

Lecture attendance monitoring and assessment performance in a 1st year chemistry course

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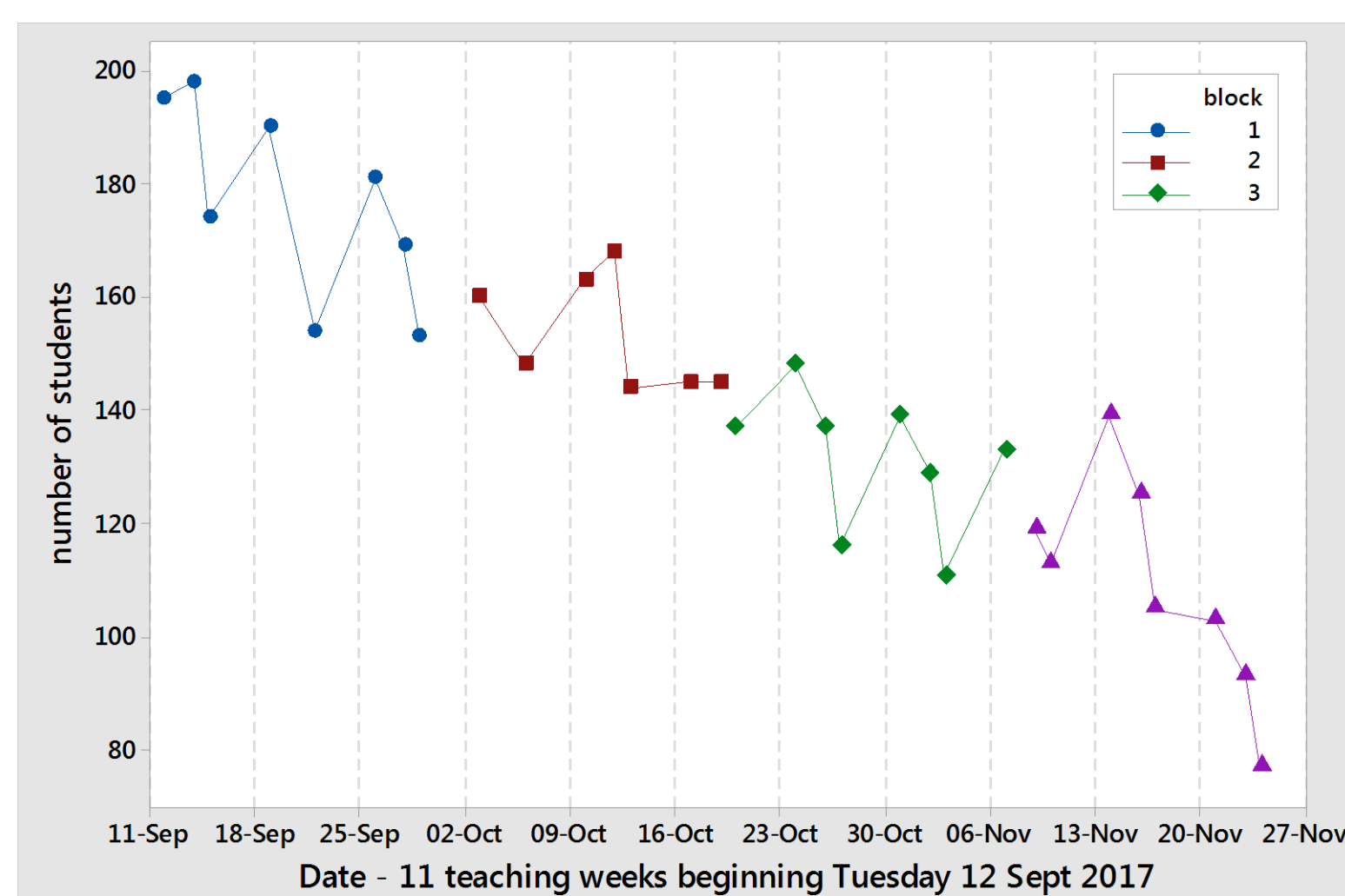
Introduction

A pilot study was undertaken across the University to use QR-codes to record lecture attendance to gauge engagement and improve retention. Students could scan the code in class using a mobile device, or enter an 8-character code online at a later date. Scanning was optional and lecture attendance was not formally monitored. A first year course, Chemistry for the Life Sciences, participated in the study. The course consisted of 33 lectures, although two (21/9/17 & 5/10/17) were not recorded. Attendance data has been compared with student performance in assessed components: continuous assessments, labs, final exam, and overall course grade point average. 215 students completed the course. Grades are on a 0-22 point scale, with 9 a pass and 18-22 an 'A' or 'Excellent' grade.

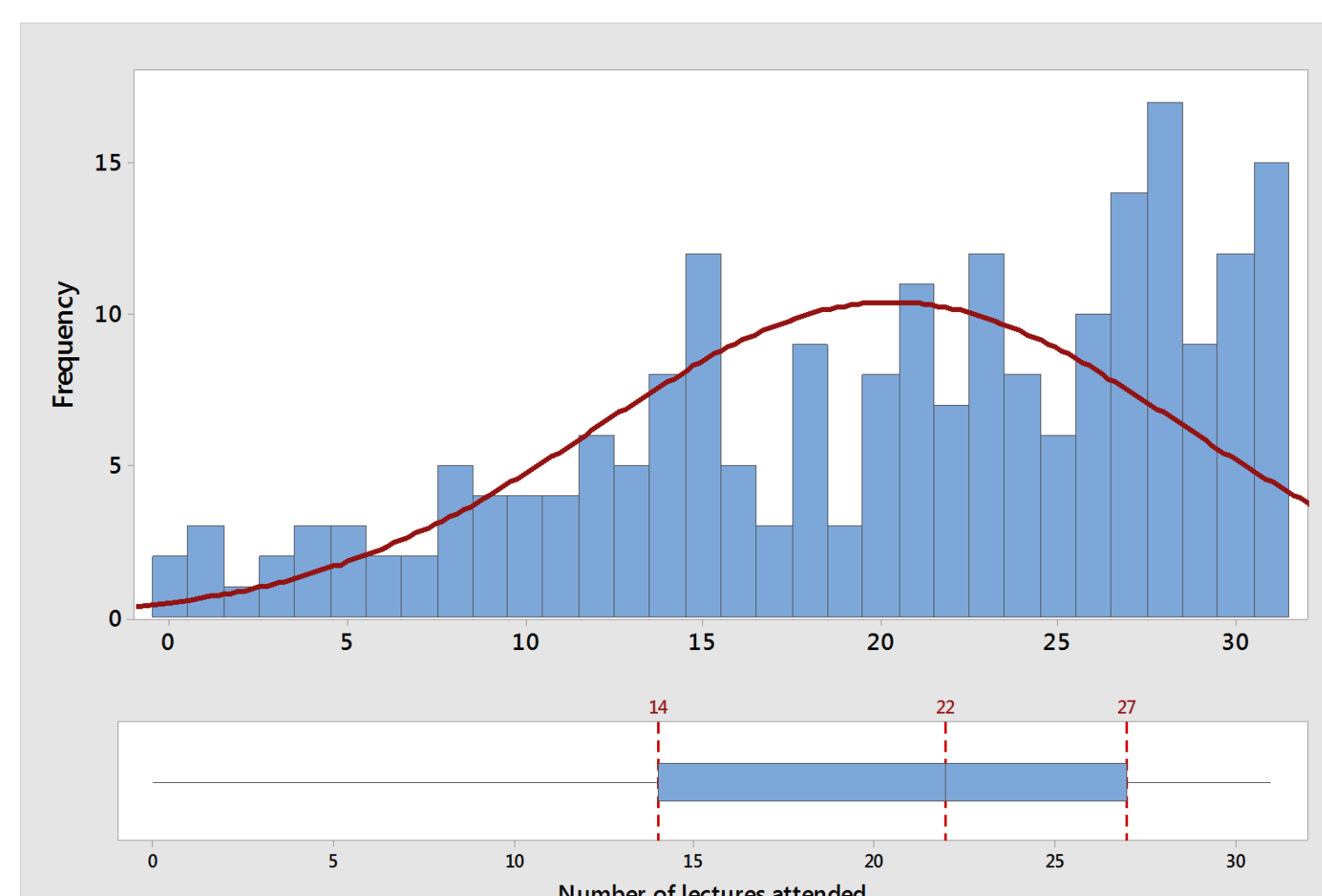


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Attendance

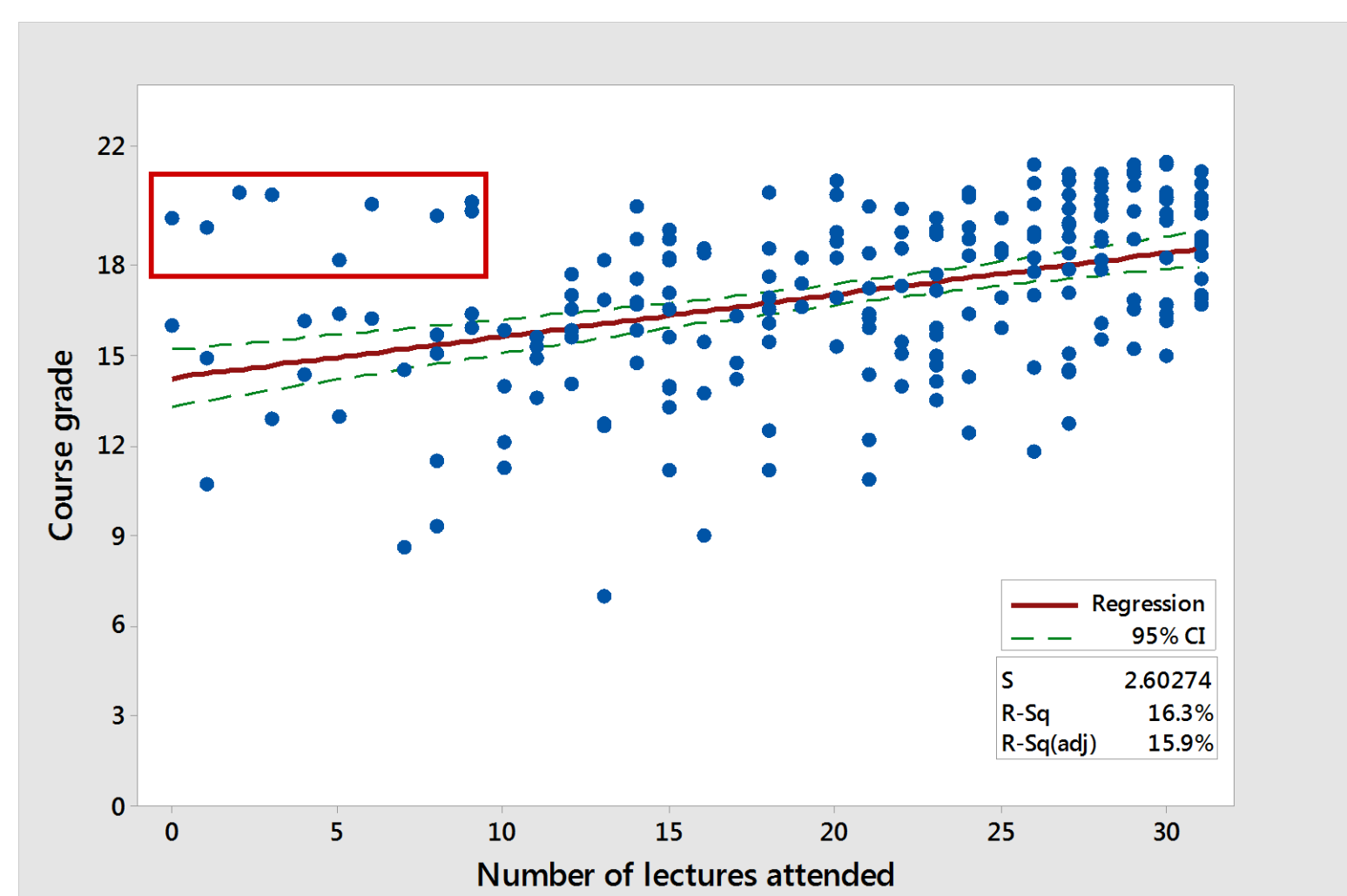


There is a general trend for attendance to fall over the 11 week teaching term. A decreasing trend is also seen during the week; Tuesday > Thursday > Friday. Lectures were given in four blocks with the topics and/or lecturer changing, with no apparent effect.



Median attendance was 22 lectures. 15 students attendance all lectures. Two students had zero attendance recorded. This may be genuine, or the students may have chosen not to scan the code. Half the class attended 70% or more lectures.

Attendance and course performance



A plot of overall course grade (combined continuous assessment, lab, and exam) shows a weak correlation with lecture attendance, $R^2 = 16\%$. Of note are nine students (shown in red box) who attended fewer than 30% of lectures, but who all achieved an A grade (>17.5) overall. This could be students who chose not to record their attendance, were motivated and engaged with the course material outside of lectures, or who were well qualified in chemistry in advance of the course and decided attendance wasn't needed.

Average grade point and 95% confidence intervals for lower, middle, and upper attendance quartiles and whole class				
	Q1	Q2	Q3	Whole class
Continuous assessment	17.32 (16.36, 18.28)	18.56 (18.11, 19.00)	20.27 (19.90, 20.65)	18.67 (18.30, 19.03)
Labs	17.89 (17.09, 18.70)	19.00 (18.67, 19.32)	19.98 (19.62, 20.34)	18.96 (18.67, 19.25)
Exam	13.30 (12.20, 14.40)	14.75 (13.99, 15.50)	17.38 (16.53, 18.24)	15.03 (14.49, 15.58)
Course	15.63 (14.78, 16.48)	16.92 (16.42, 17.43)	18.92 (18.40, 19.43)	17.09 (16.71, 17.48)

The general trend is for the average grade to increase, but based on 95% confidence intervals only the upper quartile in each component is significantly different. This could be due to the group of lower attending students with high grades increasing the average for the lower quartile.

Labs, which were not directly related to the lecture timetable, show a similar effect. This suggests that lecture attendance may also indicate a level of preparedness and engagement with labs.

Conclusions

- Attendance falls over the duration of the week and term.
- New topic blocks and lecturers don't appear to have an impact – perhaps these should be better flagged to students.
- Lectures are not 'value added' for some students with low attendance but high grades. Is the course 'too easy' or at least appear so?
- Attendance and assessed components do not *in general* correlate well overall, but this may be skewed due to a number of students with low attendance or attendance reporting.
- Students with high attendance (top 25%) have on average higher grades in all assessed components, and overall composite grade.
- The bottom 25% attendance group have average grades below the class averages in all components.

Acknowledgements

I would like to thank Dr Steve Tucker and Mr Ian Robotham who are running the pilot study and who gave me a detailed breakdown of attendance data. I would also like to thank the students who took part and recorded their attendance.