

The effect of pandemic related teaching changes on academic performance amongst first year physics students at King's College London

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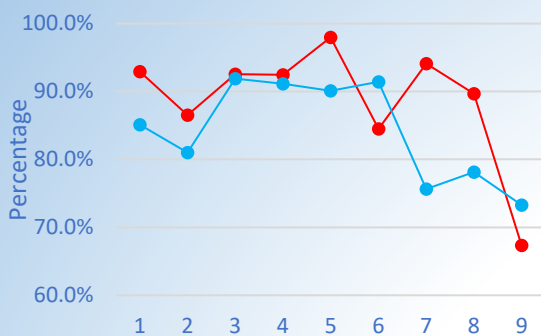
The Premise

Due to the pandemic many teaching changes were made. Students complained that these changes overburdened them. We present an investigation into the effects of these changes on performance.

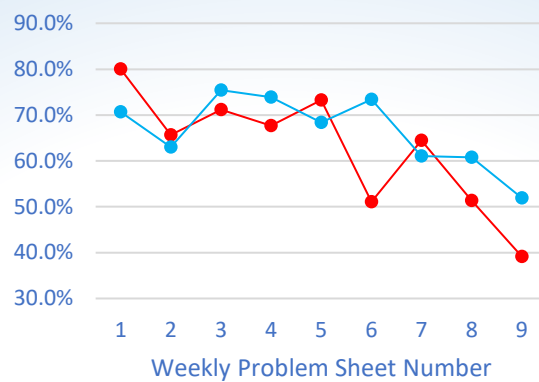
The Pre-Pandemic Year 2019/20

The same weekly problem sets were used in both the pre and post pandemic years. This gives us a baseline to compare to when investigating the effects of the pandemic.

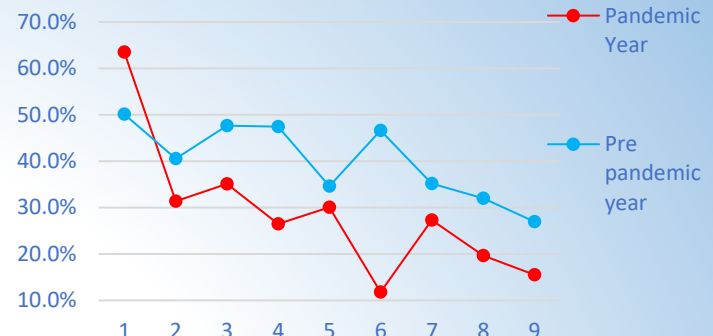
Strongest 25% of Students



Average of all Students



Weakest 25% of Students



Analysis Pre-Pandemic

There is a drop off in attainment with time. This drop off is worse for the weakest 25% of students.

Possible causes :

- Questions get harder faster than the students can learn new skills
- Fatigue sets in making motivation and keeping up more difficult

Changes due to the Pandemic

- Remote learning
 - Flipped Classroom
 - Weekly MCQ quizzes and 2 longer MCQ quizzes
 - 1 group project
- More coursework was added to increase engagement, and overstretched staff were given even more work to create the new assessments.

Final Analysis

- Students did overall worse in the pandemic year.
- Their drop off in performance with time was stronger than in the pre pandemic year.
 - The weakest 25% of students were the worst affected.
 - They saw a large and significant decline in performance with time.
- The strongest students did overall better in the pandemic year than pre pandemic.
- The strongest students had the largest drop off in performance with time in the pandemic year.

Conclusions

It is possible that had no extra coursework been given, the performance drop off would have been even larger or the same. However, since the strongest students did better overall, but suffered the largest decline in performance with time, most of the common effects of the pandemic on performance are unlikely to be the cause of the drop off. Furthermore, the clear decline in performance must be combined with students' complaints that they were overburdened with deadlines as term went on.

A reasonable conclusion is that the assessment changes made, which went beyond what was necessary for the pandemic and created a large workload for already overstretched staff, were a failure and harmed student learning. This is particularly true for the weakest 25% of students in the cohort. These students on average failed (<40%) all but their first week's coursework. The data suggests that the idea that more work leads to better learning and engagement should be treated with skepticism. An alternative would be to focus on the quality of assessment and communicating the motivation behind assessment to students more clearly.