

Declining attendance

- Class attendance has decreased uniformly over the last decade.
- The decline in attendance coincides with lecture recordings and increase in online resources.
- Non-traditional, more engaging and interactive teaching methodologies, such as flipped mode, do not seem to increase attendance.
- Over the last two decades online material provided by staff has proliferated.
- So if students do not attend classes do how do they learn?
- Where do they get their resources from? Do they use our online material?

Project

A wider project on attendance and its affect on performance, focus on first-level mathematics and statistics units.

- 1 A survey was part of the investigation.
- 2 Questions were on student use of online material, and attitude towards lecture recording. Neither unit had lectures recorded.
- 3 Linked to student demographics and performance as measured by final mark.

Previous research

Not much available, and almost nothing on mathematics and statistics.

- 1 Online paradigm has increased the divide in the student-lecturer expert relationship and referent relationship (Alshahrani et al., 2017).
- 2 Flipped mode class does not increase attendance (Khan, 2020).
- 3 Student access and use of online material depends largely on motivation (Li and Tsai, 2017).
- 4 Students access online material a few weeks after the topics are covered (White, 2009). This has implications for mathematics and statistics teaching and learning.

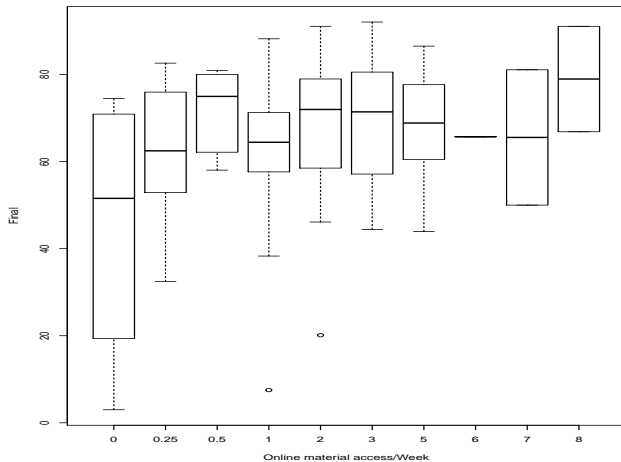
Methodology

- 1 First year introductory calculus unit.
- 2 Taken by science students.
- 3 Teaching was traditional lectures, with formative/summative assessment every two weeks.
- 4 Survey of class after final results were released.

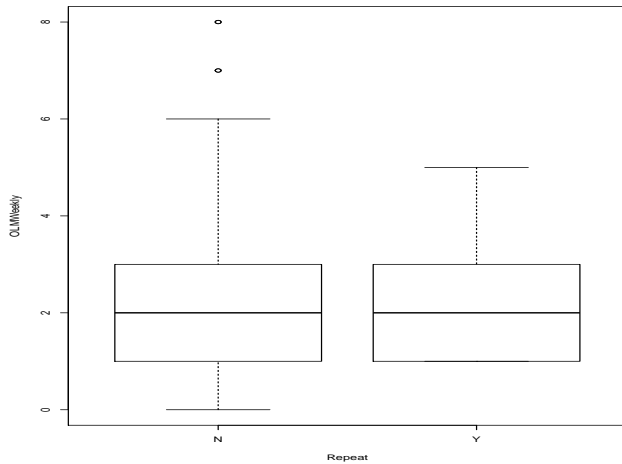
Data collection and Summaries

- 1 Total of 404 students took final exam.
- 2 Of this 175 responded to the survey.
- 3 Good spread of grades and demography.

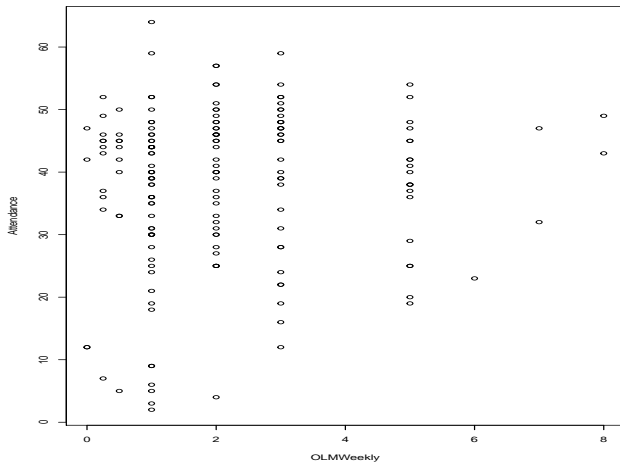
Data exploration



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Data exploration



Main findings:

- Every 10 extra class attended increased the average final mark by 4. A total of 64 classes.
- Older students do better.
- Permanent resident students perform better by 12 marks on average.
- Every 10 marks in HS math increased average final mark by 5.5.
- Every 10 increase in TER increased average final mark by 5.

An extra access of online material per week increased the average final mark by 1.

Other findings

- Permanent residents accessed online material 2/week on average compared with other residence status students.
- Second year students accessed online material 1/week more on average compared with students at other levels.
- Some evidence that students with a higher TER accessed online material less often per week—around 0.5/week less for every 10 increase in TER.

Questions

- If students do not attend classes nor access online material, how do they learn?
- How do we provide appropriate online material to increase student engagement? Add assessments?
- Are university courses face-to-face or online?

Further work

- More comprehensive study.
- Again target first year students.
- Collect exact attendance by requiring students to scan their student cards as they enter the venue.
- Collect exact access of online material, including access of lecture recordings.
- Investigate relationship between attendance, performance and access of online material, adjusting for demographics (ability, citizenship type, age, sex, high school—public vs private, . . .)
- Follow up with survey/focus groups to identify why students do or do not access online material.

Venues are not large enough to hold the entire class!!

So per force students cannot attend classes even if they want to!

As a result students may come in the first wee, but then attendance falls off.

References

1. Alshahrani, S., Ahmed, E. & Ward, R. J. (2017) The influence of online resources on studentlecturer relationship in higher education: a comparison study. *Comput. Educ.* 4: 87.
<https://doi.org/10.1007/s40692-017-0083-8>
2. Khan, R. N. (2020) Attendance Matters *International Journal of Teaching and Learning in Higher Education* (To appear).
3. Li, L. & Tsai, C. (2017) Accessing online learning material: Quantitative behavior patterns and their effects on motivation and learning performance *Computers & Education*, 114, pp. 286-297.
4. White, B.T. (2009) Analysis of students downloading of online audio lecture recordings in a large biology lecture course. *J Coll Sci Teach.*38(3):23-27.