The Learning by Evaluating Research Project.

The Challenge:

How do we facilitate learning and formative assessment experiences in a way that can be deployed at scale across large cohorts, multiple institutions, regionally, nationally, and even internationally, without adding to the workload of busy teachers?

How do we teach a student 'what good looks like' within the context of their studies, without providing them the answer? How can we encourage students to learn from the mistakes and successes of others, whilst simultaneously shaping and influencing their own work at an early stage and as it develops?

The Solution:

Our research focused on a student-centred approach referred to as "Learning by Evaluating (LbE)" led by Purdue University, Indiana, in close partnership with UK-based educational technology provider RM Education. The heart of our intervention was an innovative online tool called RM Compare, which facilitates learning and formative assessment at scale through the use of adaptive comparative judgement ('ACJ').

The project sought to empower a large student body, while mitigating negative impact on teacher workload by using intuitive online technology - RM Compare software to facilitate ACJ. We have created and iteratively refined our solution so that it can be successfully scaled across institutions, regions and even across nations.

Our research team investigated how and in what ways the RM Compare software could be used specifically as an early-stage, minimally disruptive, short (10-20 minutes), learning intervention. Specifically, we were interested to see if this novel approach would boost student attainment by simply embedding ACJ enabled peer-to-peer assessment into the learning process as a primer for learning.
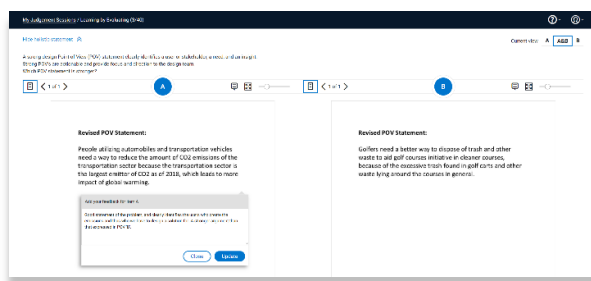

Fig. 1 The pair-wise comparison screen used by students within RM Compare

Learning Impact Outcomes:

The sample for the project was a group of ~550 undergraduate students enrolled in the same course, where half of the group had the opportunity to evaluate prior cohort work using RM Compare as a primer to their assignment, whereas the other half did not. All students evaluated the groups' work at the end of the project.

The project results demonstrate that the simple, short, early intervention of using RM Compare to review samples of prior cohort work significantly and positively impacted attainment in those students who used the software.

Furthermore, the improvement in attainment was seen across the spectrum of student ability – which is of particular interest given that few interventions achieve equity of outcome and impact when it comes to 'hard to reach' and 'more challenging' students.
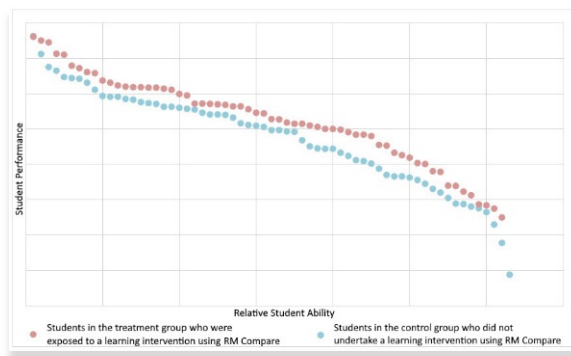

Fig.2 Student Performance – Treatment vs Control Group

Return on Investment of Nomination:

The project was funded by Purdue University to demonstrate the value of pedagogical innovation. It leveraged findings from prior research conducted by the same team and others within the research community and built on a theory of learning called *Cognitive Apprenticeship*, where students learn from others.

The very positive results of this research, coupled with the significantly positive impact on learning outcomes, means that this project has delivered a strong return on investment for Purdue University. As a result, the pedagogical intervention is now a sustainable part of Purdue's curricular approach.

A second phase of this research has already been jointly commissioned by Purdue University and Brigham Young University in Utah. The same research team is also in the final stages of negotiation to carry out a National Science Foundation grant funded project to deploy a third, significantly scaled-up phase of research across a large number of high schools in Atlanta, Georgia during 2021.