

Covid-19 impact on A-level practical science skills: are all students really ‘in the same boat’?

Introducing our study

As part of a wider collaborative project with the University of Durham, we set out to explore A-level students’ experiences of practical science at home and school during the disruption caused by the Covid-19 pandemic.

Method and participants

In summer 2021, we invited 18 students who had recently completed their A-levels to share their experiences with us in a series of online focus groups. This included exploring how prepared they felt to embark on their university studies.

Our findings

While some of the young people we spoke to felt that all students were ‘in the same boat’ when it came to their experiences, our findings suggest that this is unlikely to be the case.

We found that...

1. Students had a variety of different experiences of practical science, varying across centres and subjects.
2. Most students felt they had a gap in their manipulative skills.
3. Some students felt that their scientific enquiry and soft skills had been developed through lockdown learning.
4. Students remained positive about their transition to higher education.

Next steps

- Enable higher education institutions to design measures to ensure a smooth transition for incoming students.
- Support teachers to rebuild students’ confidence around key knowledge and skills areas.

What did the students say?

Finding 1: Different student experiences

Students across different centres and subjects reported a range of educational experiences during the pandemic.

Social distancing varied between classrooms and schools, which meant that some students were more affected than others.

Some participants felt they were restricted by both the space and time available to complete practical science work. The restrictions also meant many students were not able to interact with equipment and instead had to observe practicals carried out by teachers.

Ours wasn't really that changed ... I would say that lessons were the same as if they were a normal year, so we didn't really suffer from anything like that I don't think.

I think that our practicals were quite rushed because we had to fit them in. By the time we got back, we were basically doing exams.

When we went back to school, I don't think we did much in the way of practicals ... I think we were shown a few at the front but for a lot of them, there just wasn't the equipment or space.

Finding 2: A gap in manipulative skills

Overall, students felt that it was their 'hands-on' manipulative skills that had suffered the most during Covid-19, and some felt a particular lack of confidence in this area of practical science.

Some participants felt they did not have the opportunity to engage with manipulative skills at all during home learning. However, others were offered digital replacements such as YouTube videos, Zoom calls or simulations, albeit with limited amounts of success in emulating hands-on skills.

When we were at home over lockdown we mostly just watched videos to understand what was going on.

I'd say in terms of manual dexterity I was lacking a bit. I haven't really been that strong with setting up equipment.

Zoom calls are not the same, especially when it comes to practicals because it's very hands on.

I think sourcing and referencing was a big benefit. I don't think I would have been as confident with sourcing the websites that I used and making sure that I referred to them in my analysis, which I think are key transferable skills.

I really got to develop my evaluating and analysing skills with my practical work.

Finding 3: Scientific enquiry and soft skills

Most students felt that lockdown had allowed them to compensate for the gap in manipulative skills with other kinds of skills, such as referencing, sourcing information and using software. The majority were also fairly confident in their evaluation and analysis skills.

Finding 4: Transition to higher education

As a result of studying in lockdown, students now feel more confident in their ability to work independently. They are also aware that this experience has better prepared them for university study. The lack of practical work does not seem to have impacted students' career choices, and most participants are fairly optimistic about their transition to higher education.

I've had to motivate myself so much this year because of the online learning. I think it won't be as hard to transition maybe to university-style learning.

I always wanted to go into healthcare, so I don't think the lack of practical work really impacted my career choice because I was always going to go down that route.

Because of the lockdown I felt like this year got dragged on, so I'm getting more and more excited to move on and go to the next step, uni being the next step for me.

What are the key takeaways for teachers?

- It's important to acknowledge that students progressing to university have all experienced disruptions to their studies, but they have not all had the same experience.
- Future A-level students and those going on to further education and training may need support to acquire manipulative skills, as these were often underdeveloped during the pandemic.
- Students progressing to university may have stronger scientific enquiry and soft skills as a result of lockdown learning.
- Giving A-level students the opportunity to work independently may help prepare them for higher education study.