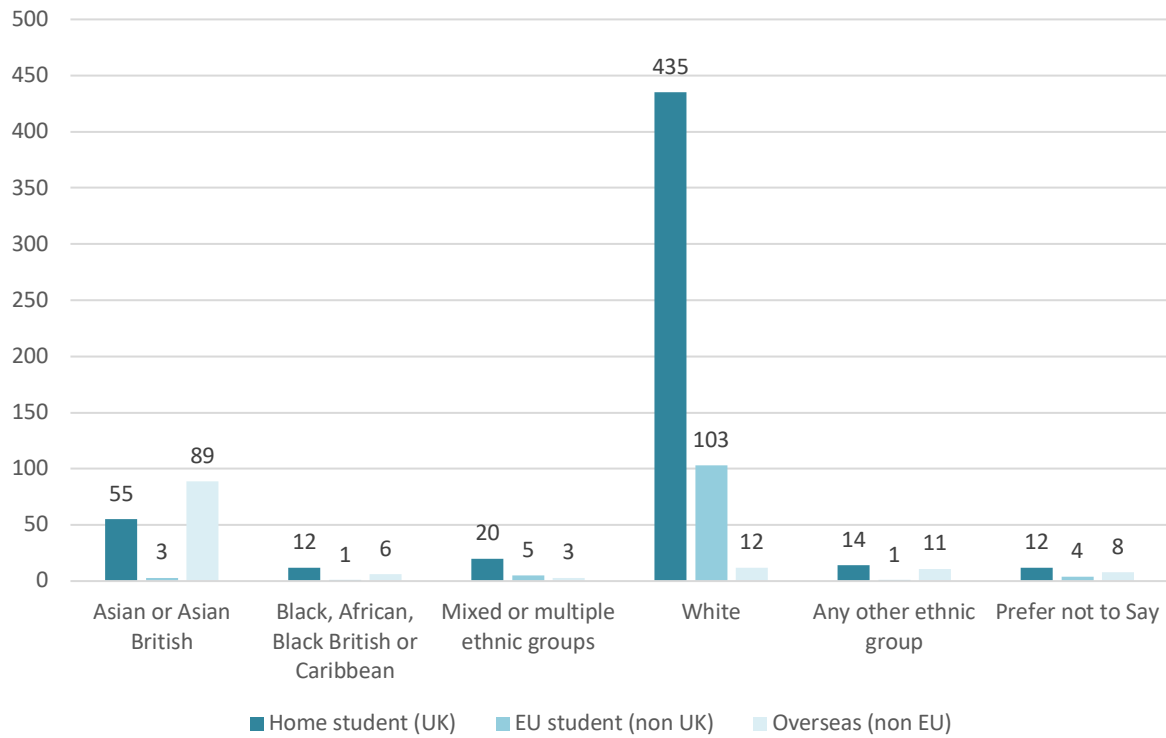


Figure A4: Year of study of respondents.

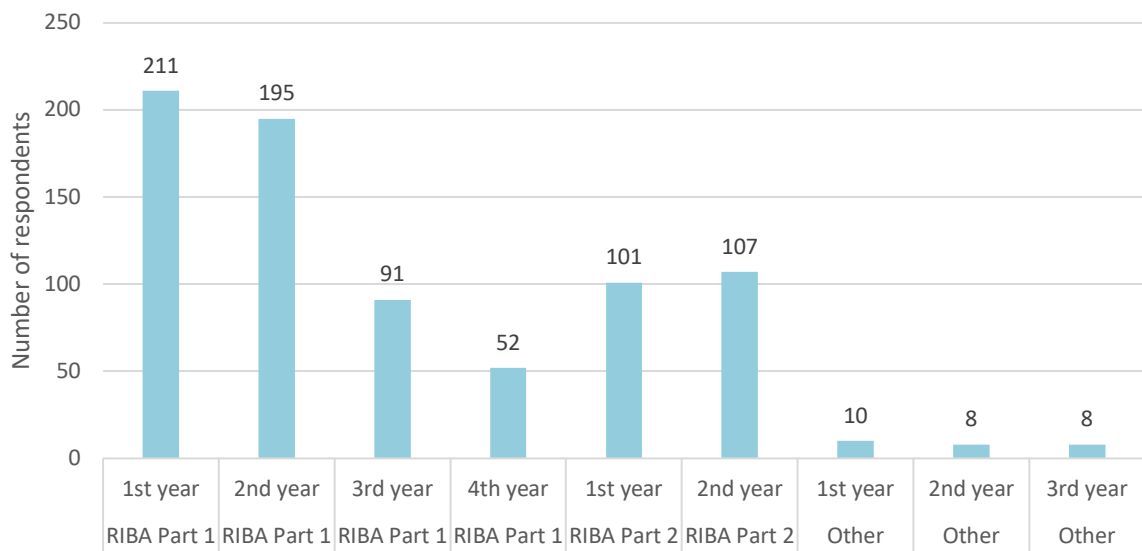


Figure A5: Remote working locations of student respondents.

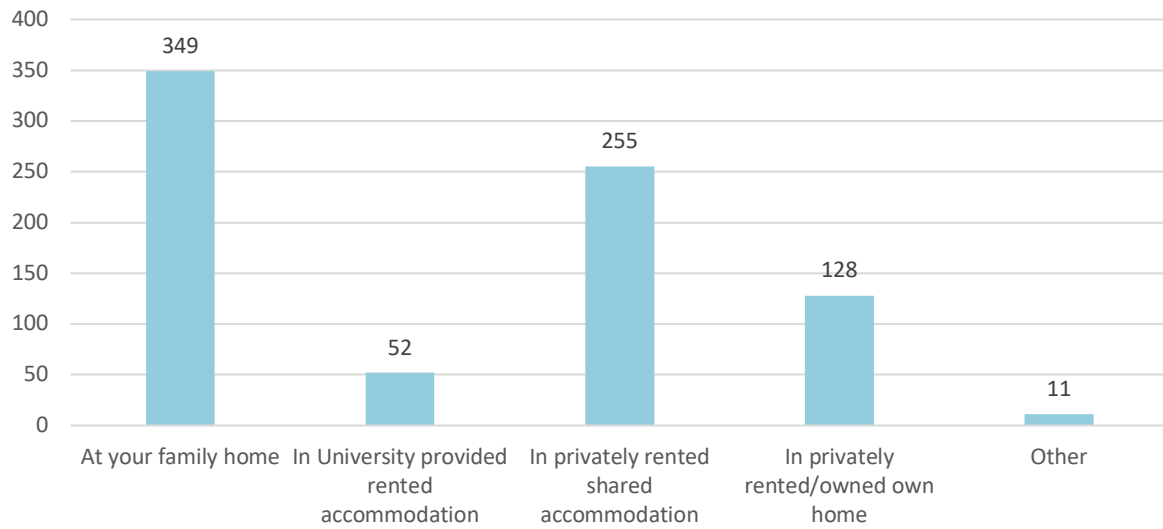


Figure A6: University of attendance of student respondents.

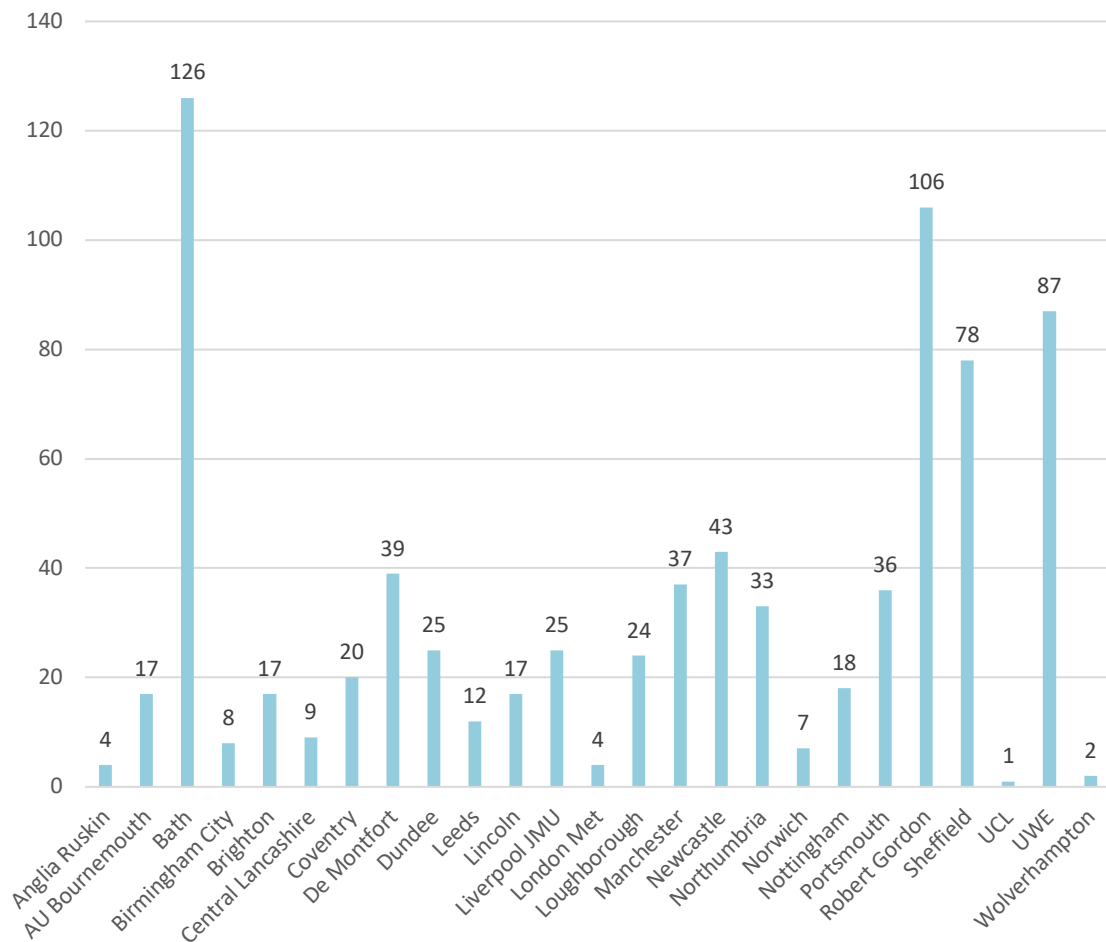


Figure A7: Studio provision available to student respondents.

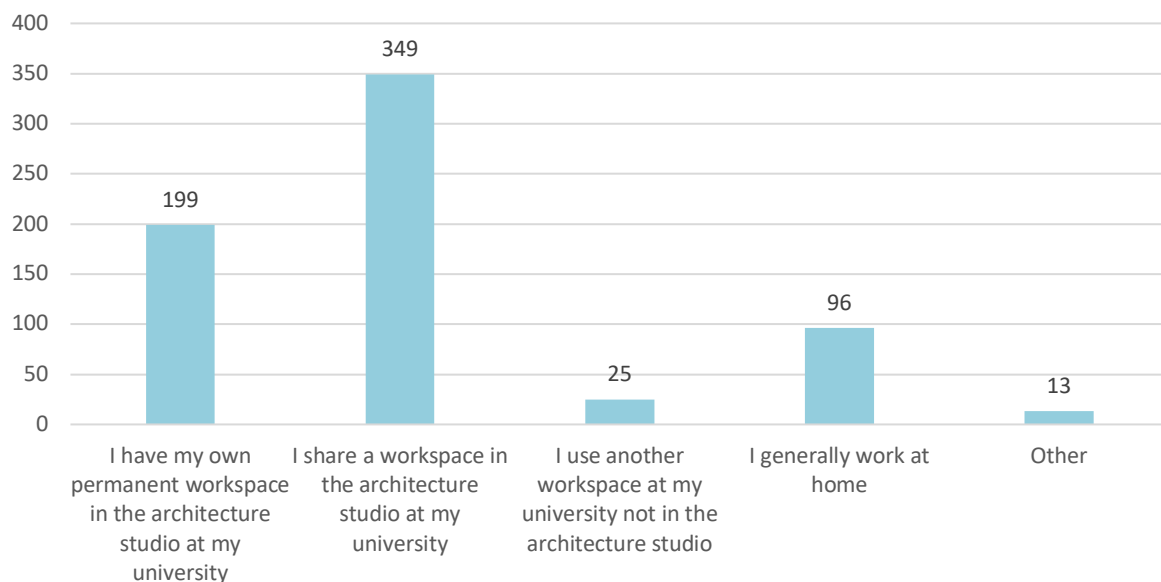


Figure A8: Resource use of student respondents in hours per week

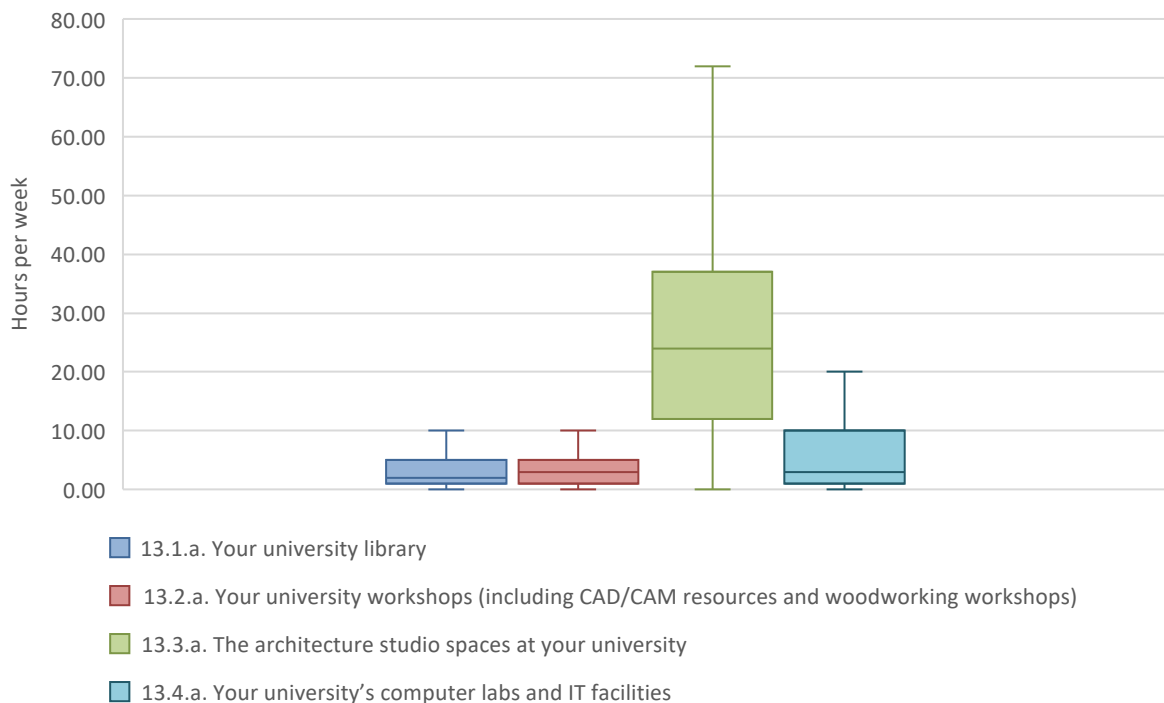


Table A1: Average resource use of student respondents in hours per week.

	University library	University workshops	Architecture studio space	Computer and IT facilities
Average hours per week	4.92	5.08	26.73	7.29

**APPENDIX B: Tutor Demographics**

Figure B1: Genders of tutor respondents (not tutors responded (“other”).

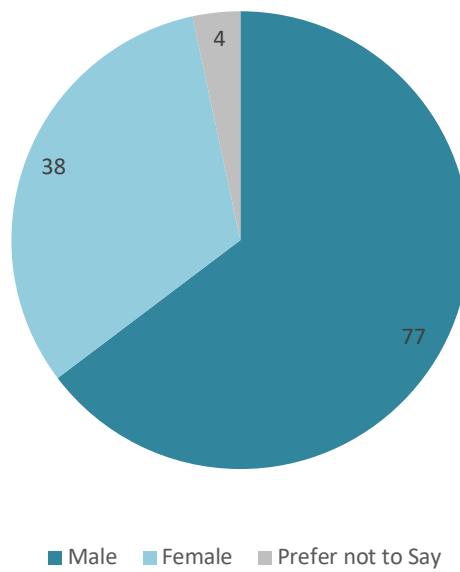


Figure B2: Ethnic groups of tutor respondents.

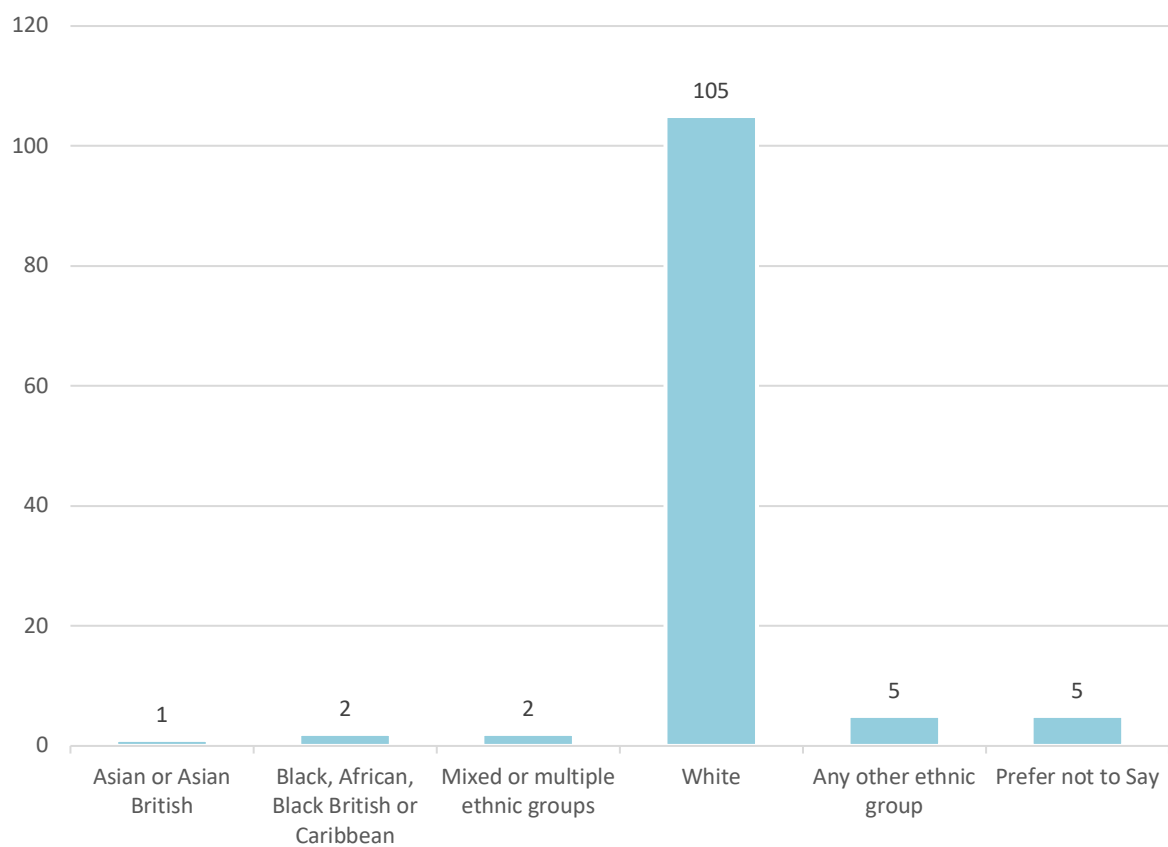


Figure B3: University of work of tutor respondents (includes tutors working at multiple universities).

