DEE

**DEVELOPMENTS
IN ECONOMICS
EDUCATION
CONFERENCE**

2-3 September 2021
Virtual Conference

Conference Handbook:

- Welcome from Conference Chair
- Programme
- Extended abstracts

WELCOME TO DEE 2021!

Holding the conference online will certainly make it feel different, but by now we have probably all reconciled ourselves to spending so much of our lives communicating online. Even if the timing of the conference means that we have been unable to go ahead with a physical (or hybrid) conference, a year and a half after the start of the COVID-19 pandemic is the appropriate time to take stock and to share lessons with each other about how our teaching has developed. The conference programme displays an excellent variety of presentation and workshop topics and I am sure that we shall all learn something useful in time for the start of the new academic year. We also look forward to our keynote speaker, France Cairncross giving her expert insight on the future of the news business.

Alongside the move to an online conference, we have made several other changes. One of our hopes for this conference was to strengthen the role of workshops to disseminate good practice and we are happy to have five workshops to complement the more conventional presentation sessions. We thought carefully about how we choose the presentations and workshops and we decided to move to a more formal triple-blind refereeing process to ensure that all submissions are treated fairly. The presentations are summarised in longer abstracts that have been sent in advance of the actual conference and which form the bulk of this document: we hope that this will make it easier for people to choose which presentation to attend and it will also provide a more permanent record of the conference for future reference. Finally, we have also strengthened our links with the International Review of Economics Education by inviting the author of the best paper for 2019-20 to speak at the conference: congratulations to Julien Picault for winning the prize and we look forward to hearing this inaugural lecture.

Organising a conference is only possible with the involvement of many people and I should like to thank everyone who has given generously of their time to help out. The general pattern of the conference was decided by a committee comprising Carlos Cortinhas, Erkal Ersoy, Liliana Harding, Cloda Jenkins, Paul Middleditch and Dimitra Petropoulou, together with help from Alvin Birdi and Caroline Elliott. Liliana and Dimitra also helped select the presentations for the conference, based on the reports of the many referees, who are listed below. Martin Poulter has managed the website, requiring several changes as the conference plans have evolved. Above all, Ashley Lait has, as usual, been the person holding the whole show together and deserves our special gratitude.

Edmund Cannon, University of Bristol
DEE Conference Chair

Thank you to the following for helping referee the conference submissions:

Panagiotis Arsenis	David McCausland
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Steve Cook	Steven Proud
Carlos Cortinhas	Christian Spielmann
Caroline Elliott	Duncan Watson
Cloda Jenkins	Chris Wilson
Linda Juleff	

Join the discussion online:

#DEE2021

@economics_net

Thursday 2 September

	Room 1	Room 2	Room 3
09.00 – 10.00	Marking and feedback	Diverse students & curricula	Employability
10.10 – 10.55	Workshop – R-markup	Workshop - Flipping	
11.00 – 11.30	Break		
11.30 – 13.00	Online teaching	Teaching technical subjects	Financial literacy & socioeconomic influences
13.00 – 14.00	Break		
14.10 – 14.55	Workshop - Experiments	Workshop - Simulations	
15.00 – 16.30	Student engagement	Co-creation & collective learning	Assessment & inclusion
16.30 – 17.00	Break		
17.00 – 18.15	Keynote Future of the news business, Dame Frances Cairncross		

Friday 3 September

	Room 1	Room 2	Room 3
09.10 – 10.40	Teaching with games	Student performance & engagement	Teaching online
10.40 – 11.10	Break		
11.10 – 11.55	Workshop – Teaching using data	Special session – Teaching & learning during the pandemic	
12.00-13.00	NSS & perceptions of economics education	IREE best paper – Economics instructors toolkit	
13.00	Conference ends		

Specialisation or Total Excellence: A study of the UK and Continental Europe marking scales

Piotr Marek Jaworski (Edinburgh Napier University)

If you are a student or a lecturer coming from Continental Europe to the UK it is difficult not to notice that the marking scales are different. Even the lecturers, who never had any contact with continental Europe marking system but teach Erasmus students are bombarded with questions why such a good work was marked only 75%. This is a rational behaviour as in Europe usually the distinction starts from 90% and the pass mark is equal to 60% whereas in the UK it is usually 70% and 40% respectively.

The model constructed attempts to explain the results of both systems if pass and distinction are concerned, in particular what is possibility of compensation of lack of knowledge of one LO by the other. The assessment regime is based on assignment with two questions of equal value towards the final grade on each learning outcomes. Each question is marked independently using continuous percentage scale of 0-100% resulting in two grades of G(LO1) and G(LO2) where 0% means no knowledge presented and 100% full knowledge presented. The final grade FG is a simple average of the two partial grades.

To pass the final grade must be higher or equal to pass grade of (pg), parameter set between 0 and 100% no matter what the individual grades level is. The compensation case occurs when one of the grades G is lower than the (pg) but the final grade FG is higher than it. What in fact means that a participant compensates deficit of one LO knowledge by a surplus in another. Resulting model relates the possible amount of compensation cases to the total possible grades combination. It uses two-dimensional geometry and with axis representing LO's grades and identifies the area which represents the compensation cases. This area is related to the area representing all possible outcomes.

The function, measuring the degree of possible compensation resulting from the model look as follows:

$$
a. \quad CA(pg) = - \begin{cases} -6*pg + 2 & \text{for pg} \in <0, 0.5) \\ \\ 2*pg - 2* & \text{for pg} \in <0.5, 1> \end{cases}
$$

With the graph:
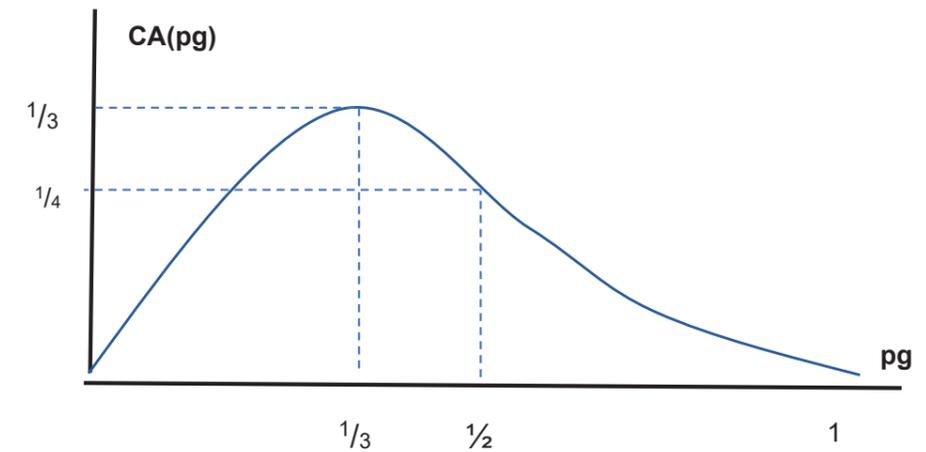
The model can be extended to a case with more than 2 learning outcomes. However, the calculations become more complicated and require multidimensional geometry while not altering the main conclusions.

We can also use the model to determine the compensation not only in case of passing the module but also if a distinction is considered: the higher the distinction grade level the lower possibility of compensating one learning outcome by another.

The model shows that the highest intensity of compensation occurs for the pass grade set at the level of 33% and any other, higher level decreases it. We must acknowledge here that the model does not determine how much knowledge is needed to reach particular grade except for the cases of 0% and 100%, with the former meaning no knowledge and 100% full knowledge. It does not also translate the grades into discretionary marks within a defined scale.

The last issue is tested in the primary research. The case is based on Edinburgh Napier University Behavioural Issues in Finance (FIN09106) module originating from trimester 2 2014/15 exam assessment. The initial assessment of the Module leader is confronted with independent marking of the same scripts by a German lecturer at Frankfurt University of Applied Sciences.

The marked set includes 30 scripts, and the initial results seem to confirm the claim that the level of knowledge for passing as well as for the distinction is the same in both system, which would prove that the British system with higher pass grade allows for more compensation and specialisation.

Breaking Down the Language Barrier: Using Pop Culture from Across the Globe to Teach Microeconomics

Wayne Geerling (Monash University) and Jadrian Wooten (Penn State University)

Introduction

Economic educators have started to realize the importance of taking a proactive role in creating a more inclusive and diverse classroom. While researchers debate the cause of the lack of diversity in the profession, a number of explanations have been proposed for the profession's "leaky pipeline." One proposed recommendation to improve diversity focuses on educators taking a deliberate approach to diversifying their lecture material (Al-Bahrani 2020; Bayer et al. 2020a; Bayer et al. 2020b). This opportunity seems promising given that more than half of all instructors say they currently don't reference diversity and inclusion in their introductory classroom (Asarta, Chambers, and Harvey 2020). If educators were already extensively addressing diversity, calls for new material would be unwarranted.

Al-Bahrani (2020), however, specifically calls for the development of resources for educators teaching introductory courses. These resources should help educators increase diversity, inclusion, and a sense of belonging among many first-year students. While only about 2% of students go on to major in economics (Siegfried 2020), targeting diverse resources to firstyear students should increase the probability that a student will take additional courses, which may then lead to more students considering graduate school and joining the economics profession.

While there have been calls to improve representation in textbooks (Stevenson and Zlotnik 2018), those changes require significantly more resources from authors, publishers, and educators alike. In time, those shortcomings will likely be corrected, but there are marginal changes that educators can adopt today to improve diversity in their teaching material. Stowe (2010) suggests that the economics field may be able to attract different personality profiles simply by changing the instructional method.

Wooten et al. (2020) have shown how Korean music (K-pop) can be integrated into an English-language classroom. We expand on that work by compiling a set of 12 teaching guides using material from 12 different countries that demonstrate economic concepts commonly taught in a principles of microeconomics course. Similar to the work of Hobbs and Wooten (2020), each teaching guide includes clip information along with multiple assessment questions that instructors can assign as part of an in-class discussion or integrated through a course management system to be used with discussion boards.

Teaching Guides

The clips used in this paper cover a wide range of media, including anime, commercials, film scenes, music videos, and general videos from YouTube. All of the scenes selected were chosen to complement the curriculum of a principles of microeconomics course. The teaching guides are mapped to a principles of microeconomics textbook and arranged in the same order as the textbook. While not all topics covered in a principles of microeconomics text have an accompanying teaching guide below, we cover many of the major chapters. To emphasise the truly global nature of the project, we decided to use media that are recorded in 11 different languages, one for each lesson plan.

We should emphasise that we are not expecting educators to use every single guide in a one semester course. Each of the teaching guides are brief enough, so that they could be added to a course and only require 10 to 15 minutes of class time. These teaching guides are an opportunity for educators to make a marginal change to their course. Interested instructors need not restructure their entire course around these guides, but rather make incremental adjustments to their existing pedagogical approach. The progression towards using more foreign-language clips in the classroom should be a gradual decision based on marginal analysis.

Conclusion

Providing more diverse content that is inclusive is vital if the economics profession wishes to broaden student interest in the subject. Given that 25 per cent of university students in America report that English is not their first language, the use of culturally and linguisticallyinclusive media, which has been shown to increase student engagement, is paramount. We provide 11 lesson plans designed to minimize the transaction costs for economic educators wishing to implement this novel approach. It is our hope that, with time, broadly diverse and inclusive media will be ubiquitous when students are introduced to economics.

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Pluralism in teaching economics to post-graduate students: emancipation vs. "business as usual"

Kuat Akizhanov (M. Narikbayev Kazguu University, Kazakhstan)

Knowledge creation and its interpretation is one of the fundamental epistemic values and skills that students need to acquire. Yet, curriculum in many social science disciplines of the post-Soviet countries is unchallenged and continues to deliver one-sided and very often orthodox theoretical concepts about various social phenomena. This is especially the case in economics disciplines where only the mainstream (neoclassical) economics methods and theories are taught. This study aims to contribute to the debate on the benefits of a pluralist curriculum in teaching economics that makes better educated and happier students (Mearman et al., 2011).

In line with the Post Autistic Economics movement (Fullbrook, 2003) and Mignolo's (2009) notion of "epistemic disobedience", the study investigates the causes of this narrow-minded approach to delivering teaching disciplines related to economic management. The specific objective of this study is to explore what kind of barriers to the pluralist approach to economics education exist in economics departments of the Kazakhstani universities. Apart from purely "technical" reasons such as lack of qualified economists who focus on heterodox economic concepts this study will argue that heterodoxy and pluralism in economics education more broadly is out of the current public agenda in many countries of the former socialist block. Neoliberal ideology that currently governs the organisational processes of the Kazakhstani universities also define the content of the economics curriculum. The study of curriculars of the several economics and social science departments of the Kazakhstani universities shows that they ensure indoctrination of a particular (pro-market) view (Hobsbawm, 2011).

Work placement and graduate employment: new insights

Panagiotis Arsenis (University of Surrey) and Miguel Flores (National College of Ireland)

Universities have a key role to play in students' transition from higher education (HE) to employment. Recent employer surveys (e.g. UK Employer Skills Survey) report that graduates often lack employability skills, ranging from technical and 'real-world' application to interpersonal (e.g. self-management, leadership and teamwork). Work placements provide students with the opportunity to gain a year-long "trial" of the world of work, where they can develop these skills. Moreover, students on placements have the potential to build their professional network and acquire valuable information from employers about future graduate jobs, and, in some cases, secure permanent posts upon graduation. The evidence suggests that work placements have positive effects on academic performance, employability skills, and subjective (e.g. graduate satisfaction with their job) as well as objective graduate outcomes (e.g. chances of finding employment, salary). However, there is limited evidence on how work placements affect graduate outcomes. This study aims to improve our understanding of the transition from HE to graduate employment within the context of an economics work placement programme offered by a UK HE institution.

We match placement data, academic records, and graduate outcomes to compile a dataset that can offer new insights. So far, our dataset consists of two cohorts of economics students who graduated from the University of Surrey in 2017 and 2018 (academic years 2016/17 and 2017/18 respectively). Our econometric analysis has focussed on earnings and employment type, comparing these graduate outcomes for those graduates who participated in the placement programme with those graduates who did not participate in the placement programme. We control for demographic characteristics (e.g. gender, ethnicity, nationality), programme of studies (economics, economics and finance, business economics, economics and mathematics), academic performance (e.g. degree grade), and job characteristics (e.g. location, sector/industry). Two models have been employed to explore the interplay between placements and graduate outcomes. An OLS model where graduate salaries are regressed on a binary placement variable (whether a student went on placement or not) and the set of control variables mentioned above. Next, we estimate a probit model with employment type (fixed-term contract or not) being the response variable and the same set of explanatory variables.

The preliminary results show that students with placement experience enter the graduate labour market with higher salaries and are less likely to secure a fixed-term contract (either of twelve months or less) than graduates without the placement experience. These initial findings suggest a positive effect of the placement programme on graduate outcomes.

However, we acknowledge the endogeneity issue in our specifications, which is a typical concern in the literature. Specifically, unobserved variables confound our estimates and bias our results. These confounders may affect the likelihood of securing or pursuing a placement and affect graduate outcomes too. We aim to complement our regression analysis with methods that mitigate this concern.

Apart from addressing endogeneity, the next steps of our analysis also involve including one more cohort of graduates, those who graduated in 2019 (academic year 2018/19); estimating placement effects on alternative graduate outcomes; and explore possible channels through which the placement programme can enhance graduates' position in the labour market. In this respect, we are interested in a possible foot-in-the-door effect, where placement students are fast-tracked by their placement employer during the recruitment process to secure a graduate job. Another, more subtle foot-in-the-door effect is capitalising on the experience students gain in the sector they are employed while on placement. The sectorspecific knowledge and transferable employability skills developed by students during placement may result in better employment outcomes than for students with no placement experience. These are important mechanisms that have not been explored yet. Understanding them not only helps us appreciate the value of placements, but can also show us how we can further support students as they prepare for the graduate labour market.

The value of virtual internships as authentic assessment in developing the future generation of economists

Katherine Leopold (University of Greenwich) and Sara Gorgoni (University of Greenwich)

Personal and Professional Development (PPD) courses in the Greenwich Business School have long contained employability as a key element. In the department of Economics and International Business (EIB), PPIBE was the second year PPD module divided into two parts. The first term and assessment were Employability focussed, the second term and assessment were aimed at preparing students for their third-year research project. In 2020/2021 we changed the design and delivery of the employability part to include a compulsory virtual internship.

For the purposes of this discussion, 'virtual internship' refers to asynchronous tasks, devised by employers, accessed via a web platform – www.theforage.com. The Forage is a global platform, with a strong collection of brand names running virtual internships including Microsoft, Deloitte, Accenture, and many more. Virtual internships are distinct from remote internships, which are traditional in person experiences re-engineered to be done at home. PPD courses have long suffered with a credibility problem amongst our economics students. The faculty wide response is a new, compulsory but not credit bearing module called Future Paths which will replace from 2021-22 the module being discussed here but will retain the virtual internship experience piloted in EIB.

In EIB there was a need to address students' calls for more practical and real-world assessment on PPIBE module, which will not only help them learn about the professional skills they need but which will actively help them develop those skills. It also aims at addressing employers' calls for graduates who have these types of skills, which are normally obtained through placements, but currently the number of students enrolled in placements is far from ideal.

We therefore thought of introducing a piece of assessment which would: 1) require students to perform tasks that replicate real workplace challenges; 2) Retain an academic element, through a reflection that in asking students to adopt models of reflective writing enables them to develop life-long learning skills, critical skills, and self-awareness; 3) provide some scaffolding through asynchronous forums, guest speakers, and tutorials. The internship allows students to self-evaluate by comparing their performance with an ideal one, and at the end students received personal and detailed feedback on their reflection.

Authentic assessment requires students to perform tasks that replicate real world challenges. The VI does so. Students are not assessed on how they did on the VI (but completing a VI was part of the grade – 20 marks), but on their ability to reflect on the VI experience. The VI reflection contributes to make this an authentic assessment, as the ability to reflect about one owns weakness, take stock, identify future actions and the ability to effectively present in video are things future graduates will be expected to do in graduate schemes and employment.

We all remember the uncertainty of the spring summer of 2020, so choosing to embed a new activity needed to come with a large amount of flexibility. We kept the assessment light touch; we wanted the focus to be on the doing of the virtual internship rather than the doing of the assessment. As such, students were given a choice of either a 7 – 9 minute video presentation or a 1000 word reflective report. There were also 4 asynchronous Moodle forums that ran alongside the 4 weeks of teaching. These offered students the opportunity to share and discuss knowledge and information about recruitment processes, what employers are looking for, networking and interview skills. Contributing to these forums earned 10 marks, submitting the certificate of completion of the virtual internship earned 20 marks and the remainder was based on the reflection; overall this was 40% of the module grade.

The reflections were generally positive in tone, with students appreciating the employer-led nature of the virtual internship, and the opportunity to discover a possible career option.

The student satisfaction was also shown in the module evaluations, where the overall satisfaction was higher than in the previous three years.

The success of this experiment means that virtual internships will be embedded into the faculty wide Future Paths modules in 2021/2022. We have the University's ethical approval to do a thematic analysis via N-Vivo of the reflections, and to match the emerging themes with students' personal characteristics to assess whether perceptions of value vary across different groups. We'll potentially also undertake a qualitative follow-up analysis to gain a better understanding of the results. We look forward to deepening our understanding of students' experience in doing virtual internships and are exploring collaborations with departments in other universities as they consider embedding virtual internships in their programmes.

Workshop: Interactive Learning with R-Markdown and R-Shiny: Statistics for Economics and Business

Pascal Stiefenhofer (Newcastle University)

Many students find understanding of some complex statistical concepts difficult. An example of such a concept is the confidence interval, especially because of the amalgamation of multiple concepts including the standard error, point estimate, and sample size into one equation. Computer technology can greatly enhance statistics education by illustrating fundamental concepts. We develop Interactive Learning apps based on R-Markdown with embedded R-Shiny components by providing interactive HTML documents to assist students with their learning process of complex statistical concepts in tutorials and homework. Our Interactive Learning Documents (ILDs) are programs developed in R language that perform specific tasks in assisting students during their interactive learning process outside the usual classroom. We provide initial student feedback regarding the design, advantages, and disadvantages of the current prototype ILDs and inform workshop participants about future generations of ILDs under development.

With R-Shiny, instructors can easily build teaching tools that are interactive, dynamic, userfriendly, visually appealing and with similar functionality to Java/Javascript applets. These shiny apps can be embedded within a R-Markdown framework (learnr package) to build interactive tutorials/homework to be distributed via Shinyapps.io server in form protected SSL encrypted HTML documents. The instructor only needs some familiarity with R to produce such human-machine interactive teaching tools. In this workshop we show how to develop and effectively utilise R-Markdown and R-Shiny in an interactive learning model for an introductory Statistics for Economics and Business module. Moreover, we provide workshop attendees with the opportunity to engage with some of our interactive learning teaching tools via mobile phone and other interface technologies.

Workshop: 'Catch you on the flip side' – Translating online learning into hybrid delivery

Paul Cowell (University of Stirling)

The required rapid expansion of online learning presented a significant challenge to universities and colleges around the world, and its success in the virtual classroom depended on being innovative both technologically and pedagogically. However, the next challenge now presents itself: the transition to hybrid delivery. Through the uncertain extent of postpandemic disruption to higher education, the discovery to many of what is possible in the virtual environment, and the potentially lasting impact on students' study preferences, the transition back to the physical classroom once again required invention.

This workshop aims to present a range of strategies and approaches that can used in translating the online flipped classroom into the hybrid flipped classroom. Particular emphasis is placed on reflecting on good practice in the online space, and how this can be done using simple-to-use, low-cost methods for interactivity that foster a unified learning community whilst being pedagogically robust. Case studies from teaching economics at the University of Stirling at a variety of levels and cohort sizes will be presented, and workshop participants will be invited to explore their own practice through interactive demonstrations.

The effect of online education on the academic performance of students during COVID-19 pandemic: evidence from Kazakhstan

Saule Kemelbayeva and Arman Yelesh (M. Narikbayev KAZGUU University)

Online education became a completely new way of getting knowledge today, especially when students worldwide were suddenly switched into remote learning. It is important to understand the consequences resulting from such a type of education. This study seeks to evaluate the effect of switching from on-campus to online learning by examining a reach panel dataset on a student body from a private university in Kazakhstan.

On March 13, 2020, two first COVID19 cases were registered in Kazakhstan. On March 16, the lockdown was announced and universities and schools suddenly switched to online teaching and learning that continued for the whole 2020/21 academic year. Zoom was commonly used by Kazakh HEIs for online teaching over the whole period, and some universities have invested in licensed full versions of it.

We examine the data on 61 senior undergraduate students representing four majors who attended via Zoom classes for 53 subjects during the Autumn semester 2020/21.

Using the data directly extracted from the Zoom dashboard which records information about each student, we easily checked the involvement in education of each particular student recorded. The system creates, keeps and updates logs by each student and all of them are identifiable. Using a standard report from Zoom we could extract the data related to their location, type of the device used, courses enrolled and technical details considering quality of connection, latency etc. This data was linked with the data on the students' academic performance from the university learning management system. To reinforce the effect of analysis we also conducted a brief survey evaluating feedback of students and professors regarding the effect of online teaching and learning.

The study employs two empirical strategies.

To employ the first approach, we merge the post-COVID data on a students' performance with the sample of the pre-COVID students who attended the same courses taught by the same lecturers a year earlier in on-campus mode. We then match pre- and post-COVID students based on observed characteristics (major, scholarship holder status, language of instruction at a secondary school, university entry test score, GPA, gender) and a subject with the nearest-neighbour propensity score matching and run the OLS model explaining the students' final grade per subject with a dummy variable for post-COVID semester on a matched sample.

The second approach seeks to estimate the effect of the Zoom sessions' technical characteristics- duration of a Zoom session, connection errors, use of PC vs. mobile phone, audio and video latency, a student's locality- on students' performance during the COVID19 imposed online teaching. Since the main explanatory variables are observed at a Zoom session level and performance is observed at an aggregate level (midterms that include several sessions each), we use a latent variable multilevel model. To ensure more data points, we use midterm grades corresponding to specific time-frames and link them with the Zoom sessions.

Our results are suggestive that an academic performance likely drops with the COVID19 imposed online teaching when we compare two groups of similar students studying the same set of subjects, but the result is not statistically significant. Some technical variables characterising the Zoom sessions are consistent and significant even after controlling for all observed students' characteristics, particularly, the use of PC vs. mobile device. However, the vast majority of the variables turned to be statistically insignificant.

Assuming that statistical significance might suffer from using a small dataset and data aggregation and keeping in mind possible alternative explanations arising from data or methodology limitation, we conclude that more research is needed.

Studying without distractions? The effect of a digital blackout on academic performance

Francesca Garbin (Bocconi University)

Taming our wandering minds when we have an infinite source of distractions in our pockets has become more and more challenging. In my paper I assess whether distractions coming from smartphones are detrimental to academic performance, and in particular how reducing them may help students boost their learning.

I target first-year Bocconi students by recruiting them in both the Fall and Spring semesters asking their willingness to participate in a challenge, and I assign them to the use of an app that blocks other distracting apps on their smartphones. I ask them to activate this app during the week-day afternoons for the four weeks preceding the mid-term examinations, in the first half of the semester.

The app needs to be manually activated and prevents users from using other distracting apps and receiving notifications. Every day before the official starting time students get a reminder on which they can tap to activate the block. When active, the app blocks other apps and their notifications, e.g. social media, messaging, news. Students can join or leave the block at any moment during this time window, and come back as many times as they like. During the distraction blackout, students make the conscious and intentional choice to remain off their phones, knowing that breaks are monitored.

Throughout the semesters I administer online surveys in order to investigate habits, past experiences and backgrounds. Moreover, I use survey measures related to exam anxiety, expectations about exam performance, and course evaluations by linking app usage to lecture schedules. I use administrative data about students' background and grades in midterm exams.

In order to detect a causal effect of the treatment assignment on academic performance, I use both surveys and administrative data to show that self-selection into the treatment is not an issue and I provide proof that my control and treatment groups are balanced.

First I document how control and treatment groups are balanced using survey measures related to academic motivation, habits and distractions, personality, and I repeat the same analysis by comparing the Fall and the Spring samples. I find that students assigned to the treatment are those that indeed use more apps and more social media, but there is no difference in terms of motivation and personality traits; this supports the idea that students assigned to the treatment are indeed those who need to unplug from distractions, and participating in this intervention is indeed costly (and potentially beneficial) for them. As for the Fall versus Spring samples I find that students in the second semester show some imbalances in terms of distraction habits, as they are more likely to be distracted by their smartphones while in class or studying compared to the Fall participants. This pattern needs to take into account the peculiar condition of the a.y. 2020/21, in which classes have been held progressively more online due to the Covid 19 pandemic. I find no difference in terms of academic motivation, habits, and personality.

Second, I use administrative variables to construct a propensity score and match observations for causal analysis. I show that groups are balanced in terms of age, gender, citizenship, Bocconi fee categories, and past performance measured as high school GPA.

In the Fall semester I find a significant difference in terms of performance between treatment and control groups for the management midterm, but not for microeconomics or mathematics. In the Spring semester I find that treatment students significantly improve their performances in the law and macroeconomics midterms, but not in mathematics or computer science. These results may hint at the fact that the app helps student focus when dealing with particular subjects that may require different levels of concentration. An heterogeneity analysis is also conducted in terms of gender, network dimension, technological history and habits, and family background.

I do not find significant differences in terms of expected percent chance of passing the exams, expected grades, course evaluations, and anxiety levels.

Further analysis is needed in order to understand the underlying mechanism and how universities can help students improve both learning outcomes and morale.

To block or not to block: Does teaching delivery method affect students' performance and learning experience?

Erkal Ersoy (Heriot-Watt University) and Morteza Haghighat (Heriot-Watt University)

In this paper, we investigate the link between lecture delivery schedule and students' performance and learning experience. We use three course delivery categories: conventional delivery refers to engaging in 3 to 4 hours of teaching activities each week; block teaching refers to an intensive schedule with continuous teaching of one course for 1 to 2 weeks; and mixed delivery refers to a smaller block of teaching spread over the semester with study time in between.

To explore the link between student performance and delivery method, we exploit a natural experiment to conduct quantitative analysis of summative assessment results from three courses in a petroleum engineering MSc programme. Using a difference-in-differences approach, we focus on the control and treatment groups in our natural experiment to study the final course marks from three modules: Formation Evaluation (FE), Reservoir Engineering (RE), and Drilling Engineering (DE). In our dataset, students' assessment performance is based on final marks obtained in each course by two cohorts of full-time students studying at the Edinburgh campus of Heriot-Watt University from two different academic years as shown below:

Course / Academic Year	2015-16	2016-17	Group
Reservoir Engineering (RE)	Block	Conventional	Treatment 1
Drilling Engineering (DE)	Block	Mixed	Treatment 2
Formation Evaluation (FE)	Block	Block	Control

Based on the performance of the two cohorts in our dataset across these three courses, we find no evidence that switching from block teaching to conventional delivery increases or decreases the expected course average. However, we do find some evidence that a switch from block to mixed delivery increases the expected average mark. Hence, we conclude that students tend to perform better when courses are scheduled with a mixed schedule rather than a block schedule, but we find no clear distinction between mixed and conventional delivery methods.

Further, we design a questionnaire to focus on the students' learning experience in each delivery method. In addition to analysing the responses to the questionnaire, we use this information to select focus group participants, which has enabled us to ensure that we have as diverse a group of participants as possible. Specifically, we include students who like and dislike block delivery keeping in mind elements of their backgrounds. A key finding is that students with work experience prior to joining the MSc programme were more likely to prefer block teaching than their peers without work experience.

Our analysis of the focus group transcription highlights that our participants used some keywords and phrases repeatedly depending on their views. Those who indicated that they enjoy block teaching in the questionnaire opted for such words as "subject", "one", "just", "block", and "exam." Meanwhile, those who dislike block teaching referred to "time", "connect", "see", and "knowledge." Further investigation of more complete statements, rather than individual words, by each of the participants suggests that students with a preference for block teaching are, unbeknownst to them, engaging in surface learning, while those with a preference for other delivery formats are adopting a deep learning approach. Lastly, noting our quantitative results and the general preferences expressed in our focus group session, our findings suggest that a mixed delivery schedule could provide a happy medium that has a positive impact on student performance as well as learning experience.

Embedding coding and project management skills into the economics curriculum
- reflections from a Python for Economics course

Antonio Mele (London School of Economics), Dimitra Petropoulou (London School of Economics) and Rahat Siddique (Confederation of British Industry)

Employer surveys highlight the need to broaden the skills developed by Economics students over the course of their degree, ranging from data analysis and coding skills to communication and presentation skills. Group work has been found to be effective in preparing students for the graduate job market by offering opportunities for students to develop such skills. At the same time, a growing number of universities are offering students access to coding courses, though these are rarely designed for economics students.

Given the rich array of online resources geared towards developing certifiable coding skills, a key challenge is how to embed and deliver coding training within an economics degree in a discipline-specific way. This paper reflects on the design and implementation of a Python for Economics non-credit bearing short course. The course was delivered in two modalities: inperson and entirely synchronously in 2019-20 and virtually and part asynchronously in 2020-21.

Why a Python for Economics course?

Python is the fastest-growing coding language, with a growing community of economists embracing its use for economics research. As Python is free and involves relatively simple syntax, it is easy to learn and share, making it versatile and broadly applicable.

Inspired by feedback from the National Student Survey (NSS) and from student representatives, the Python for Economics course was designed to support two priority areas. First, to embed economics research practices into the educational experience of economics students, and second, to engage student and alumni communities and empower students to take ownership of their skill development.

Design and modes of delivery

The course introduced students to the Python programming language and to techniques useful for economics research. In 2019-20 the course was delivered in person, intensively over a weekend; two sessions were run, each with around 30 students drawn from all years of study. In 2020-21, the course ran virtually with synchronous sessions through Zoom, and student collaboration within Teams; it was only available to Years 2 and 3 students. To be eligible to participate, students were required to complete an online pre-sessional Python course and to score above a threshold on a diagnostic test.

Students were split into groups of around 5 and assigned an economics project and coach. Coaches were mainly students with extensive Python knowledge and were required to attend a specially designed training session. Students were randomly assigned to one of six projects, and provided with a reading list, brief description, and a set of relevant datasets. Of these, four were applied economics projects and two were simulations.

A mix of exposition of taught content (GitHub and version control, data cleaning, analytics, and visualisations) and activities were designed to guide teams through their project. The course culminated with each group presenting their findings to all participants. In doing so students developed project management, collaborative, communication, and coding skills, always applied to economics themes, and informed by research into related literature. Upon completion students received a certificate of attendance. To course concluded with a panel discussion by economics alumni who use Python in their work.

Insights and conclusion

In both academic years participants were invited to complete a survey with responses to evaluative questions measured on a Likert scale and opportunities to comment. Pooling across academic years, there were 71 respondents, with mean responses ranging from 3.8 to 4.4 (out of 5), with the highest scores attributed to the format of the course and the value of the student coaches. 63 students would recommend the course to others (and the rest responded Maybe). Comments from 2018/19 informed delivery in 2020/21.

A student who attended in both 2020 and 2021 commented: "The Python for Economics events…made me consider tech and data as a career and I talked about the experience and the group work so much in my interviews. Even now, I am using the data cleaning techniques I learnt from the event every day at my internship!"

Several insights emerge. First, the design and timing of the pre-sessional course is key; students must be challenged by their project but from an appropriate knowledge base. Second, Python code must be driven by the underlying economic rationale – as opposed to methods for their own sake. Third, some knowledge of econometrics proved important, so restricting to Years 2 and 3 led to more balanced groups and an improved overall student experience. Fourth, running the course over a week offered more time for review of related literature and led to higher quality presentations. Fifth, scheduling 'milestones' over the course of the week helped students manage time, as did imposing a degree of structure on the length and scope of the final presentation. Finally, the virtual model is easily scalablewith any number of teams running at the same time; the asynchronous nature allows coaches to work with multiple teams, though a concluding in-person networking social with alumni adds value.

What's wrong with how we teach (and then practice) econometrics? What can we do about it?

Arnab Bhattacharjee (Heriot-Watt University) and Mark E. Schaffer (Heriot-Watt University)

We consider three problems with the teaching of u/g econometrics and suggest how to address them.

Problem 1: Teaching statistical significance and "null hypothesis significance testing" (NHST). The statistics profession has faced this head-on in a big way, and the economics discipline has only recently started to take this on. For example, the American Statistical Association released a "Statement on Statistical Significance and P-Values" in 2016, with six principles including "Scientific conclusions and business or policy decisions should not be based only on whether a p-value passes a specific threshold." Amrhein et al. (2019), in a Nature paper cosigned by over 800 researchers (including one of us), suggest that researchers "retire statistical significance". NHST is particularly harmful in economics, since we are typically interested in magnitudes rather than y/n questions. Finding that $: \widehat{\epsilon_d} = 0.8$ and then testing $H_0 : \epsilon_d = XXX$ is uninformative even the value XXX is chosen sensibly; we need to know whether the estimate of the demand elasticity is precise or noisy.

Solution: Follow the statisticians and "embrace uncertainty". We should teach interval estimation (confidence intervals) and the concept of "coverage" as the key learning outcomes. Reporting that the 95% CI is [0.75, 0.85] tells the student (and the researcher) almost everything they need to know (this is a fairly precise estimate for a commodity with inelastic demand). So would reporting that the 95% CI is [0.2, 1.4] (this a noisy estimate with little useful information). The frequentist concept of "coverage" is easier to convey than how to interpret p-values: in repeated samples, 95% of the time the estimated interval will contain the true value, in much the same way that 95% of the throws in a game of ring-toss will land around the stake – the difference is that in econometrics, you never find out if a particular throw of the ring (a particular estimation) was successful.

Problem 2: Teaching causality. At the u/g level, the main failure in econometrics teaching is to distinguish sufficiently clearly between predictive inference and causal inference. When we teach OLS, we typically start with the assumptions required for causal inference. The historical roots for this are the traditional focus on estimating structural parameters in economic models, dating back to the Cowles Commission and earlier. There are several problems here, among them the difficulties students (and researchers) have in interpreting control variables, the difficult transition from cross-section to the time-series setting, where forecasting (prediction) is central, and how to incorporate machine learning into our econometric syllabuses.

Solution: teach prediction first, and then causal inference. The interpretation of OLS in a predictive setting is much easier to teach and understand, as are the requirements for OLS to be an optimal predictor. This also facilitates subsequent teaching of OLS as a tool for causal inference. Examples such as "hospital treatment predicts health status" vs "hospital treatment has a causal effect on health status" are easier to convey once students are comfortable with OLS as a predictive tool. Teaching machine learning methods as part of predictive inference is very natural. So too is introducing time series data and forecasting.

Problem 3: Disciplinary diversity in Big Data econometrics across the three relevant disciplines – computer science, economics and statistics – is not taught well. Students are often left wondering how econometrics is different from statistics. Likewise, students would like to know what to expect that is different in a Big Data econometrics course vs a computer science course on machine learning, for example.

Solution: The central issue is that we do not often think through the lens of disciplinary diversity. We propose explaining the different disciplinary approaches using examples. For example: what would happen to output if an economy is hit by a positive 10% demand shock, a negative 10% supply shock and a 5% monetary policy shock? Computer Science would be very useful in discovering patterns in the past data, and can provide excellent predictions. But these data would likely not conform to the precise scenario under consideration. In any case, shocks are not observed, so one needs a clear definition in the context of a model. Statistics can help by interpreting shocks as error processes, and would aim to find out the "correct" reduced form data generating process, given a well-specified model. However, one still needs a structural model to make sense of the economic shocks. Economics is interested not only in the reduced form, but also in the causal structural model and counterfactual policy and shock scenarios. Clear articulation of this disciplinary diversity can go a long way.

Acquiring actionable student feedback in real time through graded questionnaires

Tobias Amadeus Brevik (Tallahassee Community College)

As teachers, it can be challenging to acquire an accurate understanding of students' experiences in our courses. While end of semester evaluations can provide actionable feedback that can be implemented in future courses, they are not useful for the course being taught at the time. During the COVID-19 pandemic it is especially important to have an accurate picture of students' experiences so teachers can respond in real time. In this presentation I will discuss a questionnaire I developed with both quantitative and openended questions that allowed me to collect actionable feedback from a majority of students in real time. I define this feedback as "actionable" if the feedback explicitly or implicitly provides a suggestion for at least one component of the course or teacher behavior that the teacher has the reasonable ability to modify or retain. The data comes from my Principles of Microeconomics course from a six week section in Summer 2020. Students completed the Questionnaire a total of four times during the semester. Including nonresponses, about 94% of students gave actionable feedback at some point in the semester. Roughly 68%, 72%, 74%, and 64% of students gave actionable feedback as an answer to at least one question in Questionnaire 1, 2, 3, and 4, respectively. While asking open-ended questions comparable to those that sometimes conclude end of semester student evaluations is an option, I argue that my questions can provide richer and more various answers and can also be modified for other educator roles. I hope to gain feedback on the questionnaire itself and suggestions for future work.

On the effectiveness of behavioural-based course materials to improve financial literacy and reduce the myopic bias in insurance and investment decisions

Francisco Pitthan (KU Leuven) and Kristof De Witteab (Maastricht University)

Using a randomized experiment, this paper examines the effectiveness of gamified online course materials in improving financial literacy and reducing the bias 'myopia' from behavioural economics. Financial illiteracy affects considerably the decision-making of individuals, leading to sub-optimal outcomes and lower financial welfare. One of the most common approaches to improve the financial literacy is financial education. Although financial education has been shown to improve financial knowledge, the gains to financial behaviour are limited with few evidences of long-lasting effects in the society. One of the possible reasons behind this is the existence of behavioural and cognitive biases, which have also been linked to poorer decisions. One of the particular biases that has been linked to sub-optimal decisions is myopia, which impacts the financial well-being in decisions across sectors such as investments, insurance and pensions. In a large scale RCT among secondary school students in the Flemish region of Belgium, we test the effectiveness of course materials that aim to explicitly mitigate the impact of similar cognitive biases, teaching children about insurance and investment decisions. We measure the effectiveness of the materials using as baseline the group without financial education classes, and three intervention groups: one with a regular class about financial education and two other groups that received a modified version of the class which also teach children about the myopic bias in addition to financial education.

One of the behavioural biases that can affect financial outcomes is myopia. This bias is related to the short-sightedness of economic and financial decisions, with myopic-biased people presenting short-time preferences for short-term gains over greater long-term benefits and focus on their close surroundings in the decision-making process. The myopic bias is also associated with the underestimation and underweighting of risks, and the unawareness or disinformation regarding hidden costs of a product or blurred lines in a contract. The literature has shown evidence of the harmful effects of myopia in insurance, investment, debt-taking and pension-planning decisions. Possible policies to mitigate myopia can be centred in sharing publicly the real threats of risky events to combat underestimation of risks and reduce taxes for long-term decisions such as retirement-planning.

The objective of this paper is to test the effectiveness of gamified course materials to both reduce the impact of the myopic bias and improve financial literacy levels, while being able to teach the main learning objectives of Flemish financial education, teaching children about insurance, investment decisions and behavioural biases. This was done using a large scale RCT among 765 secondary school students in the Flemish region of Belgium in over 42 different schools. We measure the effectiveness of the materials using as baseline the group without financial education classes, and three intervention groups: one with a regular class about financial education and two other groups that received a modified version of the class which also teach children about the myopic bias in addition to financial education. As secondary outcomes, we observed if the courses had an impact to the effect of other biases (e.g.

affection, overconfidence).

The main contributions of the paper are twofold. First, it is the first paper to our knowledge that uses a financial education program as an RCT-based intervention to mitigate the myopic behavioural bias. The literature applied debias techniques to biases such as framing effects, confirmation bias and herding bias, but to our knowledge it did not yet venture to debias myopia, nor to use financial education programs centred in increasing awareness to behavioural components as a debias technique. Second, our paper endeavours to improve financial literacy with financial education materials centred in cognitive biases. Although some financial education programs also focus on financial behaviour elements, those programs tend to be scarce and more focused on illustrating the good behaviour, to the best of our knowledge no trials incorporated the awareness to cognitive pitfalls or automatic thought process that individuals may fall caused by behavioural biases as part of financial education programs.

The results suggest that the intervention groups had significant better results for both the financial literacy (between 0.31 and 0.60 standard deviations) and myopic (between 0.22 and 0.39 standard deviations) post-test scores in comparison to the baseline condition, which were stronger for the materials with myopic bias content. This remained true by also being able to teach secondary school students about the course learning objectives. For myopia and the course knowledge the effect was more evident to the treatment groups which received materials about myopia, while all treatment groups had comparable effect sizes to improve financial literacy.

A critical review of the socio/economic influences on attendance patterns within a H4 economics cohort

Chris Carbery (Leeds Beckett University)

Whilst it is recognised that the Covid-19 pandemic that descended rapidly during 2020 forcibly altered delivery modes for all students of higher education throughout the UK, prior contemporary research suggests that attendance rates at lectures and seminars appear to be in decline (Oldfield 'et al' 2017, Mearman 2014.) In the first instance, this may not appear overly problematic, however, there are evidence in numerous studies that conclude, through varied research methods, that there is a strong correlation between appropriate attendance rates and subsequent student achievement (Romer, 1993, Marburger 2001, Rodgers & Rodgers 2003, Kirby & McElroy 2003, Cohn & Johnson 2006). The studies suggested that there was a relationship between attendance and student achievement research reconnoitring the various influences on student attendance patterns remained limited (Mearman 'et al' 2014.)

In this paper, I am presenting the results of an exploratory study of those potential influences from a socio/economic perspective within an H4 economics cohort based upon a qualitative study undertaken in the academic year 2017-2018 within an economics department located in a post-1992 HE institution. The purpose of my study was to locate and analyse the relationship between socio-economic influences and the potential of those influences on student decisions to attend lectures and seminars. The initial point of departure within my study focussed upon the evolving commoditised macro-environment within which higher education resided and the implications this may have had upon prevailing student behaviour regarding attendance.

Embedded within a critical framework, in order to consider prevailing power structures this study examined the values and attitudes of 27 H4 economic students regarding their attendance utilising semi-structured interviews and a focus group. Regarding the socioeconomic groupings for the sample, this was determined by the student cohort themselves as this denoted how the sample categorised their own socio-economic orientation. For the purposes of this study, a combination of criterion sampling and reflection upon the potential for researcher bias was adopted to ensure rigour, validity and reliability. Thematic analysis was then utilised to locate relationships between socio-economic influences and subsequent attendance patterns. 21 participants of this sample described themselves as poor attenders therefore this research afforded the opportunity to analyse a recognised 'hard to reach' group.

Potentialsocio-economic influences upon attendance patternsfrom secondary literature were identified prior to the undertaking of my study were paid employment, potential future earnings and the student as a consumer.

Points of interest that emerged from my research in relation to these influences were that 18 participants (the majority of the sample) considered themselves to be consumers of higher education and 26 participants (all but one) required "value for money" from their study. From the themes that arose within this sample, it appeared that one of the major influences on attendance was the need to attain a credible classification to gain financial security via

employment. This validated previous research undertaken by Fromm (1976), Field (2012) and Mearman 'et al' (2014).

The central findings that arose from my research were that the majority of this sample would only opt to attend lectures and seminars if that attendance would result in some benefit for them with regards to forthcoming assessments. This was regardless of self-defined socioeconomic orientation or being the first in the family to attend university. My research suggested that in order to reverse this pattern of declining attendance rates professional practitioners need to ensure that all lectures and seminars are relevant to assessment outcomes in order to negate diminishing student attendance rates.

Therefore, in relation to the notion of student attendance being influenced by certain socioeconomic factors this study supports the notion that the academic profession is deemed within a marketised higher education environment to provide an andragogic environment that meets the needs of students that demand 'value for money.' However, further research is required to explore what students mean by this concept as within this study students were unable to quantify this need. The need for critical, challenging and reflective students appears to be currently at odds with the perception of the majority of students within this sample who viewed higher education as a financial investment. Perhaps the role of the professional practitioners now needs to extend further to incorporate student's need to 'have' to value the need to 'be.'

Workshop: Experiencing economics: using experiments in teaching economics

Humberto Llavador (Pompeu Fabra University)

Personal experience is a powerful teaching tool, and conducting economic experiments is an effective way of getting students to use economics to think about the world around them. At Pompeu Fabra University, we have been using experiments in teaching for more than a decade. We have discovered that, besides being a powerful teaching tool, experiments make the learning process an enjoyable and memorable life experience.

This workshop will provide a hands-on activity on how to incorporate experiments in your course, and how to conduct them in the classroom or during synchronous online teaching. We will use experiments in Experiencing Economics, the latest book by the CORE Team, and on the website econ.classexperiments.com. The book and the site provide pre-programmed experiments that can be run immediately with classEx (a free online interactive tool), plus a complete set of materials to help maximize the benefits of using the experiments in your teaching. Each experiment is self-contained, and the materials are designed to minimize the required work an instructor has to do to implement live games in their teaching.

Experiments can be used in many different ways: to first expose students to theoretical concepts; as a complement to an introductory course, using "The Economy", "Economy, Society, and Public Policy", or any other textbooks; alongside a course with a specific topic; or for an experimental methodology course. They also work well as a direct companion activity to introduce discussions or convey specific concepts.

Workshop: Storytelling with simulations: interactive ideas for teaching economic models

Eileen Tipoe (University of Oxford)

Stories are helpful pedagogical tools for transferring and retaining knowledge. Adding interactive elements to a narrative ('interactive storytelling') gives students greater agency over their learning, and this active construction of knowledge makes learning more effective and meaningful compared to passively receiving course material. The power of interactive storytelling is under-appreciated in economics, which often uses static presentation and technical explanations of complex mathematical concepts and models.

This workshop will demonstrate how simulations and interactive visualisation can enhance students' understanding of economic models and concepts, and provide meaningful learning experiences. The workshop will introduce participants to existing simulations and interactive data visualisations developed by CORE Economics (e.g. the COVID-19 virus transmission simulation and the global income distribution data visualisation). Participants will be shown examples of how they can be used in a variety of learning environments, including blended and online learning, or as in-class learning activities. Participants will also learn practical tips for designing their own simulations and ideas for incorporating simulations into their own teaching.

The workshop will be structured as a presentation, followed by Q&A and discussion. Participants are advised to have a device (laptop, tablet, or smartphone) on hand so they can try out the simulations for themselves.

Which learning resources do undergraduate students perceive as most valuable and does their usage contribute to student module success?

Lory Barile (University of Warwick), Caroline Elliott (University of Warwick), Michael McCann (Nottingham Trent University)

The move to blended/online learning for many students in the face of the Covid 19 pandemic in 2020/2021 provides a great opportunity to identify which learning resources students value most highly. In this paper we use Virtual Learning Environment (VLE) data to identify which module learning resources students use most frequently. Since the move to blended/online learning students have had to rely more on online resources provided, for example asynchronous lecture recordings. There are also learning resources that were previously provided via VLEs and continue to be provided in this way, such as discussion forums. This paper offers an opportunity to compare students' use of module VLE learning resources in the 2019/2020 academic year prior to the shift to blended/online learning, with their use of VLE learning resources in the 2020/2021 academic year, considering both whether learning materials that were already provided have been used more in the current academic year, plus the take up of new learning resources that have been uploaded this year.

There is a large literature including but not restricted to an Economics literature that considers consumers' demand for a product or service on the basis of their willingness to pay. However, there are challenges in designing focus groups and/or surveys to determine accurately consumers' willingness to pay / valuation of a resource. An alternative approach to determining the extent to which consumers value a good or service is to observe their demand or use of the item. This is known as the revealed preference approach, and is the approach used in this analysis, whereby we assume that the learning resources students use provide a good indication of the resources that they value most highly. Fortunately, VLEs offer rich data on the extent to which individual students access the various module online resources, including the frequency and timing of access.

We are also interested in whether similar patterns of student usage of VLE materials emerge across different university Economics Departments. As such a comparative analysis is offered, using individual student data from two different UK Economics Departments, one being a Post-92 and the other being a Pre-92 university. It is hoped that the analysis will inform and guide academics in terms of online resources they make available to students in the future, through better knowledge regarding those resources that students most use and value.

Finally, it is natural to follow up on the above analysis by considering which factors contribute to students' success on a module, considering students' engagement with various VLE resources provided, while controlling for a variety of student characteristics and background factors. This is achieved through a cross-sectional econometric analysis in which student module final marks are the dependent variable, with usage of a variety of VLE resources as explanatory variables and various individual student characteristics as controls including gender, age, previous qualifications, ethnicity, and home/EU/international status. The results are helpful as they enable us to better advise students on study techniques. Again, through a

comparative analysis we are able to assess whether there are similar factors that contribute to Economics students' module success across contrasting UK institutions.

Throughout the paper we use secondary data from two undergraduate Economics modules from Nottingham Trent University, namely the level five Economics of International Banking module and the level six Industry, Corporations and Government module. Meanwhile, data from the level five Econometrics University of Warwick module are used.

Online lecture recordings during the COVID pandemic

Edmund Cannon (University of Bristol) and Marion Prat (University of Bristol)

We analyse second-year UK undergraduates' use of study tools on a Macroeconomics unit in Autumn 2021, focussing on lecture recordings prepared for asynchronous use. We find no convincing evidence that students can be divided into groups with different study patterns: student heterogeneity consists largely of some students using more of all materials. Greater use of study materials is correlated with prior performance, but there is no correlation with gender or overseas status. Some, but not all, aspects of study are correlated with better marks in the Macroeconomics assessment, but our observational study is unable to draw strong conclusions about treatment effects of additional study methods, since we do not observe students' ability or private study.

The COVID pandemic led to a sudden requirement to produce video recordings to supplement or even replace traditional lectures and also led to a large increase in availability and use of video-conferencing for students to talk to staff (e.g. using Zoom). The purpose of this analysis is to see how new teaching method such as specially-recorded lectures interact with students' use of other teaching / studying methods, e.g. seminars. An original component of our analysis is that we observe students' engagement with both traditional teaching resources, in particular face-to-face seminar attendance and online asynchronous teaching resources.

The focus of our study is the series of teaching videos for asynchronous viewing. We observe which asynchronous lectures were observed by each student and whether they watched them early or late; the number of viewings; the coverage and total time spent using them. Our other variables are as follows: live online lecture attendance, face-to-face small-group seminar attendance, albeit both with some measurement error; the number of days students logged on the discussion board and the number of questions that they posted. Finally, we also have a record of the number of occasions that each student saw a member of the teaching staff for a bookable fifteen-minute one-to-one office hour using Zoom.

Contrary to existing studies which use machine learning methods to characterise different student learning types, we found no convincing evidence that the sample of students could be partitioned using a cluster analysis. Most of the observed heterogeneity is due to some students using more resources than others.

There is a high degree of correlation between the six variables on asynchronous lecture usage. To simplify our discussion, we use a principal components analysis as a form of data reduction (we obtain qualitatively similar results using all six variables separately). The first two components explain a high proportion of the total variance in the data (69%) and can be summarised as:

• Component 1: amount of time spent watching videos and watching videos early rather than late;
• Component 2: number of times that each video was watched and coverage.

We investigate the relationship of these learning components with observed pre-determined variables. Component 1 is strongly correlated with prior attainment (first-year economics mark), but not with gender or overseas-student status; component 2 is weakly correlated with gender. This suggests that what differentiates students is whether and how much they use the asynchronous material, not a hypothetical learning type.

We also estimate a regression of final Macroeconomics mark on both components (controlling for the use of the other teaching methods). Only component 1 was correlated with the final mark and this was only marginally significant when controlling for predetermined variables: in particular, controlling for prior attainment dramatically weakens the explanatory power of the use of asynchronous lectures. Component 2 appears to have no correlation with the final exam mark. First-year marks explain 23% of the variance of the Macroeconomics mark; adding other pre-determined variables and asynchronous material only raises the explained variance to 29%. This suggests either that the benefit of the asynchronous material is small, or that students substitute away from other study methods or that there is a self-selection effect.

Although the new online learning environment is making possible the use of potentially rich data-intensive methods, our results underline some limitations/issues raised by these methods. First, the absence of evidence for different student learning types suggests that more studies will be needed to evaluate whether existing published results have been contaminated by some form of publication bias. Second, our inability to control for other study methods (such as time spent reading) means that the parameter estimates cannot be interpreted as causal, but the weak correlations that we estimate suggest that any benefits of these methods may be attenuated by student behaviour.

Student engagement with online learning

Mike Reynolds (University of Leeds)

One of the many impacts of Covid-19 on Higher Education in the UK was for teaching to be moved online and greater use of pre-recorded video content was made. Modules that moved to the use of pre-recorded video in place of lectures have essentially adopted a flipped classroom approach. The flipped classroom approach is when instructional content, such as pre-recorded video, is delivered prior to interactive seminars. Seminars then focus on active learning. Many papers consider the positives and negatives of making a move to a flipped classroom approach – see Akçayir and Akçayir (2018) for a recent review of the literature. Pre-recorded video also has another advantage over lectures as it allows for detailed monitoring of student engagement including data on the amount of views and the length of those views. In this paper, we make use of these statistics to consider how differences in the delivery of the online content can affect engagement with pre-recorded videos. As the time and date of viewing is also recorded then it is possible to observe how module events (e.g. seminars and formative assessment) impact engagement with the pre-recorded videos. Importantly this helps to generate a better understanding of which incentives students respond to and how students use pre-recorded content. As two of the three modules in the analysis took place before the pandemic then the paper can also look into whether the pandemic has an impact on student engagement.

The pervading wisdom is that 'shorter' videos foster better engagement from students. There is a lack of precision on what is meant by 'shorter' and a lack of convincing evidence about the impact that 'shorter' video lengths have on engagement and learning particularly in Higher Education. Slemmons et al (2018) considers the experimental evidence of the impact of shorter videos at the K-12 level in the USA where 'shorter' means two ten-minute videos instead of one twenty-minute video. They do find some evidence that the shorter videos are associated with better longer-term retention of information for males and students with learning disabilities. Students in the study also self-reported that they were more engaged. However, the situation in higher education is more complex with weekly module delivery options potentially ranging from anywhere between a single fifty-minute video to ten fiveminute videos. Whilst shorter videos might initially increase engagement, it is an open question whether this engagement persists to include the ninth or tenth video.

The paper will compare patterns of engagement with online video across three modules: (Module 1a) a pre-pandemic postgraduate module with long videos; (Module 1b) a prepandemic PG module with short videos; and (Module 2) a post-pandemic undergraduate module. Modules 1a and 1b are the same module run in different years with Module 1a representing a 'refinement' of Module 1b. Module 1a had 41 videos with an average of eight minutes per video and a total video run time of five hours and thirty minutes. Module 1b had 67 videos with an average of five minutes per video and a total video run time of five hours and forty-five minutes. As both modules had a very similar total video time, a comparison of Modules 1a and 1b will shine some light on whether students are indeed more likely to watch shorter videos and whether this persists when there are more videos.

The addition of Module 2 into the analysis adds another dimension for comparison, which

allows the paper to compare the patterns of engagement before the pandemic, when only limited modules made use of online resources, and during the pandemic, when the majority of modules were online. The magnitude of the change in delivery of modules could have big impacts on how students engage with pre-recorded video and it is important to consider this as we plan for future delivery.

The data from all three modules allow further consideration on how students use videos in relation to specific module events and allows the paper to consider the following questions: Do students increase viewing of videos before seminars? Does a formative assessment element increase engagement with videos? Do students revise the material during holidays or before an assessment? All of which are vital questions so that student use of video can be further understood and appropriate plans can be put in place for 2021/22 and beyond.

The long-term behavioural implications of co-creation in economics education

Mario Pezzino (University of Manchester) and Karol Tolpa (University of Manchester)

The way Higher Education, HE, sectors around the world are organised and operate continues to be at the centre of an important debate. Over the years, regulatory reforms, together with societal and cultural changes, have favoured forms of marketisation of the sector, with students increasingly seen and treated as consumers. Taken to an extreme, it may be the case that sometimes students, who increasingly see themselves and are treated as consumers, may get detached from principles like respect, reciprocity and responsibility. The importance of these principles, sometimes referred to in the literature as the "3R", is often related to the increasing recognition of the importance that the development of soft skills (socio-emotional/meta-cognitive skills) may have for the future success of students.

It is also important to note that recent research from the fields of psychology, sociology and (behavioural) economics highlights the importance of soft skills to define the economic outcome of education. Kocha et al. (2015) highlights the importance of soft skills from a behavioural economics perspective. They review the insights of experimental evidence and behavioural theories that show how the approach to competitive environments, self-control, patience and (intrinsic) motivation can play major roles in academic and professional success of students. These factors can help understanding puzzling reports of differences in academic choices and also performance among different groups of students (e.g. in terms of gender and socio-economic backgrounds).

In this paper, we are going to focus specifically on the benefits of co-creation with a particular focus on economics education; we shall discuss in particular its potential to help students developing soft skills and on the intertemporal effects that carefully co-produced and deployed resources may have on future generations of students. Specifically, we highlight how social attributes, e.g. respect, reciprocity and responsibility, often associated with student/staff partnership are also key for the development of soft skills and the creation of an education morale, concept analogous to the one of tax morale described in the literature on tax compliance (Luttmer and Singhal (2014)).

We expand the discussion in Kocha et al. (2015) in a number of dimensions. First, to the behavioural traits already considered in Kocha et al. (2015), we include other dimensions, related to the way individual internalise and react to social stimula, such as altruism, compassion, emotions. Second, we extend the framework introducing explicitly the effects of co-creation. We model both the direct effects of co-creation (e.g. increased partnership, active learning and development of soft skills) and indirect/intertemporal ones. We discuss how, if carefully planned and executed, co-creation can have intertemporal lasting effects on students and staff in a programme. On one side, it can influence the motivation and inclination to innovate of teachers. The emotional connections (based on the 3R) that cocreation activities can establish between academic staff and students can modify teaching staff's behaviour in deeper ways than standard monetary incentives or awards for innovative

teaching. At the same time, if the products of co-creation (for example teaching resources) were used to teach new students and introduce them to threshold concepts, the learning benefits of co-creation would reach multiple cohorts of students. If co-creation were appropriately promoted among students and it became a standard feature of a programme, this may unlock some form of cultural transmission via intertemporal peer effects: students exposed to material co-created by previous cohorts could be induced to appreciate the benefits of working with teachers and acquire hard and soft skills this way. Ultimately, via cocreation, intertemporal peer effects could influence student behaviour and, ultimately, create a sense of education morale. Students with a positive academic morale would be those who see themselves as part of a learning community and are inclined to contribute to the learning experience of other students.

To clarify our argument, we describe the set up and preliminary assessment of a co-creation activity that we have implemented in an intermediate microeconomics module.

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Luttmer, E.F.P. and Singhal, M., (2014), "Tax morale", Journal of Economic Perspectives, 28, pages 143-168.

Goal setting and implementation intentions to improve educational outcomes

Paul Cowell (University of Stirling)

The success of any student's engagement with an educational programme is inherently determined by the student's own learning behaviour. This project will break new ground in creating a nexus between the research areas of behavioural economics, the economics of education and pedagogy. For any budget, educational outcomes can be improved by nudging student behaviour towards deeper and structured learning approaches to improve educational attainment. This project will consist of a field experiment conducted in an introductory undergraduate module at a UK university to test whether goal setting and implementation intentions can improve student engagement with learning material, student wellbeing through earlier preparation for assessment, and student academic attainment. The behavioural intervention is designed to be implemented with minimal resources with large scalability, and has the potential to significantly affect student engagement, which is of practical relevance to educational providers throughout the world. Moreover, the marginal effect can be expected to be higher in deprived areas or with students who may lack the soft skills required to plan their self-directed learning activities accordingly.

Existing Evidence
This project seeks to break new ground in combining behavioural interventions with pedagogical literature in the context of higher education. A student's observed engagement in a learning activity is significantly determined by the student's motivation and preferences. Moreover, even if a student intends to take part in a learning activity, they may lack the selfcontrol skills necessary to carry out their intentions. This creates the potential for significant losses in the investment in higher education, particularly for socioeconomically disadvantaged students who may lack these soft skills or who may require to be engaged in paid employment to fund their studies, creating a strain on time resources.

Whilst there is a significant body of pedagogical literature that seeks to encourage student engagement in learning activities by considering their design (e.g. Gilboy et al., 2015), behavioural nudges provide a low-cost, high-return and more importantly – widely missing – opportunity to address the problems of student engagement. This project seeks to test the impact of goal setting ('how many or which activities I task myself with completing) and implementation intentions ('when I will complete these activities by, and in what order') nudges in the context of a field experiment in the UK higher education sector, where the problems of student engagement and lack of resources are widely acknowledged.

This project builds on the work by Clark et al. (2016) in using goal-setting as a motivational tool by incorporating implementation intentions that have been particularly successful in the field of health interventions (Gollwitzer & Oettingen, 2015; Milkman et al., 2011; Stadler et al., 2010). This combination of goal setting and implementation intentions may provide a more effective behavioural intervention in motivating students to complete learning activities in terms of completion rate, but also with respect to the scheduling of learning activities. Given that student wellbeing is of utmost importance, students who can be nudged towards earlier

and sustained self-directed study should be less likely to engage in the more stressful and less effective learning strategy of cramming.

In the context of an increasing financial burden faced by students in higher education, increasingly resource-aware universities and a much more diverse student population, behavioural nudges offer a unique and powerful opportunity to support students to be better learners and, as a result, the opportunity to improve student attainment. There are also implications for how educational providers can harness the power of learning analytics from learning management systems to monitor student engagement and consequently design learning activities accordingly.

Research Questions & Methodology
The project will take the form of a field experiment in a first-year undergraduate module in introductory economics. The overarching research aim is to test whether behavioural interventions can improve educational outcomes. Specifically, this project will combine implementation intentions with goal setting to test whether there is an additionally significant effect to asking students to plan when they will complete their learning activities. The educational outcomes will be measured by the completion rate of practice exams, the final module grade, and a self-reported measure of wellbeing. The approach of this project is that of a field experiment, where individuals will be randomly assigned to treatment and control groups to identify treatment effects and causality. Students will be randomly assigned to one of three groups, a control group, a partial treatment group (goal-setting), and a full treatment group (goal-setting and implementation intentions).

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Public feedback for collective learning

Isleide Zissimos (University of Warwick)

Introduction
In the United Kingdom's National Student Survey, feedback recurrently receives lower ratings than any other course feature, even though the literature on education highlights the importance of feedback for student learning. To be beneficial, students do need to actively engage with feedback, for which the ability to read, to interpret and to use it is critical (Sutton, 2012). This presumes that a student would know what the standards are, being able to compare their own work with the standards and taking action that leads to the closure of a gap (Sadler, 1989).

This study introduces a group formative activity that motivates engagement with feedback, by making it public. The public attribute gives students the opportunity to learn from each other's feedback. Of specific interest is to compare students' public feedback uptake to the findings in the research on private feedback with focus on timing; students' individual characteristics (gender and nationality); and feedback valence (positive or negative feedback).

The Formative Assessment
The formative activity was completed by a cohort of 78 final year students in an undergraduate multidisciplinary programme in Economics, Politics and International Studies, hosted by a British university.

The task is a student group presentation of a scientific paper during seminar classes. The groups consisted of two or three students, formed voluntarily. Each group had up to 50 minutes to present and to lead a peer discussion. The presentation is followed by a written feedback document, specifically for the group who presented. The feedback is provided by the course tutor within the same week that the presentation occurred. The tutor emails the feedback to all students and posts the presentation slides on the course website. Figure 1 depicts the conceptual stages of the assessment.

Data and Method
The first data source consists of the count of positive comments and suggestions for improvement (negative comments) listed in the written public feedback4. The second is the presentation slides produced by the student groups. A feedback comment is defined as "uptake" to a given presentation if the comment is manifested in any slide(s) of the presentation following a feedback document that was previously made public to the students. To complement the main dataset, this study uses secondary data from university's administrative records on student gender and nationality. The quantitative analysis uses ttests and correlations to compare feedback uptake in terms of timing, gender, and nationality.

Results
Preliminary results suggest that students' responses to public feedback are consistent with the responses to feedback received in private found in other studies. The feedback uptake ratios (the average number of feedback comments uptake divided by the average number of comments) decrease after 2 weeks of receiving the feedback for all possible elapsed times

suggesting that the "ideal" time for students to receive feedback is within two weeks after taking the assessment. The same measure was used to analyse correlations for gender and nationality. The resultssuggest overseas students do observe feedback provided to their peers more often than their UK/EU counterparts. Moreover, a greater magnitude in the differences is observed if the students are overseas females.

Figure 1: Conceptual Stages of the Formative Activity
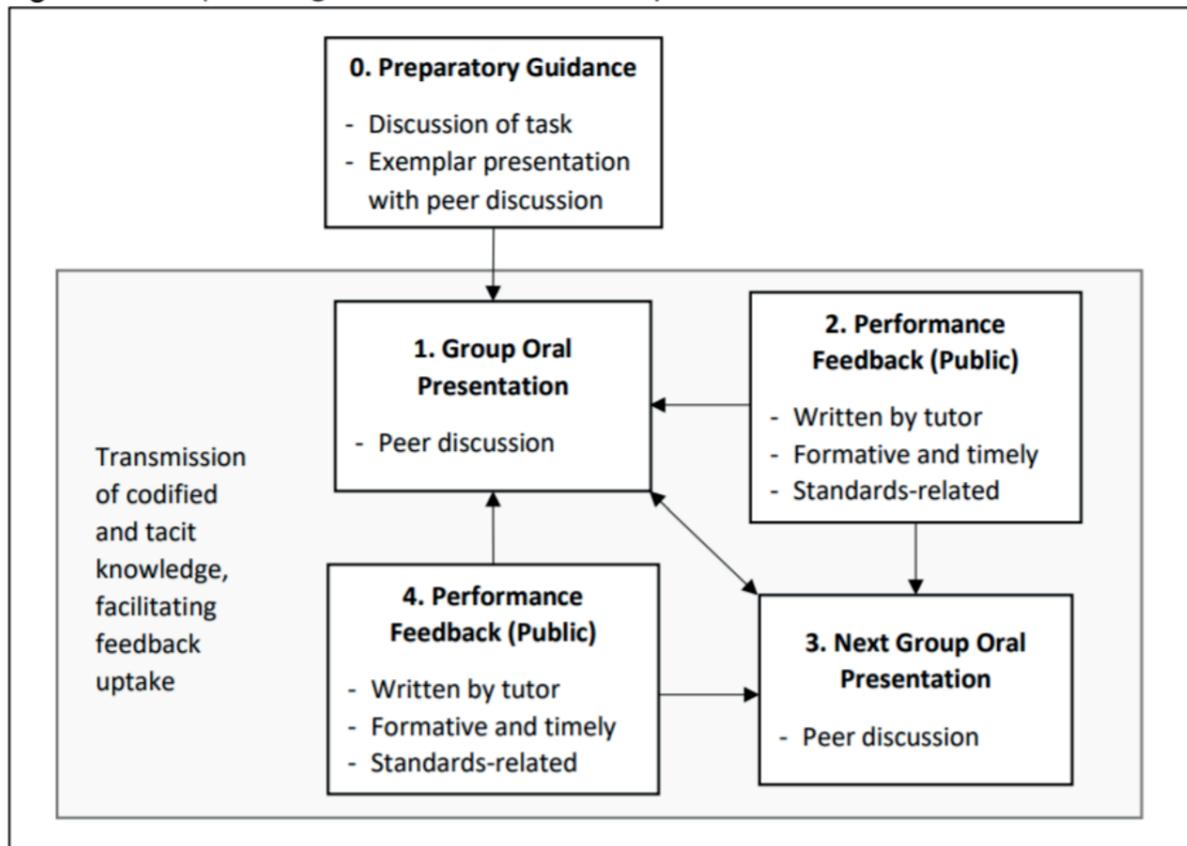
Discussion
The literature has put forward different reasons for overseas and female students' distinctive behaviour. For example, female and overseas students might have more intrinsic motivation than their peers, spend more time studying and more often connect knowledge acquired in earlier stages of their studies to new knowledge (Boylan (2002) Niemi et al. (2003) Andrade (2006), and Virtanen and Nevgi (2010)). Another possible reason is that overseas and female students might have specific preferences for assessment and feedback, which in turn affects their learning strategies and engagement (Bartram and Bailey (2010), Bevitt (2015), and McCarthy (2015)). The extent to which the findings can be generalised is constrained by the limited scope of this study.

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Negative marking, guessing and academic performance

Ghazala Azmat (Sciences Po), Maia Guell (University of Edinburgh) and Stefania Simion (University of Bristol)

Little is known about the consequences of penalizing bad performance (or mistakes). In the context of education, examiners can adopt a negative marking scoring system as a way to discourage students from guessing and to increase test reliability and validity. One common form of assessment that facilitates this type of system are multiple-choice exams. Multiplechoice exams that use a negative scoring system often penalize students for wrong answers, giving no marks for blank answers and rewarding correct answers. However, an important concern of this system is that it might reduce the performance of those who are relatively less confident in their likelihood of answering correctly or are more risk averse. In turn, inducing a trade-off in efficiency and equality.

In this paper, we use a quasi-experimental design at a large university in the UK to explore the performance impact of using a negative marking scoring system. In particular, we explore a reform in 2014, whereby change in the format of summative multiple-choice tests- from 100% negative marking to 50% negative marking- in two core economics undergraduate courses. This natural experiment accounts for any framing biases inherent in controlled experiments and provides a real-world measure of the effect of negative marking.

We aim to contribute to the emergent literature on the effects of negative marking in multiplechoice tests (Atwater and Saygin, 2021; Iriberri and Rey-Biel, 2021; Coffman and Klinowski 2020; Funk and Perrone, 2017) by focusing not only on the overall effects, but also on a set of heterogenous ones. First, given the existing evidence that women are more risk averse than men (Eckel and Grossman, 2008; Croson and Gneezy, 2009) and less confident (Barber and Odean, 2001), we analyse whether female students are more likely to be discriminated against by negative marking. Then we explore whether the effects of negative marking are different among students with different levels of ability, as well as fields of study. Finally, given that the two courses that we analyse apply different penalties for incorrect answers, we also plan to study whether the results are sensitive to the magnitude of the imposed penalty, a new dimension not explored before in the literature.

We use a rich individual level dataset, covering 4 cohorts of students, two exposed to 100% negatively marked exams (2012-2013) and two exposed to 50% negatively marked exams (2014-2015). Students take multiple choice exams as mid-terms through the year, as well as for part of their final exam. We measure their test performance, including the answers (or blanks) given to each question in each test.

In our analysis, we employ a within-individual regression analysis to explore the variation across two parts of the exams- part 1, which was negatively marked before 2014, but not negatively marked post 2014 and part 2, which was negatively marked throughout the entire period under analysis. Our regression allows us to identify changes in performance overall in the part 1, as well as any potential spillover onto part 2.

Our preliminary findings suggest that scrapping negative marking increases the grades, encouraging students to leave less blanks. However, it also increases the proportion of incorrect answers, to the extent that the overall number of correct answers under the new regime does not increase. The effects are similar for students with different socio-demographic characteristics and ability. The implications of our preliminary results imply that, despite students getting higher marks when there is no negative marking, their learning has not improved. Thus, introducing negative marking in multiple-choice exams seems to be efficient in improving knowledge, by reducing guessing, with no strong heterogenous effects. In ongoing work, we aim to analyse more drastic changes in negative marking, in terms of the applied penalty, to understand the importance of the size of the imposed penalty.

# Do we have the right metrics to assess the ethnicity gaps in education?

Gabriella Cagliesi (University of Sussex) and Denise Hawkes (University of Greenwich)

Ethnicity gaps throughout Higher Education across England have become a significant focus driven by renewed policy interest. The Office of the Students (OfS) Access and Participation Plans (APP) had forced in 2019 English Universities to place more effort to identify and address ethnicity gaps in access and success. OFS has developed Frameworks to reduce these gaps supplemented by Transforming Access and Students Outcomes (TASO) focus on causal evaluation of interventions across the sector. More recently, the AdvanceHE report (October 2020) highlighted the scale of the issue, suggesting that the pre-Covid attainment gap between White and Black of 22.6 percentage points would not close, without additional intervention, until the academic year 2085/2086.

Educational gaps in higher education have attracted academics, practitioners, and policymakers and generated public interest around equality, diversity, and inclusion themes (Wakeling et al, 2017; Callender and Dougherty, 2018). The COVID-19 crisis has exposed the endemic structural inequality and highlighted the urgency to have the right set of robust statistical tools to address and track ethnic gaps in access, progress, and achievement to avoid the widening and accelerate the closure of these gaps.

We believe that the ethnicity gaps exist before Higher Education and continue after it, in postgraduate education and in the job market. The recent OFS call for funding to develop university interventions in BAME candidates for research degree is evidence of this. We think that the development of new metrics has benefits beyond HE, as these measures could be used at any level of the educational journey.

We propose new tools to measure the education ethnicity gaps in access and success. The current approach quantifies these gaps by using differences across ethnicity groups' averages. However, simple averages, even if accurate, by definition, ignore crucial information. We use longitudinal institutional data of the University of Sussex, and we aim to compare these data with similar data from the University of Greenwich. We differentiate across different categories of ethnic groups, and their intersectionality with international and domestic students' data, and we apply, in the first phase of the research, single-measure and relative-measure index methodologies (mean differences, segregation indexes such as Duncan, Atkinson, Theil, Coworker, and Gini correcting for the small-unit bias, following the approach of D'Haultfoeuille et al., 2021). The results we present provide evidence that the awarding gaps are present at each level of progression since 2014, with BAME students and international students clustered in the lower grade boundaries. These gaps are statistically significant, persistent, and captured through multiple segregation measures.

GMall_1920
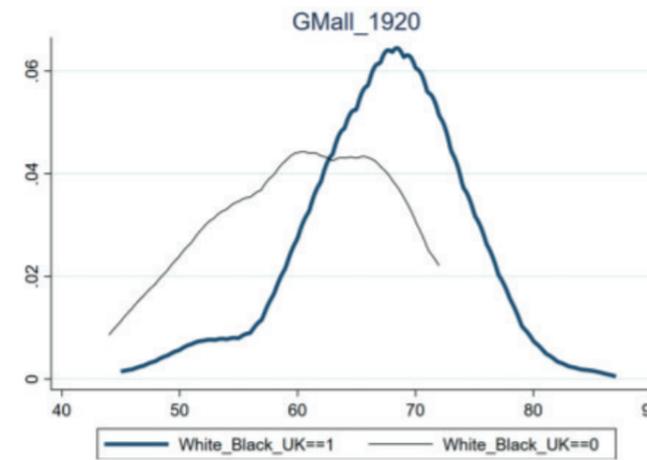
We move from simple one-dimensional analysis into a more nuanced econometric approach such as the Difference-in-Differences (Diff-in-Diff) and the generalised structural equation model (GSEM) to explain structural inequality in HE attainment. The Diff-in-Diff model allows us to explore the role of the new assessment diet and other policies used to respond to the Covid pandemic in the awarding gaps. Our preliminary estimates of the Diff and Diff model suggest that new assessment (online tests and Take-away-papers) and the non-detriment policy (use at the exam boards) have reduced the gaps between some ethnic groups, but have disadvantaged others, particularly the black students.

The GSEM model is used to estimate the Triple-Hurdle model, which seeks to explore the evolution of attainments gaps on the undergraduate degree programmes. The results highlight that the role of microaggression through the degree programme in explaining a lower proportion of good degrees for BAME students, especially the black ones. Despite the awarding gap, ethnicity is not a hurdle in progressing from year one to year two. However, it plays a more significant role in explaining students' average grades as they progress through the degree programme.
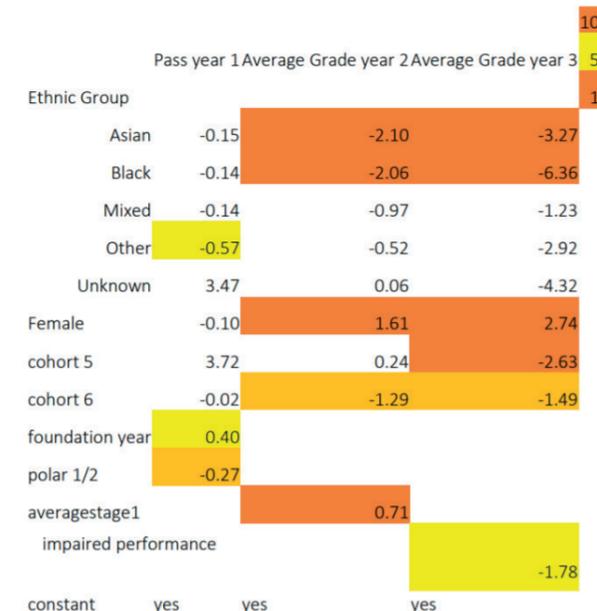
The econometric approach's distributional nature will ultimately help create additive decomposable distributional indices (such as the Oaxaca-Blinder and the Brown-Moon-Zoloth decomposition methods). We believe that these more nuanced measures we propose, which account for dispersion, distribution, and discontinuity points, can provide robust and testable evidence of ethnicity gaps to disentangle "statistical evidence" from what might be just randomness and may prove more insightful and useful in identifying and tackling the ethnicity gaps.

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Who addresses diversity, inclusion, and gender issues in undergraduate introductory economics in 2020? Results from a sixth national quinquennial survey

Cynthia Harter (Eastern Kentucky University), Rebecca G. Chambers (Federal Reserve Bank of Philadelphia) and Carlos J. Asarta (University of Delaware)

The 2020 online administration of the sixth national quinquennial survey on teaching and assessment methods in economics shows that very little has changed over the past 25 years (Harter and Asarta, forthcoming; Asarta et al., 2021). Keeping in mind evidence that the profession and the population of student majors are lacking in diversity (e.g., Bayer and Rouse, 2016), the updated 2020 survey included separate questions about the use of lessons, activities, or references that address diversity, inclusion, and gender issues. More than 80% of respondents who teach introductory economics reported no use of these types of lessons and activities in their classrooms, and about 50% reported no use of these types of references in teaching undergraduate introductory economics. This paper investigates factors that affect instructor choice about using these teaching practices.

We provide descriptive statistics to compare the demographics of those economics instructors who do use these teaching practices with the demographic profile of the typical introductory economics instructor. This profile is predominantly a male, Caucasian, with a Ph.D., and has not changed over the past 25 years (Asarta et al., 2021). Table 1 shows demographic characteristics of those instructors who report using each of the more inclusive teaching practices and for the overall sample of introductory economics instructors. The average percentages of those who are using lessons or activities that specifically address diversity and inclusion issues and those who are using lessons or activities that specifically address gender issues that are in tenure-track jobs is lower (.63 and .65, respectively) than the overall average in tenure-track jobs (.69). The percentage of females using each of these teaching practices is higher than the percentage of females in the overall sample. The percentage of White respondents who report using lessons or activities about gender issues is lower than that of the overall sample. The percentages of those who use these teaching practices that are native English speakers is higher than that of the overall sample. There are no noticeable differences in the percentage of work time spent on teaching (as opposed to research, service, administration, etc.) for these groups. The groups that are using more inclusive teaching practices do have slightly less teaching experience than the overall sample, including experience teaching online.

Table 1 Mean Values of Demographic Characteristics
(Standard Deviation in parentheses and Number of Observations underneath)

Teaching Practice	Tenure Track	Female	Hispanic	White	Native English Speaker	Percent of Work Time Teaching	Years Teaching	Have Taught Online
Diversity & Inclusion Lessons	0.63	0.44	0.06	0.89	0.88	54.77	16.31	0.35
	(0.49)	(0.50)	(0.24)	(0.32)	(0.33)	(22.32)	(11.93)	(0.48)
	99	99	98	97	99	96	94	108
Diversity & Inclusion References	0.68	0.44	0.04	0.90	0.87	55.07	16.69	0.34
	(0.47)	(0.50)	(0.20)	(0.31)	(0.34)	(23.12)	(11.70)	(0.47)
	290	289	284	286	290	284	270	312
Gender Lessons	0.65	0.5	0.05	0.86	0.85	55.62	15.48	0.31
	(0.48)	(0.50)	(0.21)	(0.35)	(0.36)	(21.85)	(11.51)	(0.47)
	86	86	85	85	86	85	84	93
Gender References	0.70	0.43	0.05	0.89	0.85	55.16	17.05	0.33
	(0.46)	(0.50)	(0.22)	(0.31)	(0.36)	(22.00)	(11.99)	(0.47)
	293	294	287	290	294	288	280	316
Overall Sample	0.69	0.39	0.06	0.89	0.83	55.31	17.34	0.37
	(0.46)	(0.49)	(0.23)	(0.31)	(0.37)	(23.34)	(12.17)	(0.48)
	601	599	588	588	599	594	565	649

Following procedures used by Harter, Becker, and Watts (1999) to investigate characteristics of instructors who use various teaching methods, we use binary probit analysis to investigate factors that affect instructor choice about using these inclusive teaching practices. We estimate four models where the dependent variable for each model is a binary variable equal to one if the respondent uses that specific teaching practice – activities or lessons about diversity and inclusion issues; references to diversity and inclusion issues; activities or lessons about gender issues; or, references to gender issues. Preliminary results suggest that instructor demographics such as gender and native language are important factors that affect instructors' choices about using these teaching practices in introductory economics.

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Lego serious play for economics lessons

Prashan S. M. Karunaratne (Macquarie University)

Experiential Learning Theory (ELT) is a holistic methodology in higher education that focuses on how individuals learn (Kolb, Baker, & Jensen, 2002). In recent years, educators are beginning to recognise experiential leaning as the methodology that will revitalise curricula in higher education (Kolb, 2014).

As the unit convenor of the Bachelor of Commerce (BCom) Capstone Unit – Agility and Excellence in Business, I teach a new unit that brings students across 12 distinct disciplines in the BCom together to form cross-disciplinary teams of 5-7 – so that each student develops an empathy for other disciplines that they will have to work with upon graduation, as well as understand where a student's own discipline-expertise fits in the context of the entire team.

The teams work towards addressing one of the UN Sustainable Development Goals. They bring their skills and experience from their prior studies together to achieve this goal – collaboratively, sustainably, ethically, and profitably. Students produce a report that comprehensively outlines their capstone project, and how the team has strategically incorporated the 5 lenses of the team members.

Teamwork is embedded in the unit's curriculum with 5 weeks devoted to teamwork: an introduction to teams, the theory of teams, communication, collaborative problem solving, and conflict management. We work through activities which are ultimately a scaffolding for their capstone project.

This is where Lego Serios Play comes in. Lego Serious Play is a teaching pedagogy used in schools, higher education, as well as industry. Lego Serious Play is not to be confused with Lego Mindstorms which is another excellent methodology for teaching in STEM – and hence the Lego kits and lesson plans are quite different. Lego Serious Play (LSP) is geared towards business education as it is designed for team building, teamwork, management, and organisational activities.

For 17 years I have incorporated a "budget-version" of Lego Serious Play in my economics classes – whereby I use blank pieces of paper to teach team-based activities when it comes to a factory production line or the co-ordination of the banking system.

Satzler & Shieu (2002) discuss the use of LSP in a large operational management class. Specifically, the authors utilised LSP to teach:
- Product design / development
- Statistical quality control
- Workforce management
- Aggregate production planning
- Material requirements planning
- Process / layout design

All of which fits neatly within the context of the B Com Capstone.

Casper (2017) discusses the teaching of forming, storming, norming, performing, adjourning using LSP in a higher education context – content in the BCom Capstone curriculum. Kristiansen & Rasmussen (2014) in a widely cited study, discus how LSP helps in building better businesses, which echoes the name of the BCom Capstone – Agility and Excellence in Business. In Peabody & Noyes (2017), the authors discuss the use of LSP for teamwork, as well as reflective practice, and they state that the kinesthetic methodology is a promising higher education pedagogy – where reflective tasks are embedded in the BCom Capstone. Nerantzi & Despard (2014) and James (2013) also discuss the benefits of incorporating LSP in higher education.

In the Capstone unit, one lesson using LSP is to teach Tuckman's Stages of Teamwork. Each team is provided an identical Lego set and instructions – with the aim of completing the construction in the fastest time possible. The teams are initially allocated ten minutes for purely planning out their team strategy – the stages of forming and storming. Once these ten minutes pass, teams begin construction – the stages of norming and performing. When all teams are complete and their various times are realised, team reflect on their performance and are given the opportunity to re-form or adjourn.

For a lesson on economics, LSP can be used to teach a lesson on production and costs from microeconomics. A simple Lego structure involving 7 pieces is showcased as the product to be created- the aim is to create the maximum possible product in 2 minutes. Begin the first round with a single student on a production line and note the total product created in 2 minutes. Every round, add another student to the production line and plot the total product in both a graph and a table. Eventually, you will notice diminishing marginal returns beginning to set in.

LSP provides a tangible point of reference to students to experience the concepts that are being discussed in the classroom, via a hands-on activity that emulates what would occur in the workplace – equipping and empowering learners with employability skills.

Mental wellbeing of first-year economics students: The effect of a game-based orientation day

Lize Vanderstraeten, Evelien Opdecam, Patricia Everaert (Ghent University)

The mental wellbeing of higher education students is of tremendous importance, both in terms of academic research as well as regarding policy initiatives. First-year students, in particular, are considered highly susceptible to psychological distress (Auerbach et al., 2018); consequently, they might benefit from additional support in their transition from secondary to higher education. Scholarly research has underlined the universities' responsibility to create an inclusive sense of community and to promote social activities among students during this transition period, by means of effective orientation activities (e.g. Brooman & Darwent, 2014; Myrtveit et al., 2017). More specifically, gamification of university orientation activities has been demonstrated to stimulate students to create social connections and to explore the campus (Bürgisser et al., 2018), as well as to increase the effectiveness of information transmission (Denny et al., 2018) and the learning satisfaction of higher education students (Murillo-Zamorano et al., 2021).

The current study investigates the effects of a game-based orientation day on the mental wellbeing of first-year university students in economics and business administration, by means of quantitative survey data (N = 1850). The design and features of the interactive orientation day initiative – organised by the Faculty of Economics of a large Belgian university – are deliberately established on the basis of the multidimensional Framework for Enhancing Student Mental Wellbeing in Universities of Baik et al. (2016). The quasi-experimental design of the present study comprises two years of data. In September 2019, the game-based orientation day was implemented in one first-year study programme (business economics, N = 464), whilst students of a very similar first-year study programme got offered a more traditional, lecturebased orientation day and thus served as a control group (business administration, N = 488). In September 2020, the game-based orientation day was organised in both study programmes (N = 448 for the business economics sample and N = 450 for the business administration sample).

The study design enables to investigate the effects of a game-based orientation day across comparable student samples, as well as across two years of data, while considering the students who participated in the lecture-based orientation day as the control group. Table 1 offers an overview of the main characteristics of the game-based orientation day (experimental treatment) and the lecture-based orientation day (control treatment) format.

The effects of the game-based orientation day were measured in terms of the first-year students' mental wellbeing, academic self-confidence, feeling of informedness, and satisfaction, at the moment of the orientation day. ANCOVA analyses offer evidence that students who participated in the game-based orientation day reported significant higher levels of mental wellbeing, of academic self-confidence, and of satisfaction with the orientation day, compared with the control group. Furthermore, longitudinal data analyses indicated a decline in mental wellbeing after three weeks – which is consistent with previous literature (e.g. Conley et al., 2014) – among all student samples. Nonetheless, this decrease was significantly smaller

for students who participated in the game-based orientation day format.

Hence, a gamification approach of orientation activities designed for first-year university students is characterised by a multidimensional added value. The success of the game-based format manifests itself in a greater satisfaction and a more adequate informedness of the participating students, in comparison with a not-interactive lecture-based format. Additionally, the game-based orientation day supports and strengthens the students' academic selfconfidence, as well as their mental wellbeing in both the short and medium term. The insights gained from this study provide for recommendations on future orientation activities aimed at first-year higher education students. However, the first-year students targeted by this study still experience a decline in their mental wellbeing after three weeks of academic courses. Therefore, this initiative should be complemented by other interventions that are intended to support mental wellbeing, as a part of universities' long-term student wellbeing strategy.

Table 1 Characteristics of the control treatment and experimental treatment

	Lecture-based orientation day	Game-based orientation day
Main format	Plenary presentation	Small groups of students in a game
Location	Large auditorium in the faculty	Across the entire faculty building
Contact with staff	One-way formal communication by staff	Informal student-staff interaction
Peer interaction	No informal moment to talk to peers	Working together with peers
Attending staff	The dean, one student counselor, one student representative	The dean, student counsellors, student representatives, administrative staff, professors, teaching assistants, researchers, senior students, library staff, tutors, communication department staff, …
Information transmission	All information in one slideshow	Information divided into circa 10 different information booths
Information processing	Students passively acquire information by listening	Students actively look for information and experience the university look-and-feel

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The use of robotic players in online games

Jon Guest, Matthew Olczak and Robert Riegler (Aston University)

Short in-class games have become an increasingly common way to teach a range of key concepts and theories in economics. These allow students to gain first-hand experience of incentives and the impact on decision making. This makes it easier for tutors to convey underlying economic theory and the implications of the resulting predictions. However, moving to an online environment presents a number of challenges for using this method of interactive teaching. In particular, the widespread adoption of asynchronous activities provides students with greater flexibility over the timing of their studies but also means that students cannot play interactive games against one another.

An alternative is to run games in which students play against robotic players that make decisions according to some pre-programmed rules. This greatly increase the possibility of using online games asynchronously. However, as it stands very little is known about how this affects student learning. The aim of this research was to investigate how student perceptions and behaviour change when robotic players are used. In a series of different treatments, we varied whether students knowingly or unknowingly played an online Prisoner's Dilemma game against other students or robotic players. We then tested how this affected the students' decisions in each round of the game and used pre and post questionnaires to measure their perceptions of the game.

First, we find that perceptions of the game were similar across all treatments. Students typically found the game to be fun to play, helped them to understand economic theories and represented real-world situations. In addition, we asked the students about their perceptions of greed both before and immediately after playing the game. We find that a significant change occurred as a result of playing the game only for students that played against a robot and knew that they were doing so. These students became less averse to greed after the game. This suggests that the in-game experience and perceptions of this may influence student learning outcomes from playing in-class games.

Then, to investigate further, we examined the in-game decision making for each of the treatments across each round of the game. We find that cooperation in a given round of the game was more likely for female students, those that had not studied economics before and students doing a pure economics degree. Furthermore, the likelihood of cooperation was unaffected if students played against a robot but didn't know that this was the case. However, cooperation was significantly less likely when students knew that they were playing against a robot. We then show that this is in-part driven by students in this treatment being more willing to deviate in the next round having established cooperation with their robot opponent in the previous round.

Overall, our findings indicate that knowingly playing in-class games against robotic players can influence in-game decision making and this in turn can influence learning outcomes from playing the game. This suggests care needs to be taken in using robotic players in online games.

The Core pedagogy: is there a difference in student performance and engagement?

Martha Anyango Omolo (University of Exeter)

Students highly value good performance in their learning process. In universities, students' perception of a subject being interesting not only draws them to it but also influences their belief about their performance in the subject in subsequent academic years. Economics as a subject is lagging behind in attracting a wide range of students as it has the potential to, yet the study of economics helps us understand how societies and resources are distributed in our highly globalised world (Bayer et al., 2020). To attract more students to economics, new pedagogies of teaching it have been developed. One such pedagogy is the CORE pedagogy, which provides students with a way of thinking how the entire economy works together (CORE Team, 2017). Thereby improving students' interest in economics and having a positive attitude about their future academic performance.

While the CORE pedagogy has been adopted by at least 375 universities (CORE Team, 2021) and numerous studies evidence its ability to attract more students to economics (Bayer et al., 2020), there is still inadequate research on whether the pedagogy improves the performance of students in subsequent academic years compared to those who are taught using traditional methods. Studies on grade comparison by University College London (UCL), shows that in their second year, the first cohort taught economics using the CORE pedagogy, outperformed the previous cohort taught economics the traditional way (UCL, 2017). Similarly, studies by Cardak (2021) show that students taught economics using the CORE pedagogy in the first year outperform those taught by traditional methods in a common course for both groups of students. These findings show that CORE as an interactive pedagogy increases students' performance which is consistent with the findings of Freeman et al. (2014). Although these studies demonstrate the benefits of the CORE pedagogy, their focus is not on the effectiveness of the pedagogy in a blended learning environment and post Covid-19 pandemic, which this study focuses on.

Therefore, this study investigates whether the introduction of the CORE pedagogy to first year economics undergraduate students at University of Exeter in 2019-2020 improves their academic performance in their subsequent year or not. The study addresses two research questions. First, what is the relationship between performance and students who were taught using CORE pedagogy? Second, what is the relationship between level of engagement and students who were taught using CORE pedagogy?

To address the first question, the study uses a regression analysis using data on grades of second year students over the 2020-2021 academic year for students enrolled in the Economics, Economics with Econometrics; and Economics and Finance programmes who learnt economics using the CORE pedagogy in their first year; and compares them with the grades of previous cohort students who did not learn first year economics using the CORE pedagogy. Consistent with existing studies (Jacob and Rothstein, 2016; Mallik and Lodewijks, 2010), the study also controls for student characteristics: gender, nationality; pre-university qualification; and prior economic knowledge, all of which influence a student's performance.

The preliminary results, shows that the second year students who were taught economics using the CORE pedagogy in their first year, outperform those students who were not taught using the pedagogy in their first year, in compulsory and research oriented modules.

Student engagement in their learning process is vital for their academic success (Fitzgerald et al., 2016). However, measuring student engagement is challenging and no standard way of doing it exists. Kirby and McElroy (2003), use class attendance as a proxy for engagement and show a positive correlation between class attendance and student performance. During the Covid-19 pandemic, restrictions on movement, safety and welfare of both students and educators, time zone differences and internet connectivity issues made it difficult to use class attendance (both physical and online) as a proxy of engagement given the large size of economic classes, necessitating the need to use other proxies for student engagement. Therefore, to address the second question, this study uses data on student habits from two sources. First, frequency of logins on the university's virtual learning environment (ELE) and duration of time spent doing learning activities on ELE. Second, frequency of viewing, and duration spent viewing and doing activities of instructor recorded videos using Panopto.

The preliminary results of this study show that students learning economics using the CORE pedagogy outperform their counterparts in subsequent academic year. Therefore, the implementation of the CORE pedagogy beyond first year economic students should be considered by the department.

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Exploring student study habits in a large, online, macroeconomics module in order to design effective interventions

Tad Gwiazdowski (University of Leeds)

Overview:

The relationship between time and learning has long been an issue in pedagogy. However, there remains a lack of knowledge about how long students spend learning and what they do with their time; yet, understanding this is crucial if we are to design modules well and if we are to design effective interventions for those students that need them. This raises important questions, such as: what are the differences in the relationship between time and learning across the grade distribution and between students on different degree programmes? This paper aims to address these questions using data from a large-cohort introductory macroeconomics class. We use summary statistics and econometric analysis to analyse students' interaction with pre-recorded lectures, live whole-class feedback sessions, seminar attendance, and time spent reviewing videos. The analysis shows that there are diminishing returns to time spent watching videos and that interventions need to be carefully designed because students use resources in a heterogenous manner.

Motivation:

The availability of online learning tools has been growing in recent years, but the Covid-19 pandemic accelerated the shift to hybrid and fully online learning from spring 2020. The crucial role of time in the learning process can at least be traced back to Carroll (1963) and the subsequent work of Bloom (1974,1984). Bloom (1984) sought solutions to the 2-sigma problem and highlighted the ultimate goal of providing group tutoring as effective as one-toone tutoring. Technology has opened new opportunities as highlighted by Khan (2011, 2015). Many papers provide empirical evidence to show the benefits of using instructional videos (see, for example, Exposito et al. 2020). However, recent studies also highlight our lack of deep understanding of the relationship between time and learning when interacting with online content and limited evidence of the efficacy of a flipped or online module design (see, for example, Meehan and McCallig, 2018; Roach, 2014; Weinert et al., 2020). In this paper, we analyse how students learn using mainly online tools in a large, introductory macroeconomics class. The module has been fully integrated into TopHat, the all-in-one online education platform. The vast majority of lecture content was delivered via prerecorded videos and active learning was encouraged as each video was followed by at least one question to check understanding. During the semester students watched around 200 days of video content and submitted over 100,000 answers to formative questions asked during weekly learning modules and summative tests. The data from the module provides unique information that would not normally be available when students learn in a traditional lecture and then at home, offline in their own time.

Data and Methodology:

TopHat provides real-time data on students' progress, and we used this to provide students' knowledge of their own real-time progress relative to their peers by sending bi-weekly progress reports. We can also use the real-time data to effectively identify those students that have not engaged with weekly content over successive weeks. We contacted disengaged students to inform them of their lack of progress. If there was no reaction from students after successive emails, then we also contacted their academic personal tutors. Overall, we have data on student engagement with video content, their attendance at seminars, the communication they received about their relative progress, and whether they were identified as disengaged. We use this data to compare summary statistics across the grade distribution and across degree programmes. We also use econometric analysis to help identify patterns of behaviour and patterns of engagement with module resources.

Results:

Our results show that there is a close correlation between final grades and the following factors: previous academic achievement, engagement with recorded videos, attendance at whole class online hours, and seminar attendance. However, there is not a simple linear relationship between final grades and engagement with recorded videos; there are diminishing returns to engagement with online content. We also find that regular and timely engagement with learning material is strongly correlated with final exam performance. We show that real-time module data showing student progress and engagement with online content is highly effective at identifying engaged and disengaged students even very early in the semester. This type of information opens up the possibility of designing more effective interventions and providing more effective student support in future.

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What do business students value in the emerging virtualisation of learning and teaching that is accelerated by COVID-19? A pilot study of the business students at Bath Spa University

Lu Liu, Li Li, Inna Pomorina, Anna Walker and Victoria Opara (Bath Spa University)

Due to the development of high technologies and the changing market environment of high education, the HEIs in the UK have already been moving onto the virtualisation of learning and teaching to attract, retain and engage with students as well as expanding internationally. However, this progress has never been so swift after the outbreak of COVID-19. Since the first lockdown announcement on 19 March 2020, the restrictions and advice put in place by the Government have fundamentally changed the ways that universities are operating, and the experiences students are having. The immediate changes including: Shifting to online delivery of teaching and learning; encouraging home working of students and staff; and changing examination arrangements, etc. Although most of the universities implemented blended teaching in Sept/Oct 2020 when the new academic year started, the on-going pandemic status does not allow the university students to go back to the normal life they had before. This study aims to explore the impact of COVID-19 on how business students value the virtual learning experience and environment at university by answering the following research questions and by employing Bath Business School as a pilot study. The key objectives include: to explore students' attitudes to the emerging virtualisation of learning and teaching; and to better understand students' personal adaptive strategies to handle the challenges arising from the emerging virtualisation of learning and teaching.

This study follows the critical realist epistemological stance and adopts a qualitative research approach. CR combines realist ontology with an interpretive epistemology. CR researcher begins with the experienced results of something and then works backward in an attempt to explain why it is the case, or what must have caused it to happen (Bhaskar, 2020). COVID-19's unpredictable and ongoing nature makes the studies of its influence and consequence on the universities students not only a must but also complex. CR's philosophical stance provides a feasible and realistic perspective for the researchers to conduct this study. Accordingly, the Interpretative Phenomenological Analysis (IPA) methodology (Larkin and Thompson 2012) is employed to investigate, identify and explain the factors and the individual's perceptions and experience regarding the impact of COVID-19 on undergraduate business students at Bath Spa University. The data collection method is semi-structured interview. The participants are six undergraduate business students who currently study at Bath Spa University. The number is decided in line with the IPA methodology, i.e. to qualitatively analyse detailed, reflective, first-person accounts from research participants. The thematic analysis method, which is widely used in the IPA approach to identify and understand the themes within the personal accounts being interviewed (Maguire and Delahunt 2017), is adopted for the data analysis to enable the researchers to compare and synthesise these personal accounts to draw generalisable conclusions.

The findings show that the students have mixed feelings about the changes in their studies. The transition to online teaching has been a challenging one for most of them, although the students have reflected that there have been both positive and negative impacts. It significantly changed the learning skills and processes they were used to and more importantly, their perspectives on teaching and learning at the University. On one hand, the students appreciate detailed or additional teaching and learning materials provided by the tutors, which has not been the case in in-class teaching, for example, video lecture recordings; detailed answers/explanations to seminar activities; swift online meeting arrangements; etc. The students feel the teaching and learning activities were more structured, enriched and active than before. The students also observed their personal development in being more organised and mature. On the other hand, some students are still not comfortable with online teaching and learning. Even though they recognise that online teachings made their attendance better, it does not necessarily mean they have gained a better performance in their studies. They think it is easier to be self-motived when coming to the university. They also miss the social life at the university. From observing the students' academic results, the researchers also find a bigger deviation between the students, i.e. the majority of the students become more diligent while there is an increased number of students whose performance is worsened due to a lack of face-to-face contact with the tutor, other students, and the University.

In conclusion, although there could still be too early to observe and understand the profound impact of COVID-19 on the HEIs and their students in the UK, with the findings from this pilot study, the researchers argue the necessity for pedagogical rethinking and organisational restructuring in the HEIs to enable the build-up on the speed and enthusiasm with which both academics and stakeholders embrace interactive online teaching & learning as the future of the HEIs.

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'I have been kicked out of the class!' COVID-19 move to webinars in higher education: a process evaluation

Rabeya Khatoon (University of Bristol) and Steven Proud (University of Bristol)

The pandemic forced large lectures in higher education to video conferencing during the 2020-21 academic year. Except for a few in-person small group sessions, all teaching took place online in a Russel group university. We adopted two platforms for video conferencingBlackboard Collaborate, a browser-based, and Zoom, a cloud-based web conferencing tool. Our research focuses on the user experiences of online teaching both from the students and the staff's perspectives in several undergraduate and postgraduate units.

We analysed the connectivity issues during the webinar lectures. To our knowledge, there is no systematic research comparing connectivity issues using the two platforms, other than some customer review-based software comparisons (e.g., Software Service, Mohammadi, 2021). The web conferencing user data gives us the number of joins everyone had to make to a specific lecture. Some of the units used Blackboard Collaborate for all the sessions, while others used Zoom. Comparative summary statistics imply that a Zoom unit on average has marginally fewer joins than a Blackboard collaborate unit. The average number of joins in a Blackboard collaborate unit is 1.44 (PG 1011), while the figure for a Zoom unit is 1.14 (UG 10024). One unit (UG 20011) used almost half of the sessions using each platform, giving us a comparative picture within the unit. Combining different sessions, we form a student-lecture panel data for each unit under consideration. We found that a Zoom session has approximately 0.51 extra joins with a fixed-effects estimate than a Blackboard collaborate session.

We also attempt to analyse the effect of connectivity issues on exam performance. Based on some summary statistics, there is a slight negative trend in median marks with increasing numbers of joins. Controlling for the duration of connection and previous (pre-COVID) scores, our work-in-progress research so far identified no significant effect of the number of joins on student exam performance.

We organized two focus group discussions regarding student and staff experience to complement the quantitative information. The focus group discussions identify some benefits of blended learning: improved student engagement in large lectures with the availability of the chat function, online submission of assessments, and online office hours. Like other studies (e.g., Strelan et al. 2020), we found that students generally like activities as a flipped content rather than pure videos. Regarding connectivity issues, some students mentioned being 'kicked out' from classes using either platform without noticing much difference between them. Others highlighted the flexibility in using Zoom, which allows them to join in using mobile devices. On the staff side, there were perceived benefits of a Zoom session compared to a Blackboard collaborate session regarding better connectivity, seeing many participants, and the ease of sharing a screen or joining with an iPad. The major issue staff mentioned was some inappropriate chat messages using Zoom, due to the sessions perceived as informal and/or the flexibility of the students joining in an unidentifiable format.

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Intimate, intimidating or interminable? Lecture chat culture versus live Q&A

Annika Johnson, Danielle Guizzo, Christian Spielmann (University of Bristol)

Holding lectures online caused a shift away from the raising of hands in lecture theatres, to widespread use of text-based chat facilities, altering the nature of instructor-student interaction. While students no longer need to wait with their hand in the air, their names are visible alongside their comments and chat facilities don't easily replicate the organic conversation associated with the in-person interaction at the end of traditional, offline lectures. In this paper we examine this important shift in instructor-student communication by analysing the chat content from two different chat facilities used in large, introductory economics lectures. The first is the chat window within the lecture platform (Zoom) itself and the second is a parallel, live Q&A option (through EdStem) with the option for students to remain anonymous to their peers. Large numbers of participants readily used the Zoom chat, but a subset of students used the live Q&A alternative to ask questions which they were unwilling to ask in Zoom, particularly in busy lectures when the chat was fast-moving.

Online lectures held through Zoom meetings allowed students to easily interact with both instructors and peers through the standard chat facility, without leaving the application. From the beginning of the year, students readily used this for phatic expressions, administrative questions, simple clarification questions and short responses to oral questions from instructors. As the year progresses, the proportion of higher-level questions and comments which build on the lecture material increases, but some students prefer to keep to phatic expressions and responses to oral questions. There are many possible reasons for this: students may not have the confidence to pose more complicated questions, they may find it difficult to organise their thoughts while following a busy chat, or they may simply find it difficult to type complicated questions and statements fast enough.

To address some of these concerns, in the second of the two terms, students were given the option to ask questions through a text-based 'Live Q&A' run simultaneously with the Zoom lecture. Live Q&A features are increasingly available on discussion applications used in education settings such as Piazza and Slack. For these courses, the Live Q&A ran through the course's discussion board, EdStem, using the megathread ability. In contrast to standard discussion board use where students might create a separate item for each question or comment, the Live Q&A megathread creates a single page (thread) where students and instructors can post comments and questions throughout the lecture. Students and instructors can then use a 'reply' button to create a sub-thread directly under the question asked, and not simply at the bottom of the chat as it would appear in Zoom. Although it requires monitoring of a page outside the lecture platform, the key advantages for the instructor over the Zoom chat is that the instructor can keep track of which comments have been addressed using a 'resolved' mark. This is especially important in large, busy, online lectures where questions might otherwise be easily missed. Unlike the zoom chat, both students and instructors can also more easily write in mathematics, paste diagrams or use code snippets. A key feature for students is the ability to appear anonymous to their peers when posting a question or comment.

Since the Zoom chat was always available to students, using the Live Q&A feature was entirely optional. Students did not opt to use the Live Q&A in all lectures, but did make use of it in lectures where the Zoom chat was very busy. Despite this, the Live Q&A cannot simply be considered an overflow platform for Zoom conversation. Many students opted to use both forms of chat communication, but the type of question or comment differed. Questions and comments in the Live Q&A were predominantly longer and went beyond simple clarification, building on the lecture material and furthering the discussion. Not all students took advantage of the opportunity to be anonymous to their peers in the Live Q&A. Those who kept their names visible, asked building questions in both Zoom and the Live Q&A, although the Live Q&A items were longer. However, for those students who chose to be anonymous in the Live Q&A, the nature of the comments and questions was very different. These students used the Zoom chat for short responses or phatic expressions only. By contrast, their comments and questions in the Live Q&A were much longer, building questions that they did not ask in any lectures in Zoom.

Although it is unclear whether this is because it is difficult to engage in busy Zoom chat, or because they value the anonymity, the Live Q&A offers a subset of students a means to more meaningfully engage with the lecture when they might not be otherwise able to do so. If the Live Q&A can be run in parallel and at low-cost by using features on existing discussion boards, then this offers a simple way to increase the accessibility and inclusivity of the lecture to a greater number of students. Such considerations might be particularly important when a large percentage of the course's teaching is online or where cohorts are large and students are new to the given education setting.

Workshop: Teaching using 'Measuring the Economy'

Georgia Tasker-Davies (Office for National Statistics)

'Measuring the Economy' is an online textbook produced by the Office for National Statistics (ONS) which aims to explain key economic concepts and how these apply in real life, including the new challenges and opportunities of measuring the modern economy. We now have produced much of the teaching material, covering the theory and practice of how we measure gross domestic product (GDP), price inflation, the labour market to name a few. We are keen to show the efforts of our research in how we have gone about producing the teaching material so far as well as how we can work with the academic profession in delivering how this textbook might be taught to Economics undergraduates. We hope that by interacting with participants at the Developments in Economics Education Conference that we understand how we can respond to the user needs of lecturers and students, so that we can improve the teaching offer.

We would welcome the opportunity to create a workshop session of two parts; The first part will give a short overview of the project and the chapters available with the intention of gaining feedback around the content and whether participants would like any more information. The second part would be to demonstrate the use of the book in a practical environment. We would aim to guide participants through a particular chapter, give handson demonstrations of the data and information available to show how the book can be used to enhance the teaching of economic measurement.

Economics education in the Covid-19 pandemic: what was done and what should be done

Fabio Arico (University of East Anglia), Paul Cowell (University of Stirling), Adam Cox (University of Portsmouth), Paul Latreille (University of Sheffield)

n this paper we develop an analysis of how teaching, learning, and assessment practices in Economics have been adapted in response to the Covid-19 pandemic. The analysis draws on semi-structured interviews conducted with key role-holders who were responsible for reviewing, re-designing and implementing changes to teaching practice over the academic years 2019-20 and 2020-21 in a range of university departments, schools, and units offering Economics courses in the United Kingdom.

The analysis is developed through thematic analysis, where we explore: (i) the degree of autonomy delegated to individual teaching units over the process of adaptation of teaching practice, (ii) the tension between process-driven approaches versus pedagogical enhancement approaches, (iii) barriers and enablers to the implementation of a desired response, and (iv) elements of innovative practice that are planned to be retained at the end of the social distancing restrictions.

In the final part of the paper, we consider the elements of innovative practice as identified by the respondents and we map such elements to recognised frameworks for blended learning practice with the aim of identifying to what extent innovative practice in Economics education has aligned with the principles advocated by mainstream pedagogical research. Finally, we compare and contrast the practices emerging from our analysis with those outlined in the Economics Network Virtual Symposium held in 2020 to investigate the emergence of specific elements of good practice in Economics education in the aftermath of the Covid pandemic.

Analysing the determinants of student satisfaction in the NSS

Steven Proud (University of Bristol) and Guglielmo Volpe (City University London)

Since 2005 the NSS scores have become one of the main metrics used to measure Departments and Universities progress in enhancing the students' learning experience. Students' perceptions of various dimensions of learning such as teaching quality, assessment and feedback, academic support and learning resources are collected, investigated and interpreted in order to identify the determinants of students' overall satisfaction.

The 2021 NSS results were published on July 15 and this paper adds this latest evidence to past data in order to 1) discuss the latest trends in NSS within the economics sector also in comparison with the performance in similar cognate subjects such as Business Studies, Finance, Mathematics and Politics; 2) identify the dimensions of learning (teaching quality, assessment and feedback, learning community etc.) that contribute the most to the explanation of economics students overall satisfaction with their studies; 3) measure whether response rates play any role in explaining students overall satisfaction not only in economics but also across other subjects.

The 2021 NSS results have shown a marked decrease of about 7 to 8 percentage points in students' overall satisfaction not only within economics but also across the other cognate subjects. A 'pandemic/online learning' effect seems to have affected all the dimensions of learning with average decreases of about 3% in 'teaching quality' and 'learning opportunities' and of about 7% in 'assessment and feedback' and 'academic support'. The largest falls in students satisfaction have been registered for the 'learning resources' and 'learning community' scales with average falls of, respectively, 10.8 and 9.3 points. However, not all is doom and gloom with economics (as well as mathematics) students showing a slight increase in satisfaction relative to 2020 with respect to question 16 "The timetable works efficiently for me". The NSS asks students to reflect on their overall learning experience while at University. The 2021 cohort experienced about one and half years of disruption caused by the pandemic and it could be argued that either the Universities responses to the challenge or the students' disappointment with the overall impact of the pandemic or a mix of these two effects are the most likely determinants of the overall fall in satisfaction.

The relationship between overall satisfaction (Q27) and the other 'scales' or dimensions of satisfaction is not straightforward. Research that included evidence up to 2020 showed that the most stable determinant of students' satisfaction in the sector was question 15 'the course is well organised and runs smoothly'. Looking at the 2021 NSS responses there is no reason to believe that such a relationship will be weakened with a fall of about 4 points in the average satisfaction for Q15 between 2020 and 2021. However, interestingly, in 2021 the smallest fall in satisfaction was recorded for scale 5 "Organisation and Management" with an average fall of about 2 points relative to NSS2020.

The relationship between response rates and students' satisfaction is subject to considerable discussion. The main point of contention concerns the response rate by "unhappy students".

On the one hand, it is argued the 'unhappy students' are more vociferous and, hence, more likely to complete the NSS. Hence, a high response rate is likely to offset the negative responses. On the other hand, it is argued that 'unhappy students' are more likely to just ignore the NSS and that continuous reminders to complete the NSS is just likely to attract either negative or 'neutral' responses from students who, otherwise, would not be interested in completing the NSS. Our research shows that within the economics sector there is a negative relationship between overall satisfaction and response rates. However, the relationship is heterogeneous across Institutions and may be related to the size of the Institutions with smaller Institutions displaying higher response rates and higher levels of satisfaction on average. The extension of the analysis to other subjects shows a much weaker and less clear and sensitive relationship

Attitudes towards economic education in Saudi Arabia

Sarah Najm (King Saud University and University of Reading)

There is a growing body of academic and policy interest on what drives students to specialise in Economics following declined enrolment and lack of diversity in the field. The financial crisis in 2008 also refuelled the interest and the critique of how Economics is taught, with rising initiatives to induce practical teaching and tackle misconceptions about the subject.

Understanding how students perceive Economics and teaching practices represents a crucial foundation for a more inclusive field, an area that remains underexplored in Saudi Arabia. We contribute to a similar line of thought and extend the literature on whether Economics should be taught in English to aid the use of recent and more expansive resources. This adds to increased competition from Business and Finance majors that teach in English to respond to labour market demand and improve teaching content. This diversity in teaching practices within and across universities may influence the choice of major, where teaching in Arabic or English may generate a bias for prospective students in Saudi Arabia.

This study examines attitudes towards Economics as a choice of major based on a representative sample across Business schools in four universities in Saudi Arabia: King Saud University (KSU), King Abdulaziz University (KAU), King Fahd University of Petroleum & Minerals (KFUPM), and Princess Nourah Bint Abdulrahman University (PNU). The sample used represents public universities across main urbanised regions: KSU and PNU in the capital, KFUPM in the Eastern region and KAU in the Western region. The choice of dataset contributes to the literature by comparing different institutions in two ways. Firstly, it allows us to examine the role of gender in a comparative context: KSU offers degrees for female and male students, KFUPM for male students1, while PNU is for female students only. Secondly, the dataset allows us to explore how teaching Economics in English influences attitudes towards the subject. KSU and KAU represent mainstream departments that teach in Arabic since 1957 and 1970; KFUPM teaches Economics in English to Business students since 1975, while PNU's emerging department of Economics was established in 2007 and started teaching in English only recently. We investigate what impedes students from majoring in Economics, the role of the teaching language, perceptions towards the subject and aspirations. A pilot study was conducted in January 2021, and a formal data collection period occurred from March to May 2021. The study includes more than 500 participants, ranging between Economic undergraduates and non-major students who study Economic as part of their curriculums, as well as postgraduates and alumni. Around 66% of participants reported that Economics was their first choice of major in KSU and KAU. Around 37% of them stated that being taught in Arabic was one of the reasons for majoring in Economics, but around 16% of participants stated the same reason for not choosing to major in Economics. Around 48% of the overall sample stated that Economics should be taught in English, where some participants suggested using English and Arabic in the classroom.

Following the CORE project approach, the survey starts by asking participants about the most pressing problem economistsshould address – Figure 1. The preliminary analysisshows a

Figure 1: Word Cloud

dominant reoccurring response under unemployment as well as inflation and rising costs of living. This aligns with the current climate of high unemployment rate and austerity measures in Saudi Arabia, including a VAT first imposed at 5% in 2018, increasing to 15% in 2020 (IMF, 2021). In comparison, the outcome shows less concern regarding non-mainstream Economic topics such as the environment and inequality. But most of these responses were from universities that teach Economics in English, which may imply broader exposure to critical issues in the field. Some participants suggested another pressing problem: simplifying Economics as a subject and linking it with real-world examples. This is consistent with the raw data where around one-third of participants who did not choose Economics as their first choice of major viewed Economic concepts as difficult to understand or lack practicality for solving problems, stating that as a reason not to major in Economics. The preliminary analysis adds to the call for inducing practical illustrations in teaching and improving the teaching content to catch up with developments in the field. Forward work entails applying discrete choice models to examine underlying relationships between variables to understand better the determinants of attitudes towards Economics as a choice of major.

The economics instructor's toolbox

Julien Picault (University of British Columbia)

Although seminal literature indicates that "chalk and talk" is still the predominant lecture method (Watts and Becker, 2008; Watts and Schaur, 2011; Ongeri, 2017), research more specific to millennials (Carrasco-Gallego, 2017; Leinberger, 2015; Litzenberg, 2010; Morreale and Staley, 2016) indicates multiple challenges for economics instructors who are teaching millennials; it suggests instructors need to adapt their teaching methods. They especially point out that millennials have a different skillset than previous student cohorts. Recently, multiple new teaching methods have been proposed in the economics literature. This paper reviews and discusses the most effective teaching methods specifically targeting millennials. New teaching methods clearly focus on the inclusion of popular culture and media, which are already a salient part of the day-to-day life of students. Improving students' engagement appears to be a paramount objective in the recent literature. Examples of methods reviewed in this papers are flipped classroom, student-crafted economics experiments, and the use of social media as a medium of instruction.

Friday 3 September, 12:00 BST
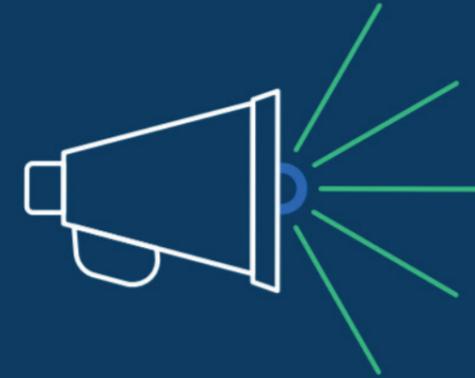
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