Behavioural consequences of reminder emails on student performance: a real-world deployment
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Abstract
As online learning has become a new norm during the COVID-19 pandemic, it is more difficult for instructors to monitor progress and motivate students. We designed and implemented a real-world randomized A/B experiment to send emails to students reminding them about their online homework, in an effort to reduce procrastination and increase student performance. In this paper, we discuss the impact of reminder emails on student motivation to attempt and complete homework, and analyze if it prevents students from procrastinating and results in students starting earlier and performing better. Also, we will discuss the limitations of our deployment and how we can generalize it to a broader context.

Background / Context
- Procrastination is a prevailing problem among college students. Research has estimated that approximately 80% to 95% of college students engage in procrastination [2, 4]. Moreover, studies have found a strong negative correlation between procrastination and student performance [7]. However, procrastination has become more prevalent in the online learning environment due to a decrease in student attendance and how we can generalize it to a broader context.

- According to last minute marketing, there is an increasing trend that firms in the travel and tourism industry are more open to marketing education and ideas in the online learning environment due to a decrease in student attendance and student performance [7].
- The phenomenon of procrastination has become more prevalent in the online learning environment due to a decrease in students’ effort regulation and intrinsic motivation to learn [5]. Therefore, it is crucial to implement the randomized A/B reminder messages to keep students on track. Email reminders will be randomly sent on Tuesday or Thursday, and the effects of the timing of the emails will be investigated.

Method of Analysis
- To measure how much of an impact reminder messages have on students, we have sent reminder emails to test our hypothesis. We deployed the reminder messages during the Winter 2020 semester of Introduction to Programming (CS1108). Our deployment was done in week 5, 6, 7, 8, 11 and 12 within the second semester; for this poster, we will focus on week 6 in particular as this week hasn’t been analyzed before.
- In Week 6, we sent reminders for students’ weekly exercises. To test students’ behavior change due to email reminders, we randomly divided students into a control group (no email, n = 235) and treatment group (receive email, 75.16%, n = 711). Within the treatment group, we have randomized which day (Tuesday vs. Thursday) they will receive the email.
- In addition to understanding students’ perceptions and experiences receiving those messages, we also conducted a survey to allow students to express their ideas on receiving those reminders.
- In this poster, we will focus on answering two main questions:
  1. Are reminder emails really effective?
  2. On what day of the week are reminder emails more effective than others?

Intervention Results
- Students who received the reminder emails generally show positive impressions. (Figure 4)
- Our deployment was done in week 5, 6, 7, 8, 11 and 12 within the second semester; for this poster, we will focus on week 6 in particular as this week hasn’t been analyzed before.

- Students who received the reminder email performed better in the midterm. The p-value (0.00796) is statistically significant [Figure 4].
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References

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