

Table of Contents (Click headings to navigate gdoc)

[CSC108 Summary of Research Paper Ideas](#)

[Channels for Reaching Students](#)

[Motivation for Research](#)

[Research Questions](#)

[Link to implementation](#)

[Discussion or Feedback:](#)

[General Messaging/Prompting Interventions for Students to Work](#)

[Motivation for Research](#)

[Research Questions](#)

[Link to implementation](#)

[Discussion or Feedback](#)

[Using Association Between Course Inputs and Achievement \(Informational disclosure nudge\)](#)

[Motivation for Research](#)

[Research Questions](#)

[Link to implementation](#)

[Discussion or Feedback:](#)

[Questions to ask in interviews](#)

[Using Small Bonus Mark Incentives to Induce Effort](#)

[Motivation for Research](#)

[Research Questions](#)

[Link to implementation](#)

[Discussion or Feedback](#)

[Automated "MessageBot" system for messaging/prompting students to set aside time to work on course \(or motivate them\)](#)

[Initial survey](#)

[Research question](#)

[Link to implementation](#)

[Discussion](#)

[PCRS Submission Data](#)

[Research Questions](#)

[Discussion](#)

[Exit Survey](#)

[Research Questions](#)

CSC108 Summary of Research Paper Ideas

This document logs what we could contribute as a research paper from the surveys, interventions and interviews we've done for CSC108 online session.

OVERALL AIM OF THIS PAPER (linkage between studies):

This paper explores effective ways of helping higher education students to support students to keep track in their courses.

The contributions of this paper are:

1. Results from a survey of students' perceptions towards prompts using various channels and messages;
2. Results from a study investigating the impact of general prompting interventions on students' preparation activities in an online course;
3. Results from a study on the impact of an informational nudge on students' completion of a course assignment;
4. Results from a study on the impact of an academic incentive with gain or loss framing to induce effort.
5. Results on which channels are most effective for reaching different types of students.

{{Some papers from previous CHI, for example, available here: [CHI papers - for reference in paper-writing](#). See in particular [paper 319](#) on framing and presenting multiple studies. }}

Channels for Reaching Students

Motivation for Research

Suppose had some messaging intervention which induced students to significantly increase effort exerted in their courses and as a result lead to large gains in GPA. For this intervention to be actually impactful, it has to first reach the students and be read. Hence investigating which channels (email, canvas inbox, text, or chatting application) are the most effective for different types of students is crucial for messaging interventions to be effective.

Research Questions

1. What are effective channels for instructors to reach students? (quercus email vs canvas inbox).
2. How can instructors figure out what channels are effective for reminding students and getting them to set aside time?

3. When is it a good time to message students so that they are most likely to engage in the intervention?

Link to implementation

- [Progress check through canvas vs utoronto email](#)
- [Week 12 progress check through canvas vs utoronto email](#)

Discussion or Feedback:

Please write any of your feedback relating to the above idea and interventions here.

General idea: Show students data from the year before, which point they should/could be at in the course, for the week they're on. Can show them stats for what they *haven't done* yet, as it can then motivate the students.

Do a broad survey. Then follow up with interviews on a targeted range of people (who check email often, don't check email often).

Do a bit of literature review on marketing, what might be relevant. Rifat paper... HCI community commented on it.

General Messaging/Prompting Interventions for Students to Work

Motivation for Research

It's fairly easy and inexpensive to send a large amount of messages to students through a variety of channels through email and texts. How effective are general message prompts such as reminders and goal setting in help students keep on track with their courses?

Research Questions

1. The impact of different types supportive messaging interventions on inducing students to complete online homework activities.
2. How do we get students to put aside time and spend effort on important activities (e.g. Rehearse) by messaging and prompting them (e.g. email about PCRS attempts being correlated with midterm grade)?

Link to implementation

- [Generic vs Catch Up vs Review email for doing PCRS](#)
- [CSC148 Intervention Fall 2018](#)
- [Finish any uncompleted Rehearse before midterm](#)
- [Reminder to read A2 instructions](#)
- [Reminder to read A3 instructions](#)
- [Reminder to fill out exam plan exercise and earn bonus marks](#)

Discussion or Feedback

Using Association Between Course Inputs and Achievement (Informational disclosure nudge)

Motivation for Research

Instructors often speculate on correlational data to motivate students. For example “Students who attend lectures perform better, so you should attend lectures.” How does this approach compare backup speculative statement with real data from the course showing the relationship between some course input and student achievement.

Research Questions

1. Does showing students real data associations between course inputs and course success induce students to increase course inputs?

Link to implementation

- [Midterm grade vs PCRS python problem attempts](#)
- [Rehearse reminder encouragement](#) (Weiwen sent)
- [Barplot showing students who submitted A2 draft early did better on A2. Use this to motivate students to submit A3 early.](#)

Discussion or Feedback:

Please write any of your feedback relating to the above idea and interventions here.

Use a bar plot instead of a scatter plot

<extrinsic and intrinsic motivation>: Look beyond giving just a piece of information. Rather, it would be better to look at what they actually care for and wording the message accordingly. You can look at the paper below:

Rifat, Md Rashidujjaman, Jay Chen, and Kentaro Toyama. "Money, God, and SMS: Explorations in Supporting Social Action Through a Bangladeshi Mosque." *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*. ACM, 2017.

Questions to ask in interviews

How likely are you to read these?

Do you remember seeing this? What did you think when you saw it?

What would you think when you see these emails?

What features of these emails, plots did you notice?

Which features of these do you think motivated you? Why?

Using Small Bonus Mark Incentives to Induce Effort

Motivation for Research

Instructors are sometimes allowed to allocate a small portion of their syllabus towards bonus points (e.g. 2% bonus point opportunity throughout the course). Can we use these bonus points to induce students to complete small stakes tasks (e.g. tell us your plan for completing the assignment and you will earn 0.2% bonus points) that help them keep on track.

Research Questions

1. Can small bonus marks (e.g. 0.1%) be used to nudge students to increase course inputs such as reading assignment instructions or submitting an early draft. How do the impact of bonus marks depend on loss/gain framing and the channel which is used to inform them about bonus mark opportunity (email vs canvas message)
2. How can instructors use bonus marks and fake deadlines to get students to start earlier?

Link to implementation

- [Announcement to get bonus marks for submitting A2 draft before deadline](#)
- [Gain/Loss framing of bonus points](#)
- [Reminder for Planning Exercise April 16](#)
- [Follow up for CSC108 exam planning progress](#)
- [Daily Progress Check Reminder \(Email vs Canvas\), April 21](#)

Discussion or Feedback

Automated "MessageBot" system for messaging/prompting students to set aside time to work on course (or motivate them)

>How should we design and use an automated system for messaging/prompting students to set aside time or work on the course or be motivated? MessageBot (between April 5 and 25).

Initial survey

Research question

Descriptive Projects:

1. To learn about students academic background, preference in being reached, attitudes towards setting time aside to study for course material, etc

Link to implementation

- [Descriptive analysis of the initial survey](#)

Discussion

PCRS Submission Data

Research Questions

1. Document students study habits using the submissions level PCRS data and examine how it varies with students prior background (using initial survey).
 - a. Are students with low programming background starting the online homework before the students with high programming background?
 - b. How do student study habits evolve throughout the course? (e.g. do they get less likely to do rehearse and start homework later as the course progresses?)
 - c. How do students study habit change after midterm grades are realized? Do they depend on realizing a good score vs bad score?

Discussion

Exit Survey

Research Questions

1. Based on students feedback from interviews and final survey, which interventions seem promising in inducing students to exert most effort. How to best implement these interventions to reach the most students as possible.