Nudging learners to complete their online courses

Project report

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THE BEHAVIOURAL INSIGHTS TEAM

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Executive Summary

The Behavioural Insights Team (BIT) and Access to Information (a2i) have been collaborating since March 2017 to apply behavioural insights and rigorous evaluation to public innovation in Bangladesh. This report summarizes the findings of our first 'partner-led' trial with a2i, in which a2i's Education team led the implementation of the trial with support from BIT.

Policy objective

This project looked to support an initiative led by a2i's Education team to improve access to skills through e-learning programmes. a2i developed MuktoPaath - a free e-learning platform in Bengali - in 2016. It was created as a low-cost solution to upskill teachers across the country. However, it has since branched out to different target groups, including students and migrant workers.

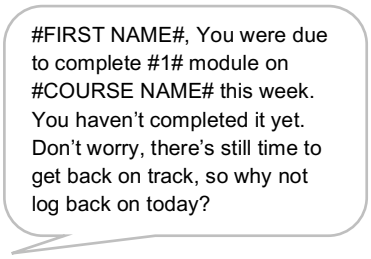
In 2018, there were over 130,000 learners registered on MuktoPaath, with course completion rates ranging between 30 and 50 per cent. a2i and BIT collaborated on a project to identify and test low-cost ways to boost completion rates and help learners achieve their skills development goals.

Intervention

We conducted extensive fieldwork and research to explore the reasons why learners might not complete their MuktoPaath courses. Our research revealed that there is often a gap between learners' intentions to study and their actions. Limited time, and unexpected barriers and distractions mean that intentions often do not translate into behaviours.

We designed low-cost interventions - based on insights from behavioural science - which were built into the MuktoPaath platform. These were comprised of: (a) a simple 'planning tool' to help learners manage their time to complete their MuktoPaath course; and (b) additional weekly SMS to provide feedback on learners' progress.

Figure: *Example of weekly personalised SMS (translated into English)*



The SMS contained personalised feedback on whether the learner completed the modules they intended to that week. They included messages of positive reinforcement to encourage them to log onto the platform to continue progressing their course.

Trial Design

Working closely with a2i's Education team and the third-party who built and maintained MuktoPaath, we designed a three-arm Randomised Controlled Trial (RCT) to evaluate the impact of the planning tool and additional SMS reminders.

The trial launched on 18 November 2018, and targeted 11,653 courses completed by 3,797 learners. We assessed the effect of the planning tool and SMS reminders on the proportion of MuktoPaath courses completed within three months of enrolment.

Results

Although the planning tool alone did not have a significant effect on MuktoPaath course completion rates, the combination of planning tool and the SMS reminders was found to increase course completion by 2.6 percentage points, from a baseline of 35.5 per cent in the control (an effect which rises to 15 percentage point when looking only at learners who completed the planning tool). This translates into an additional 171 courses completed on MuktoPaath throughout the duration of our

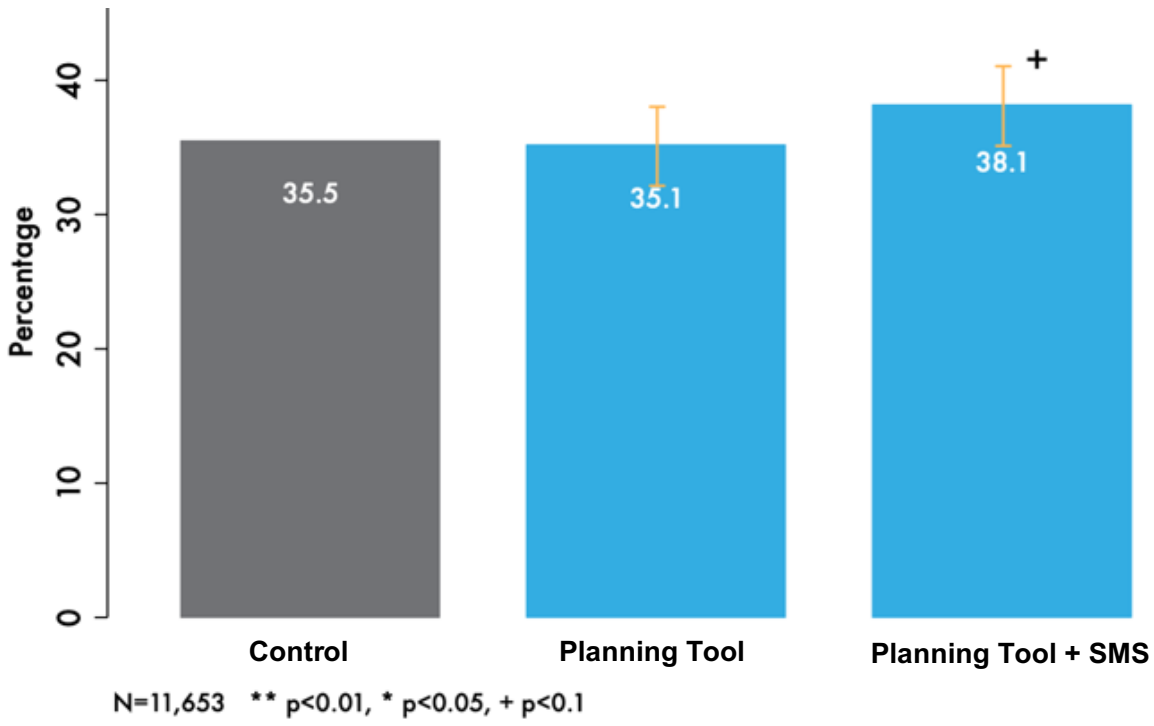
trial, helping teachers and learners develop new skills.

Recommendations

This trial yielded important recommendations for a2i's education agenda, and for the scale-up of complex policy innovations:

- **Recommendation 1: Conduct further testing of the intervention.** We recommend that a2i conducts further testing to tease out whether the effectiveness of the second intervention - the planning tool with the additional SMS reminders - was driven by the combination of the two interventions, or whether the impact was driven entirely by the weekly SMS messages.
- **Recommendation 2: Systematically apply behavioural methodologies to other projects.** Given the insights that we gathered throughout our project, in particular why learners are not currently completing their MuktoPaath courses, we recommend that a2i systematically engages with potential users to understand their needs and behaviours, prior to designing education portals and initiatives.
- **Recommendation 3: Systematically evaluate other projects.** More generally, this trial has demonstrated the feasibility of A/B testing on a large online government portal in Bangladesh, which can be extended to other platforms and services.

Figure: *Percentage of courses completed, by trial group*



01 / Introduction

The Behavioural Insights Team (BIT) and the Government of Bangladesh's Access to Information (a2i) Programme formed a partnership in March 2017 to apply behavioural insights and rigorous evaluation to public innovation in Bangladesh. The purpose of the partnership, which is supported by the Global Innovation Fund, is to: (i) apply behavioural insights to support Government of Bangladesh (GoB) priorities; and (ii) help train a2i staff to independently apply behavioural approaches and rigorous impact evaluation through 'learning-by-doing'.

The third project undertaken as part of this partnership looked to support one of the priorities of a2i's Education team - improving access to skills through e-learning programmes. Specifically, this project focused on making improvements to 'MuktoPaath' - a free, Bengali e-learning platform, launched by a2i in 2016, to help learners achieve their skills development goals.

02 / Background

MuktoPaath

The initial aim of MuktoPaath was to create a low-cost solution to upskill teachers across the country as part of a drive to improve the quality of education. However, it has since branched out to different target groups, including students and migrant workers. The platform now includes online courses ranging from teacher training and basic coding, to quail farming and cow fattening.

Learners registering for a course on the platform can earn certificates by successfully completing e-learning courses. To do this, they must work through content, undertake online quizzes, assignments and final exams.

The importance of upskilling students and teachers

This project focused specifically on increasing completion rates of e-learning courses aimed at students and teachers. These are particularly important for a2i to target as:

- **Traditional teacher training has huge resource implications:** In Bangladesh, there are more than 800,000 teachers in primary and secondary education. Teachers must receive a range of training, including pedagogy, curriculum, assessment and ICT. However, with a shortage of teacher training institutions, trainers and resources, there remains a large number of untrained teachers affecting the quality of education around the country. MuktoPaath provides an opportunity for any teacher to undertake training online for free.
- **There are gaps in the student curriculum:** There are currently four million students in universities and colleges across Bangladesh who will need to enter the job market upon graduation. However, as highlighted by the World Bank (2018), these students lack important soft skills required in the job market such as communication, English language, ICT and problem solving.[i] MuktoPaath provides an opportunity for students to undertake free online courses in a range of topics such as public speaking and English writing.

Many learners do not complete the courses in which they register

In 2018 there were over 130,000 learners registered on MuktoPaath, with course completion rates ranging between 30 and 50 per cent. a2i approached BIT for support in finding low-cost ways to boost completion rates and help learners achieve their skills development goals.

We conducted extensive fieldwork and research to explore the reasons why learners might not complete their MuktoPaath courses. This revealed, among others, that the lack of structure and deadlines affected learner

motivation and could lead them to procrastinate on their course completion. This is consistent with findings from other research conducted on learner behaviour in online education.

This trial therefore focuses on encouraging MuktoPaath learners (primarily students and teachers) to complete the e-learning courses they sign up to.

03 / Intervention

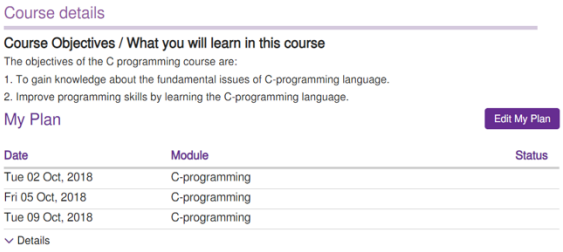
This trial focuses on helping learners avoid procrastination when faced with a lack of fixed deadlines, structure and support on their e-learning courses.

Our intervention: a behaviourally-informed planning tool

BIT and a2i identified low-cost interventions - based on insights from behavioural science - which could be built into the MuktoPaath platform to overcome procrastination and losses in motivation. These were comprised of:

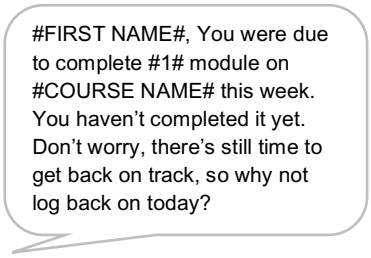
- **A simple 'planning tool'** (see Figure 1 for a mock-up of the planning tool before it was converted into Bengali), to help learners manage their time and complete their MuktoPaath course. Planning prompts can help people overcome procrastination and setbacks to fulfil a specific goal. They have been shown to be successful in other e-learning settings. For example, Yeomans and Reich (2017) found that when MOOC learners were given an open-ended text box to fill out a learning plan, their course completion rates were 29% higher than for those who were not prompted to make plans.[ii]
- **Weekly personalised SMS** (see Figure 2 for an example message in English), to provide feedback on learners' progress. Feedback is a key component of effective goal pursuit.[iii] It helps people to understand how much progress they have made and determine how to adjust their performance if they need to improve. The SMS also serve as a reminder, helping keep the courses top of mind.[iv]

Figure 1: *Example of personalised study plan*



The planning tool contained an algorithm which combined preferred study times (days of the week; hours per week) along with the course structure (number of modules; expected duration of modules). This allows us to present learners with a personalised 'study plan' that provides them with module deadlines.

Figure 2: *Example of weekly personalised SMS (translated into English)*



The SMS contained personalised feedback on whether the learner completed the modules they intended to that week. They included messages of positive reinforcement to encourage them to log onto the platform to continue progressing their course.

We selected these interventions as they are easy-to-use, convenient (embedded onto the course enrolment page), and can be personalised to learner's needs, allowing learners to enter the days of the week and number of hours that they want to study.

Furthermore, the planning tool and SMS are both low-cost, scalable way to support learners. If successful, they could be therefore rolled out to a wider range of courses.

04 / Trial design and implementation

Working closely with a2i's Education team and the third party who built and maintained MuktoPaath, we designed a three-arm Randomised Controlled Trial (RCT) to evaluate the impact of the planning tool and additional SMS reminders.

We assessed the effect of the planning tool on the proportion of MuktoPaath courses completed within three months of enrolment.[v]

Sample

The study population comprised learners who enrolled onto one of eight open courses aimed at teachers and students and offered on the MuktoPaath e-learning platform.[vi]

In a pipeline design, learners were included in our sample upon registering onto a course. Throughout **the duration of our trial, we targeted 3,797 learners who enrolled into 11,653 courses.**

Randomisation

Learners were allocated into one of three groups on an alternating basis as they enrolled onto a MuktoPaath course.

Group	Condition	Sample size
Control	No modification	1,264 learners 3,874 courses
Treatment 1 (T1)	Planning tool	1,270 learners 3,888 courses
Treatment 2 (T2)	Planning tool + SMS	1,263 learners 3,891 courses

As learners can sign up to multiple courses,[vii] the first treatment condition to which they are allocated will apply to all other courses they enrol on during the trial period. This was to ensure that learners did not receive the planning tool or SMS reminders for some courses and not others, which may have "contaminated" our comparisons across groups.

We were unable to ensure balance across courses or learner characteristics ex-ante given the pipeline design, but controlled for key variables such as gender, education level and occupation during the analysis.

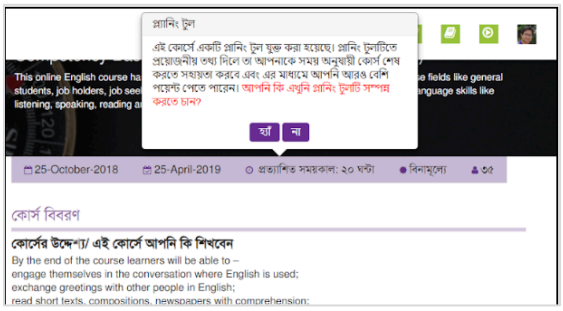
Implementation

The trial was successfully launched on 18 November 2018, with more than 800 learners enrolling on the first day alone.

As early monitoring data showed that uptake of the planning tool was very low - in two weeks, learners in T1 and T2 used the tool for just 11 per cent of courses in which they enrolled - BIT and a2i worked to make visual changes to the course enrolment page. These were designed to make the planning tool more attractive, highlighting it as MuktoPaath's "new feature", and adding a pop-up box when learners clicked to access the next page of course material (Figure 3).

The pop-up asked learners to confirm that they wished to continue without completing the planning tool, or else gave them the opportunity to make a study plan.

Figure 3: *Pop-up to encourage making a study plan*

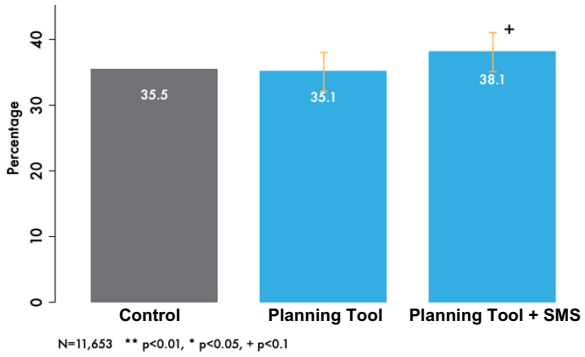


These changes led to a marked improvement in planning tool uptake - from an average of 11 per cent of courses to 23 per cent. Over the trial period, this averaged at 14 per cent uptake.

05 / Main findings

We analyse the effects of our interventions using a random effects regression model, where we control for individual characteristics. Results are shown in Figure 4 below.

Figure 4: *Percentage of courses completed, by trial group*



Although the planning tool alone had no significant effect on course completion rates, **the combination of planning tool and the SMS reminders (T2) was found to significantly increase course completion by 2.6 percentage points, compared to 35.5 per cent in the control**.

This translates into an additional 171 courses completed on MuktoPaath over the trial period, helping teachers and learners develop new skills.

Since learners completed the planning tool for only 14 percent of courses, we conduct secondary analysis to evaluate the effect of the interventions on course completion among those who took up the planning tool (what we call the “average treatment effect on the treated”). The planning tool alone still did not affect completion rates, but the estimated effect of the planning tool + SMS combination rose considerably, from 2.6 to 15 percentage points (compared to 35.5 per cent completion in the control group).

This result provides evidence to support a low-cost, behaviourally-informed intervention to increase the proportion of courses completed by MuktoPaath learners.

We cannot, however, tease out whether the effectiveness of T2 stemmed from the combination of the planning tool and the SMS reminders, or whether the impact was driven entirely by the weekly SMS messages. This suggests an avenue for future testing.

06 /Recommendations

This trial yielded important recommendations for a2i’s education agenda:

Recommendation 1: Conduct further testing of the intervention.

We recommend that a2i conducts further testing to tease out whether the effectiveness of the second intervention - the planning tool with the additional SMS reminders - was driven by the combination of the two interventions, or whether the impact was driven entirely by the weekly SMS messages.

Recommendation 2: Systematically apply behavioural methodologies to other projects.

Given the insights that we gathered throughout our project, in particular on reasons why learners are not currently completing their MuktoPaath courses, we recommend that a2i systematically engages with potential users to understand their needs and behaviours, prior to designing education portals and initiatives.

Recommendation 3: Systematically evaluate other projects.

More generally, this trial has demonstrated the feasibility of conducting an online Randomised Controlled Trial (‘A/B testing’) on a large online government portal in Bangladesh, which can be extended to other platforms and services, such as the Teachers’ Portal, or Konnect.

07 / a2i project team

This project was the first "partner-led" trial conducted as part of BIT's partnership with a2i. Indeed, while BIT supported a2i throughout, the implementation of the trial was led exclusively by a2i's Education and Data Innovation teams.

We report below what key members of the team thought of the experience of working on this trial.

M.A. Arefin Chowdhury, Assistant Professor and E-Learning Expert, a2i Programme

"I had some exposure to behavioural science during my Masters, but did not have any first-hand experience of designing behavioural interventions"

Arefin led the design and implementation of the project from a2i's perspective. He facilitated exploratory work to enable BIT and a2i to understand the issues faced by learners on the MuktoPaath platform, fed into the intervention design, and worked closely with the third-party who built and tested the impact of the planning tool.

Since completing the trial with BIT, Arefin has integrated it into a new iteration of the MuktoPaath platform and has spoken to other government departments about the work.

Arefin is now exploring other applications of behavioural insights for the MuktoPaath platform. For example, he is thinking about ways in which a2i can improve learner engagement through making their experience more 'social'. With some technical support, he is confident that his team at a2i could run some more behaviourally-informed trials in the future.

Jinia Jerin, E-learning Assistant, a2i Programme

"Before implementing the trial, it was difficult to understand and track learner behaviour...I just prepared a quarterly database and could see that learners were not finishing their courses."

Jinia played a key role in the implementation of the trial. With her in-depth knowledge of the MuktoPaath platform, Jinia helped design and test the tool to ensure that it worked effectively.

Although Jinia had previously invested time thinking about how to make MuktoPaath more user-friendly, being part of the project allowed her to apply behavioural methodologies and experimentation more systematically.

Jinia felt that the team managed to overcome a number of technical challenges to launch the planning tool. However, she said that it was important to think about how to encourage uptake of the tool.

Running the trial gave Jinia greater insight into learner behaviour, for example, how learners can be motivated by establishing a routine.

She thinks that the launch of a new MuktoPaath app provides a good opportunity to implement and test new behavioural interventions and already has some ideas about how to do this cost-effectively.

Iffat Ahamed, Research Assistant, a2i Programme

Iffat is part of the core team at a2i responsible for finding opportunities to run, and then implement behavioural trials. She played an important role in facilitating this project with a2i's education team.

Iffat felt the biggest challenge was to get enough learners to sign up to courses on the platform to enable us to run a randomised controlled trial (RCT). She supported BIT in doing this by designing and sharing advertisements on social media. This was an important preliminary step in running the trial.

08 / Conclusion

We reported here on the first "partner-led" behavioural insights trial we conducted with a2i.

The results achieved in this trial provide evidence to support a low-cost, behaviourally-informed intervention to increase the proportion of courses completed by MuktoPaath learners. We cannot tease out whether the effectiveness of our intervention stemmed from the combination of the planning tool and SMS reminders, or whether the impact was driven entirely by the weekly SMS messages, but these results encourage further research into the effect of planning and reminders to encourage sustained engagement with new digital tools.

To our knowledge, this was also the first time that a2i have used A/B testing to rapidly test the impact of website adaptations and new tools on one of their portals. As such, it represents an incredible effort for the teams involved, and opens up many exciting avenues for further testing on a2i platforms and services, which have been very pleased to see a2i's education team already start exploring

Notes

[i] World Bank (2018) Bangladesh - Skills for tomorrow's jobs : preparing youth for a fast-changing economy, accessed at: http://documents.worldbank.org/curated/en/684441522921114827/Bangladesh-Skills-for-tomorrow-s-jobs-preparing-youth-for-a-fast-changing-economy

[ii] Yeomans, M., & Reich, J. (2017). Planning prompts increase and forecast course completion in massive open online courses. In *Proceedings of the Seventh International Learning Analytics & Knowledge Conference* (pp. 464-473). ACM

[iii] Van Hooft, E. A., Wanberg, C. R., & Van Hoye, G. (2013). Moving beyond job search quantity: Towards a conceptualization and self-regulatory framework of job search quality. *Organizational Psychology Review*, *3*(1), 3-40.

[iv] Karlan, D., McConnell, M., Mullainathan, S., & Zinman, J. (2016). Getting to the top of mind: How reminders increase saving. *Management Science*, *62*(12), 3393-3411

[v] As a secondary outcome, we had intended to measure the proportion of learners who applied for an end-of-course certificate, but as certificates were ultimately awarded to all learners who completed their courses we did not analyse this outcome separately.

[vi] The courses were: Classroom Management Techniques, Reading Instruction, Basic Teacher Training, Troubleshooting - Multimedia Projector, C Programming, Competency Based English Communication Skills, Public Speaking, Easy English Writing Skills.

[vii] Historic enrolment data for two MuktoPaath courses show that 46% and 57% of learners in each course, respectively, were also enrolled in the other course.