Moving to blended teaching and learning delivery:
which online resources are likely to be most valuable to students?

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The Covid pandemic has changed the way we think about higher education.

Since the pandemic, higher education has seen online teaching and learning moving from the margins to becoming key. Blended delivery seems to be the new "normal".

With the initial move to online learning students had to rely more on online resources provided, for example asynchronous lecture recordings. Resources previously provided via virtual learning environments (VLEs) also took on greater importance, such as discussion forums.

The ultimate move to blended learning was perceived as a welcome change by Lory Barile and Caroline Elliott in the Economics Department, who, with support and funding from IATL, conducted a research project exploring students' use of online learning materials during the Covid 19 pandemic period.

What will our teaching and learning be like moving forward? What are the most valuable VLE resources for students?

The project had two key objectives. Firstly, using a revealed preference approach the project aimed to explore students' use of VLE module resources in the Economics Department at the University of Warwick. The objective was to see whether there were any significant differences between the preferences of students for different types of learning resources over the pandemic period. This is particularly valuable in light of the cognitive theory of multimedia learning (Mayer, 2009), which suggests that regardless of mode of delivery, it would be anticipated that students will use all learning resources to develop and deepen knowledge and understanding. If this is the case, there is risk of *cognitive overload* by which students may not be able to integrate all information channelled by various resources. Instead, they make decisions about which subset of resources, among those available, they find most valuable in learning and what resource is productivity optimal for their learning experience.

Secondly, regression modelling was used to analyse the extent to which different VLE module resources affect students' module attainment.

Lory and Caroline saw the project to be particularly useful for fostering students' engagement and participation not only during the challenging times faced during the pandemic but also in the future if we're able to identify the VLE module resources that students prefer to use, as well as estimating the impacts of these different resources on student module attainment, controlling for students' characteristics and pre-university performance.

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What was found…

Using the experience of delivery on a core 2nd year undergraduate module in Economics during the 20/21 academic year, results suggest that students avoid cognitive overload by being selective in their use of learning resources. In particular, students showed a greater preference for passive learning resources like lecture recordings (i.e., Echo360 video recordings for both asynchronous and synchronous lectures). Home students exhibited a lower preference for active VLE features such as lecture notes, multiple-choice quizzes, past exam and open-ended questions and discussion forums. Maybe as expected, students' use of different VLE resources is not consistent throughout the teaching terms. There is significantly greater engagement with resources in the run up to assessments, and engagement dissipates near the end of teaching terms.

Nonetheless, particularly for international students, engagement with most of the active VLE resources (i.e., lecture notes, past exam questions and multiple-choice quizzes) along with lecture recordings had a significantly positive impact on academic attainment.

Results support the idea of instrumental and selective use of VLE module resources in developing deeper understanding of the subject. Results imply that such resources are used more selectively. However, they should still be provided to encourage active, deeper learning and their use can positively and significantly impact on students' module attainment.

References
R. Mayer (2009). *Multimedia learning* (2nd ed.). Cambridge: Cambridge University Press.