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To cite this article: Duncan Watson, Robert Webb & Steve Cook (29 Jul 2025): Pedagogical inertia and asynchronous specificity: a heuristic model of post-covid teaching in higher education, Professional Development in Education, DOI: [10.1080/19415257.2025.2536264](https://doi.org/10.1080/19415257.2025.2536264)

To link to this article: <https://doi.org/10.1080/19415257.2025.2536264>



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Published online: 29 Jul 2025.



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Pedagogical inertia and asynchronous specificity: a heuristic model of post-covid teaching in higher education

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ABSTRACT

Our paper introduces a heuristic model to explain how the UK higher education sector's rapid shift to emergency remote teaching during the COVID-19 pandemic may constrain subsequent pedagogical innovation. Adapting the asset specificity framework, first introduced in the 1980s, we develop the concept of asynchronous specificity, a form of pedagogical lock-in that arises when teaching materials and institutional practices become narrowly tailored to pre-recorded, non-interactive delivery modes. We argue that these covid-era adaptations, though necessary at the time, may have created structural and cognitive sunk costs that disincentivise research-informed pedagogical reform. Our model highlights the competing incentives facing academics, between compliance and innovation, and the institutional conditions under which innovation is more likely to be suppressed. While our approach is conceptual rather than predictive, our approach offers a diagnostic tool for understanding inertia in teaching practices and sets out an agenda for policy and professional development reforms. We conclude by arguing that unless emergency responses are critically reassessed, the sector may risk mistaking short-term coping strategies for long-term pedagogical progress.

ARTICLE HISTORY

Received 16 May 2024
Accepted 13 July 2025

KEYWORDS

Innovation; higher education; pedagogy; Covid-19; asset-specificity

Introduction

The universal global response to the COVID-19 pandemic in the HE sector was to provide a technology enabled, online and remote asynchronous experience. This was quickly rolled out and surprisingly standardised in its approach (see Unesco 2022, Ferri *et al.* 2020, QAA 2020, Hoss *et al.* 2022, Verillaud 2020 amongst others). In their wide-ranging report on the response to covid, Unesco (2022) state: '*The rapid and near universal shift to online teaching and learning . . . was astonishing*' (p.6) with data reported in a global study undertaken by Marinoni *et al.* (2020) that 67% of HEs transitioned to online remote provision.

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Such a rapid response presented multiple challenges to academics and created shock waves across the sector, as reported by Neves and Hewitt (2021) ‘... *staff and institutions have faced bigger challenges than at any point in living memory*’ (p.6) and JISC (2020):

The recent, rapid move to remote learning and teaching has been a profound shock to the higher education sector. . . (p.4 Learning and teaching reimagined: Change and challenge for students, staff and leaders, July 2020, JISC 2020).

Lemoine and Richardson (2020) stated how ‘*fear gripped higher education and forced change that was totally unexpected*’ (p.43) and in an editorial for a COVID-19 focussed special edition of *Studies in Higher Education*, Goedegebuure and Meek (2021) note: ‘*What the contributions to this issue demonstrate beyond any doubt is the profound impact this pandemic has had on our sector*’ (p.1). The sheer amount of literature using such emotive language provides evidence that the sector struggled. A view which is further informed by authors using words such as: ‘fear’ (Lemoine and Richardson 2020); ‘emergency’ (Hodges *et al.* 2020); ‘stop-gap measure’ (Krishnamurthy, 2020); ‘little or no experience’ (Rapanta *et al.* 2020); and ‘re-invent teaching practices’ (García-Morales *et al.* 2021) to explain the stresses exerted on staff.

However, as Hodges *et al.* (2020) emphasise that, while planning took place as covid took hold, there was no advanced planning (or preparedness) for the transition to high-quality online education. Rather what they define as emergency remote teaching (ERT), a temporary and reactive shift in delivery prompted by the crisis conditions. Unlike intentionally designed online learning, ERT typically lacks pedagogical planning, interactivity, and alignment with learning outcomes. Recognising this distinction is crucial to understanding both the emotional tone of the sector’s response and the long-term risks it poses to pedagogical innovation.

Our paper considers the response to COVID-19 and the lack of readiness, mainly attributed to the lack of innovation in the years preceding covid. We then account for the sector’s lack of innovation by drawing on a novel theoretical approach rooted in Riordan and Williamson’s (1985) concept of ‘asset specificity’, as recently adapted for the education sector by Watson *et al.* (2024). This helps us to explain why, despite decades of pedagogical research on online and blended teaching techniques, the sector was caught both underprepared and lacking the experience to switch seamlessly into remote teaching. Innovative approaches and pedagogical research were sidelined. For example, while the COVID-19 literature in higher education documents what institutions did, it largely overlooks why this particular response emerged and what pedagogical reasoning – if any – underpinned it.

Adapting the work of Riordan and Williamson (1985) on the theory of ‘asset specificity’ we build an approach that helps explain the general lack of innovation in the preceding years to the onset of covid. Constructing the notion of ‘asynchronous specificity’, we derive a cautionary forecast on how activities adopted during remote covid provision may affect future pedagogical innovation. Our approach also helps inform how the impact of asynchronous specificity may further compound pre-existing problems over pedagogical innovation, relating not only to the extent to which it occurs but also to the incentives to even engage with such activity (see, *inter alia*, Harland and Wald, 2018; Gilbert *et al.* 2021; Smith and Walker 2022).

Our paper first examines the UK HE sector's response to covid-19, highlighting the scale, speed, and uniformity of the shift to remote provision. We then contrast this response with the substantial body of pedagogical research that preceded the pandemic, noting a surprising lack of alignment between theory and practice. Building on this paradox, we introduce and develop a heuristic model, grounded in the work of Riordan and Williamson's (1985) transaction cost model, which we adapt and introduce the concept of asynchronous specificity, which helps explain why pedagogical innovation was not more widespread. We then consider the implications of our model for institutional policy, professional learning, and future research, arguing that a failure to distinguish emergency responses from genuine innovation may entrench inertia for future years.

The response to covid-19

As we have stated, the response to COVID-19 across the globe was to adopt a remote online study approach (see Unesco 2022, U-Multirank 2020 for research on the general global response, or for individual countries see, amongst others QAA 2020 for the United Kingdom, Hoss *et al.* 2022 for Germany or Verrillaud 2020 for France). A brief review of the pre-covid technology-based remote learning literature would have the reader believing that this type of approach was commonplace in HE before covid-19. However, the general shock reported to moving online and the data since reported, suggests that online study was far from ubiquitous in the years before the pandemic.

As such, past research exposes an element of organisational double speak across the sector. Discussing the use of technology and a blended learning approach, Oliver and Trigwell (2005) nearly twenty years ago, argued that it: *'is already prevalent within practice in higher education'* (p.21) and Kentnor (2015) state that *'Online education is no longer a trend. Rather, it is mainstream'*. In addition, numerous studies recount sometimes lengthy experiences and insights gained regarding the implementation of blended and online methods of teaching (see, for example, Figlio *et al.* 2013, Alpert *et al.* 2016, Cook *et al.* 2019).

We must also be cognisant, that there has rarely been a time when the use of technology and innovation to support learning, has been *out* of the pedagogical literature (and online methods have been employed and evaluated for many years). For example, Harasim, back in 2020 state: *'The 1980s and 1990s saw enormous innovation and expansion in online education and networking at all levels of education.'* Harasim (2000, p. 41) and Williams and Wong in 2009:

After very little change in the university sector for several centuries, there has been something of a "mini-revolution" in the last quarter of a century or so... there has been spectacular change in the area of educational technology. (Williams and Wong 2009, p. 227)

In 2008, Sun *et al.* stated that: *'E-learning is emerging as the new paradigm of modern education.'* (Williams *et al.* 2008, p. 1183). In their paper, they discuss not only the rapid growth in the adoption of eLearning but also analysed the factors underlying student satisfaction in adopting these methods. These papers are *not* isolated cases and there exists a long history of innovative technology-enhanced learning literature, for example, see: The Department for Education and Skills (2003), Kerres and De Witt (2003),

Whitelock and Jelfs (2003), Oliver and Trigwell (2005), Ryan and Tilbury (2013), Snowden *et al.* (2014), Kentnor (2015) and Jones-Devitt (2020).

However, despite this, recent research from U-Multirank (2020) comprising of a global study of 1,800 Universities from 92 countries, helps confirm the opposite:

60% of universities reported online learning provisions in their strategic planning prior to covid-19, while only one third appeared to provide full online courses in some form . . . and 'although a majority of universities realised the strategic relevance of online teaching, only few were prepared for full online programmes. In engineering and science fields, the percentage of programmes that are available fully online is less than 3% . . . business studies (12%) and economics (7%)

This is further backed up by Rapanta *et al.* (2020), p. 924) who summarise that there was a general lack of '*pedagogical preparedness of university teachers with no or little experience in online teaching*' and by the joint project leader of the U-Multirank study:

Universities all over the world appear to be caught by surprise by the COVID-19 crisis. Only few institutions appear to have had a risk management strategy in place that would allow them to respond to a pandemic. Particularly the capacity to offer online programmes and support appears to be a key strategic response. This capacity was not broadly available when the crisis hit

Issues, however, were not limited to the readiness to engage with pedagogically underpinned teaching and learning strategies, it extends across the teaching and learning provision. For example, Fox *et al.* (2020, 2020, 2021) stated difficulties relating to: transitioning to a new environment; student engagement; student support; grading; secure assessment; and the provision of feedback. Also reporting that academics felt particularly unprepared when undertaking hybrid and flexible approaches relative to purely online methods and face-to-face teaching, with subsequent concerns raised about the impact on student outcomes.

The survey findings of Bartolic *et al.* (2022) refers to the '*teaching effort*' involved in the transition to remote teaching and consider several factors, stating:

. . . most institutions had little experience with robust, off-the-shelf digital learning exemplars that could be swiftly deployed for mass online instruction' (Bartolic *et al.* 2022, p. 520) and ' . . . our results showed how COVID-19 led to overwhelming, short term tidal wave effects on teaching and learning. (Bartolic *et al.* 2022, p. 528)

The emerging nomenclature fell on terms such as '*remote learning*' and '*asynchronous*' (as opposed to '*synchronous*') sessions. Asynchronous not being a term underpinned or used previously in the literature. In addition, as academics responded by recording their existing slides, past literature provides little evidence as to whether such material, developed for face-to-face delivery, was appropriate for remote delivery. Kuklinski and Cobo (2020), UNESCO (2022) stated:

The first reaction of some teachers is to pass all the content from face-to-face experiences to the virtual environment without further adaptation, as if it were a simple copy and paste. (p.23)

Fox *et al.* (2020) concur with this finding, reporting that most module materials remained the same as pre-covid and that technology replaced the physical lecture hall

and, worryingly, given the lack of pedagogical underpinning, is planned to be increased further in the future:

As they look toward another term that includes online instruction in some form, almost two-thirds of faculty are planning to supplement their core materials with digital tools to solve engagement, collaboration, and assessment challenges. (Fox *et al.* 2020, p. 24)

As is to be expected, the rapid shift immediately prior to or at mid-term did not prompt a transition of core curriculum materials in the spring. The majority muscled through the term with the same materials, with over one-third adding supplemental tools. However, in the future, 57% of faculty plan to use digital tools to supplement the remote experience. (Fox *et al.* 2020, p. 24)

As discussed, reference to ‘*changes to pedagogy and practice*’ and ‘*pedagogy*’ and the ‘*pedagogical literature*’ were scant, but ‘*faculty stories*’ where academics discussed problems and issues via Zoom, LMS, and/or lockdown browsers (a form of proctoring) were widely reported (see Fox *et al.* 2020, pp. 16–19). It is worth noting that the first report by Fox *et al.* (2020), was undertaken in the spring, with the subsequent report (Fox *et al.* 2020) being more forward-looking to plans for the autumn after some experience of remote teaching had been gained. Neither report, however, provides a pedagogical underpinning as to how pre-existing materials are to be used, or are indeed appropriate to be used, to support delivery and assessment.

Past pedagogic literature in the area of remote online study which could have been utilised to both inform the chosen approach and support staff to transition into online teaching is vast (for example, see Jaffee 1997; The Department for Education and Skills 2003; Sun *et al.* 2008; Kerres and De Witt 2003; Whitelock and Jelfs 2003; Oliver and Trigwell 2005; Ryan and Tilbury 2013; Snowden *et al.* 2014; Kentnor 2015 and Jones-Devitt 2020; Rapanta *et al.* 2020). In addition, the past literature also contains a sub-literature explicitly focussing upon online teaching (see Mautone and Mayer 2001, Berg *et al.* 2014, Guo *et al.* 2014, Chen and Wu 2015, Brame and Perez 2016, Hong *et al.* 2016, Wang *et al.* 2020).

Further, many past studies could have been referenced that evaluate specific pedagogic issues concerning teaching online. For example, evaluating the factors that impact learning in an online environment. These include an examination of motivation, time management, and a sense of community alongside more structural issues such as course structure and technology (see Song *et al.* 2004); the evaluation of the introduction of online teaching in response to a crisis (see Todorova and Bjorn-Andersen 2011); how interactivity can improve performance in an online environment (see Wei *et al.* 2015); explorations of issues including academic discipline, self-meaning, skill development and assessment structure on student retention in online courses (see Bawa 2016; Yang *et al.* 2017); and the use of live interactive synchronous online sessions to promote self-efficacy and address learner demotivation (see Shea and Bidjerano 2010).

There also exists additional literature that considers more mechanical matters in relation to online teaching than just recording your previous face-to-face slides. For example, when considering the creation of recorded material, issues previously examined include the optimal duration and pace of videos; the use of alternative forms of presentation; the inclusion or exclusion of ‘talking heads’ in recorded material, and how the effective structuring of videos can vary when attempting to develop alternative forms of

knowledge (for example see, inter alia, Mautone and Mayer 2001, Berg *et al.* 2014, Guo *et al.* 2014, Chen and Wu 2015, Brame and Perez 2016, Hong *et al.* 2016, Wang *et al.* 2020). In addition, the survey findings of Berg *et al.* (2014) indicate that when considering videos, students prefer short, captioned recordings with the appeal being their flexibility: they can be viewed at any convenient time and can be paused and replayed to allow reconsideration of material covered and facilitate notetaking. Considering presentational issues, Mautone and Mayer (2001) examined the use of ‘signalling’ in multimedia presentations in the form of prompts such as arrows or colouring to guide attention with their results supporting the positive impact upon retention and transfer (or application) of knowledge.

Such literature was also being published *during* the pandemic. For example, Rapanta *et al.* (2020) comments on helping ‘*non-expert university teachers (that is, those who have little experience with online learning) to navigate in these challenging times*’ (p.923) and Gewin (2020) provides ‘tips’ to assist teaching in an online environment. Advice is also provided, in a more forceful manner, by García-Morales *et al.* (2021):

... higher education institutions are undergoing radical transformations driven by the need to digitalize education and training processes in record time with academics who lack innate technological capabilities for online teaching. García-Morales *et al.* (2021)

Both cognisance and slight uneasiness regarding the lack of design, planning, or reference to past pedagogic literature in the sectors, COVID-19 response emerged quickly, especially in the educational technology field where the response began referring to: ‘*emergency remote teaching*’ and such ‘*hurried moves online*’ and that: ‘*nobody making the transition to online teaching under these circumstances will truly be designing to take full advantage of the affordances and possibilities of the online format*’ Hodges *et al.* (2020).

Subtler concerns were also expressed regarding the basis of the pedagogical approach. For example, the blog by Hodges *et al.* (2020) made an implicit reference to both the unexpected environment, the response, and the planned pedagogical best practice, they state:

Well-planned online learning experiences are meaningfully different from courses offered online in response to a crisis or disaster. Colleges and universities working to maintain instruction during the COVID-19 pandemic should understand those differences when evaluating this emergency remote teaching.

Further, Fuchs (2022) observes:

... the temptation of comparing ERT with online teaching/learning is comparing apples to oranges. Indeed, both are educational models with opportunities and shortcomings, however, the nature of planning, implementation, and execution is fundamentally different

Importantly, to the best of the authors’ knowledge, the nuance of the remote online approaches have not yet been assessed or widely discussed across the sector. However, as we have seen from the discussion above, moving to online provision has carefully defined and researched terms, which have developed over the past two decades as Hodges *et al.* (2020) state: ‘*distance learning, distributed learning, blended learning, online learning, mobile learning, and others*’. Hodges *et al.* and Fuchs (2022) argue that the approaches taken by the sector as a response to COVID-19 are rushed and require reflection, examination, and assessment. It stands to reason that remote, online learning teaching

requires careful planning based on past studies and a clear strategy. Means *et al.* (2014) believe developing online provision has nine dimensions and each of these dimensions also has options. Hodges *et al.* estimate that developing online provision takes at least 6–9 months (see also Cavanaugh 2005).

So, given such an assertion, there seems to be an apparent disconnect: a vast array of detailed literature on using technology and blended learning as becoming ‘mainstream’ and yet the sector facing its biggest ‘*challenges than at any point in living memory*’ through covid (Neves and Hewitt 2021, p. 6). This paradox helps explain the default swift rollout of the standardised approach adopted by the sector, now referred to as emergency remote teaching. The following section presents a theoretical approach as to why the approach adopted through COVID-19 took hold and became so ubiquitous, with embedded staff buy-in, despite its lack of pedagogical underpinning.

Asynchronous specificity

The preceding review of the sector’s rapid, largely uniform shift to emergency remote teaching and the documented mismatch between that response and decades of digital-pedagogy scholarship raises a paradox: why was the sector caught unprepared? To begin to understand this, we develop a theoretical approach, adapting Riordan and Williamson’s (1985) asset-specificity framework, using the concept of asynchronous specificity recently developed, in an education setting, by Watson *et al.* (2024).

We define asynchronous specificity as the extent to which pedagogical materials, teaching structures, and institutional practices become narrowly tailored to asynchronous, pre-recorded, non-interactive modes of instruction. Using the framework introduced in the recent work of Watson *et al.* (2024), we develop Riordan and Williamson’s (1985) concept of asset specificity, where assets are so tailored to a particular purpose that they lose value outside that context. In our adaptation, the ‘asset’ is not a machine or building, but the academic’s course content, recorded lectures, slide decks, and digital assessments, produced in response to the COVID-19 emergency remote teaching. These assets are ‘asynchronous’ because they are designed for use without real-time interaction, and they become ‘specific’ because their pedagogical usefulness is closely tied to the original emergency context.

To help ground this concept further, we note that similar concerns around instructional rigidity have been echoed in the broader literature on technological integration in education. For example, Harasim (2000) warned of ‘legacy technologies’ creating resistance to new pedagogies, and Jaffee (1997) flagged the danger of ‘format lock-in’ in early online courses. In the current context, asynchronous specificity manifests not just as content dependency, but as an embedded cultural and operational bias in favour of pre-recorded delivery methods, at the expense of dynamic, evidence-based innovation. Our approach captures how well-intended responses to crisis teaching may entrench a kind of pedagogical path dependency. In addition, it highlights how institutions and individuals may be constrained, not by a lack of imagination or evidence, but by a systemic preference for the status quo that minimises perceived risk.

Taking this approach, we consider why, given the lack of pedagogical underpinning for the sector’s response to covid-19, the standardised approach became so readily accepted by academics in the HE sector.¹ Before outlining our heuristic model, it is

important to clarify its intent. We do not claim that the trajectory we describe is deterministic or inevitable. Rather, the model serves as a cautionary framework to illuminate how certain institutional behaviours, if left unexamined, may lead to constrained innovation over time. We ground our approach in logic derived from transaction cost economics, which we use to map the incentive structures currently facing academics. The use of conditional logic ('if X, then Y') is not meant to suggest a guaranteed outcome, but to encourage reflection on how certain configurations, such as the entrenchment of asynchronous teaching, could hinder pedagogical innovation. In this way, our model is illustrative rather than predictive. Our model integrates theoretically grounded assumptions that are not empirically tested in this paper. Rather than offering proof of behaviour, we aim to offer a structured interpretation of incentives that invites future empirical investigation.

We also acknowledge that our approach originates outside the field of pedagogy. However, we intentionally apply it heuristically, not empirically, to highlight a structural logic that may help explain institutionalised behaviours in teaching contexts. Our approach has precedent: similar cross-disciplinary adaptations of economic models have been used to understand academic governance, risk aversion, and innovation diffusion (see Fox 1992, Brownell and Tanner 2012) and the approach adopted here has recently been used, in a different context by Watson *et al.* (2024). Our aim is not to assert that our approach or that Williamson's model precisely describes pedagogical decision-making, but to use its logic to illuminate potential disincentives to innovation in times of systemic stress.

That said, we now develop the heuristic 'asset specificity' model first introduced by Riordan and Williamson (1985) to underpin our approach. This model, which originates from the '*theory of the firm*', takes a transaction costs perspective to vertical integration and a firm's 'make-buy' decision. Riordan and Williamson theorise on whether it is more economical for a firm to make those assets required for trade or buy them in the marketplace. The more specialised the asset is, the higher the asset 'specificity' and therefore the more expensive and difficult it may become to find in the marketplace; and, as a result, they argue it may become more economical to bring the production of the asset inside the firm:

Accordingly, whereas internal organisation is at a transaction cost disadvantage to the market where asset specificity is slight, this disadvantage decreases and is eventually reversed as the condition of asset specificity deepens. (Riordan and Williamson 1985, p. 368)

Williamson (1983) argued that asset specificity could arise in several different areas, including: site specificity; physical asset specificity; human asset specificity, and dedicated assets (see also Polanyi 1962, Marschak 1968). We take this organisational governance system and define the development of pedagogical innovation as a specific form of quasi-integration: while the university owns the supply of technology and student support services, any pedagogical innovation decision is controlled by the individual academic. We propose that the extent of pedagogical innovation is likely to be constrained by how the asynchronous approach has been internally embedded during the COVID-19 crisis. As such, the creation of online materials during this period may become specific to current curricula and teaching methods. Any subsequent innovation may then negate these materials as sunk costs, with the materials no longer relevant to current teaching

methods and therefore the investment lost. Viewed as a special case of asset specificity, we term this issue ‘asynchronous specificity’.

As stated, asynchronous is defined as using online, remote learning approach whereby staff provided pre-recorded audio-visual output, often in the form of short video vignettes (see Kuklinski and Cobo 2020). The approach allowed HE institutions: to replace the face-to-face lecture; to provide access to content *asynchronously* online; and to (generally) support the remote teaching of the curriculum. As we noted in the previous section, this has become known as emergency remote teaching and is heavily reliant upon technology and benefitted from the speed with which the sector could replace the face-to-face lecture. For the individual academics in the sector, in order to successfully switch to remote teaching within a tight timeline, they became accustomed to a temporary imposed norm: the replacement of synchronous face-to-face events with asynchronous online learning materials. In line with this, for the individual academic, we switch the ‘make-buy’ decision of the firm in the Williamson (1981) model to the ‘comply-innovate’ decision of the academic. This is shown in Diagram 1, below.

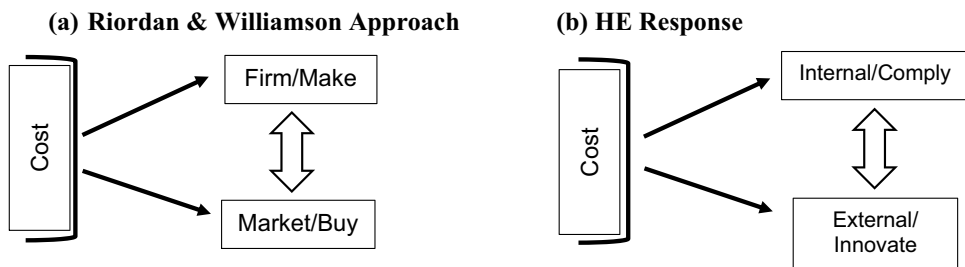


Diagram 1. Adapting the Riordan & Williamson asset specificity approach. Source: Watson *et al.* (2024)

In simple terms, we set out two polar opposite responses faced by an individual academic: *either* to comply to the *internal* learning and teaching guidelines that were strongly encouraged by the university or to adopt *external* (that is, independent, pedagogically underpinned) innovation. Internally, the university established the recommendations for delivering the module and these were communicated to the academics. Deciding to comply with the internal learning and teaching guidelines is associated with clear benefits, such as: reduced time spent on developing pedagogically based materials unsupported by the university; and the personal reputation enhancement of adopting university requirements and ‘fitting in’ with the university supported approach. As Hodges *et al.* (2020) note:

Faculty support teams play a critical role in the learning experiences of students by helping faculty members develop face-to-face or online learning experiences. Current support models might include full-course design support, professional development opportunities, content development, learning management system training and support, and multimedia creation in partnership with faculty experts

The external decision, however, is underpinned by a ‘market’ which is unpredictable and unreliable. We assume that when employing your approach, it is reliant on external pedagogical underpinning and later, ex-post feedback from students and to some extent student performance. This latter approach is uncertain and increases personal costs, in terms of time spent developing the module. This would, for example, include reading and embedding the pedagogic literature and developing materials in line with the research,

but also relies on clear, robust, and reliable student feedback, which will be uncertain. Adopting this approach, university recognition of the individual's investment cannot be guaranteed.

It is plausible, though not empirically confirmed, that academics considered students as satisficers, particularly during this period of uncertainty and pressure. In line with Diamond *et al.* (2014), who have observed satisfying behaviours in higher education assessment contexts, as such, we propose that academics may have anticipated that short, focused, video vignettes would better align with student expectations during a time of stress. We include this as a working hypothesis within our heuristic framework, acknowledging that further research would be required to substantiate this directly. In this environment, academics will see a benefit to '*doing as they are told*'.

Relying on their own student-assessed, pedagogically underpinned approach may expose academics to higher time costs and subjective risks. Drawing on concepts such as bounded rationality (Simon, 1955) and asymmetric information (Williamson 1985), we argue that academics likely perceived personal risks in diverging from institutional guidance, particularly when student feedback mechanisms, often tied to performance management, introduce uncertainty. While, again, we do not present direct empirical data to support this perception, we position it as a plausible and testable outcome within the logic of our heuristic model.

Universities that established the emergency remote teaching response, may have correspondingly created modules that are high in asynchronous asset specificity. As the asynchronous approach became embedded and the university's support systems were established around this approach, we theorise the more asynchronous asset specificity may take hold, and modules may become increasingly high in asynchronous specificity. As such, as specificity deepens, following Riordan and Williamson (1985) it could make sense for the module leader to comply with internal regulations and advice (the asynchronous prescribed route). By extension, this may also mean lower future pedagogical innovation. Importantly, the pandemic may have created a high quantity of online materials which exhibit high asynchronous specificity.

Further, our approach suggests a likely reduction in future pedagogical innovation, particularly if the sector continues to conflate emergency remote teaching with intentionally designed pedagogic innovations in online learning (see Hodges *et al.* 2020). Intuitively, an academic with online materials with low asynchronous specificity is more likely to see value in making changes to their module. Here, there are incentives to underpin the teaching approach using the pedagogy literature/student feedback/student performance. While the benefits may remain modest, perhaps limited to improved student satisfaction and slightly higher grades, they could still justify further pedagogical development. In a less pressured, post-covid environment, research-based innovation may also be more favourably received by the school and wider university.

As we have stated, emergency remote teaching lacks planning or design but may lead to an institutional approach that exhibits high asynchronous specificity. If this is not recognised by the sector and, by extension, individual HE institutions, it may well crowd out future planned innovations.

Developing our theory further, intuitively, an academic with prepared embedded online materials characterised by low asynchronous specificity may be more likely to

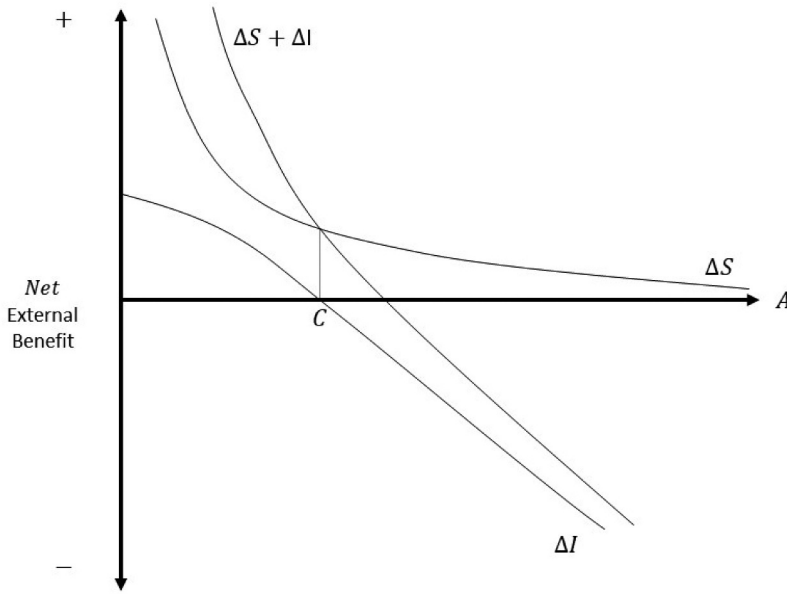


Diagram 2. The asynchronous specificity heuristics model.

see value in making further changes to their module. Here, there are incentives to underpin the teaching approach using the pedagogy literature/student feedback/student performance. The benefits may well remain low but may accrue from positive, if limited, student satisfaction and increased grades – and in a non-pressured, no COVID-19 environment, introducing research-based pedagogical innovation may well be welcomed by the school and wider university.

We have developed [Diagram 2](#) to show that as asynchronous specificity increases, the incentives to innovate can rapidly fall. The vertical axis denotes the *net benefit* to an academic from module development. We define development in terms of pedagogically underpinned curriculum changes or changes in teaching content, approach, delivery, or assessment. The horizontal axis, in contrast, describes the extent of asynchronous module specificity in the university. The higher a module is in asynchronous asset specificity, the more likely that current online resources become redundant from making this development. Both ΔS and ΔI show the effects of substituting the internal/comply approach for the external/innovate approach. Two key mechanisms relate pedagogical innovation to asynchronous specificity.

- ΔS : This is the net student-based benefit from replacing comply with innovate. To produce *innovation* costs time and is reliant upon *student satisfaction* feedback. In line with Riordan and Williamson (1985), this shows the production costs of the pedagogically underpinned module development. However, as asynchronous asset specificity increases, there is a time-cost benefit for the academic to follow the internally recommended procedures. Available materials will already meet the satisfying student's requirements for supporting assessment. Innovation will increase production costs without generating sufficient compensation through gains in student satisfaction. We

expect these gains to innovation may tend to zero as asynchronous specificity increases, as this refers to an increasing abundance of learning support to meet current curriculum and assessment requirements.

- ΔI : This is the net benefit from pedagogical innovation through internal *reputation* and *career progression effects* and shows the governance effect. This reflects internal asymmetric information whereby Universities may not necessarily see the benefits of pedagogically underpinned module development and staff are likely to benefit by compliance. The more embedded the asynchronous specificity is, the more reputational benefit may accrue to the lecturer who follows the university-controlled strategy. The module organiser has created materials for virtual learning systems, ensuring that learning analytics evidence is available for their engagement in the new blended learning environment. Moreover, any pedagogical innovation could generate increasing opportunity costs which may reduce the time available for growing research output, with many staff finding that they may maximise their chances of career progression. Only when specificity is low will there inevitably be benefits from module innovation.

Adding together the costs of producing lecture materials that are underpinned by pedagogical research reliant on student feedback and the governance effects on reputational career progression, we derive our *conservatism* measure C . This represents the threshold at which the disincentives to innovate outweigh the benefits. It encapsulates both the production costs (for example, time and cognitive effort to redesign modules) and governance costs (for example, risk to career progression, poor student feedback). As asynchronous specificity increases, meaning more existing materials are narrowly tailored to past modes, the relative benefit of innovation falls, and C rises. In practical terms, C helps conceptualise the point at which an academic is more likely to comply with institutional norms than to pursue pedagogical enhancement. Increasing C implies lowering these barriers through better incentives, support structures, and recognition for innovation.

This is the point where asynchronous specificity becomes binding and may eliminate any incentive to innovate. Given the universal commitment to minimise the damage to the student experience from remote learning, we could expect extensive asynchronous materials being created across the sector. We therefore contend that covid-19 may well harm future investments in pedagogical enhancement. It is only through increasing C that we may avoid this problem, likely ensuring a higher probability of a positive return from pedagogical innovation. That may be secured, according to this heuristics model, by deriving significant changes to ΔS or ΔI :

- Reduce steepness of ΔS : We can seek to minimise the impact of student satisficing effects by demanding changes to assessment practices. This may make asynchronous materials of less value in meeting any student's minimal assessment outcomes. However, unless this involves assessment changes that have pedagogical merit in themselves, this may also maximise sunk costs without necessarily improving the student experience.
- Shift ΔI upwards: We can seek to change career progression practices within universities, such that there is a more suitable reward for engineering-pedagogical changes based upon research. This would require a shift away from blunt practices

into career progression. Rather than using simple key performance indicators for staff performance, such as module evaluation scores, it would require the application of pedagogical knowledge that may be beyond the comprehension of the staff appraisers involved.

Discussion

Our paper considers the paradox presented by the HE sector's response to covid. On the one hand, a vast array of pre-existing literature on innovative approaches using technology and blended learning detailing these approaches as being 'mainstream'. And yet the sector faced challenges. Recourse to the covid literature contains repeated expressions of difficulties encountered when responding to the pandemic and shows that academics were not slow in bringing to everyone's attention how challenging the changes required were, and continue to be, for all those with responsibility for teaching.

Added to this, the adopted approach was widely accepted and rapidly rolled out being referred to as emergency remote teaching. This is in contrast to innovative, well-planned, rigorously developed, and supported online provision underpinned by past literature. The literature in this area is well-established and rich in both illustration and evaluation of methods to support teaching in an online environment. However, this served to highlight how the sectors response could have failed to embed innovative methods in the year preceding covid and therefore lacked solid foundations for teaching under remote conditions.

An obvious issue was just *why* pre-existing teaching practices faced extensive challenges when subject to the rapid transition to a remote environment. More explicitly, why had the sector not innovated pedagogy? Answers can be found in the absence of engagement with innovative pedagogical foundations and recourse to past pedagogical literature and in the assertion that online methods have not developed as extensively as the sector likes to believe. The pandemic-prompted change to teaching methods provided a genuine test of innovative teaching practices that had developed, or as is more the case, had not developed, during the decade preceding the imposed lockdown. Had resources and overall approaches been shaped by insights on active learning, engagement, dialogic feedforward and feedback practices, views of assessment as learning, the demonstrated benefits of alternative forms of video construction? From this perspective, the emotional responses of the sector are even more disappointing as it alludes to maybe decades of pedagogic inactivity. It is accepted that the unexpected nature of the change prompted by the pandemic did not offer the time to revise and overhaul teaching practices to incorporate insights from decades of pedagogical research, hence the term 'emergency remote teaching'.

Adapting the asset specificity work of Williamson (1981, 1983) and Riordan and Williamson (1985) on production and governance effects provided our theoretical framework in which to understand why the response was rolled out so rapidly despite its *lack* of pedagogic literature-based teaching practices. In addition, our development of Riordan and Williamson's (1985) asset specificity model brings to the fore a worrying finding: if the approach introduced through COVID-19 becomes the standard approach, it may deepen 'asynchronous' specificity and deter future innovative pedagogic literature-based teaching approaches. This is an important observation: if emergency remote teaching is

mistaken for well-planned innovative online provision, it may set pedagogy back long after COVID-19 has passed.

Importantly, the sector should take time to reflect and take stock of what has emerged through emergency remote teaching, as Ferri *et al.* (2020) note:

This pandemic can be an opportunity and an exercise for emergency remote teaching to evaluate emerged challenges during emergencies and develop a coherent online education strategy for any other emergencies or natural disasters that can potentially happen in the future. (p.2)

To overcome the issues of embedded specificity arising from the promotion, and support of a specific teaching approach, the sector may be required to provide incentives, career progression, and rewards in relation to supporting research-informed teaching enhancement, along with raising the esteem associated with teaching, development and innovation. This must also come with the ability of the university to support a variety of teaching approaches fully and comprehensively.

While our approach offers some preliminary suggestions, such as reforming incentive structures, revisiting assessment practices, and elevating the status of pedagogical innovation (also see Watson *et al.* 2024) we acknowledge that these remain at a high level of abstraction. This is in part because our paper offers a conceptual and heuristic framing, rather than empirically tested interventions. We do not claim predictive power. Rather, the model is intended as a diagnostic tool to provoke institutional reflection and guide future empirical research. Nevertheless, these suggestions are not arbitrary: they stem directly from the internal logic of the asset specificity framework and are supported by decades of literature on the misalignment between teaching innovation and academic career advancement (see Fox 1992, Brownell and Tanner 2012). For instance, our emphasis on reassessing assessment design arises from the identification of student satisfaction as a rational response to surface-aligned evaluation regimes (Diamond *et al.* 2014). Future research would be necessary to test the effectiveness of these interventions, but we offer them here as theoretically coherent and practically actionable responses to the issues identified in our model.

A note of caution. While our model foregrounds institutional constraints, particularly incentive structures and policy logics, we recognise that pedagogical decision-making is not solely shaped by policy or structure. Academics are not passive actors but bring to their practice a wide range of personal beliefs, disciplinary identities, prior experiences, and pedagogical values. The heuristic ‘comply vs. innovate’ approach we use is intentionally simplified to illustrate incentive tensions, but it should not be read as denying academic agency. Rather, we believe that individual choice operates within bounded structures that privilege certain behaviours over others. This underscores the importance of exploring how academics navigated these tensions during the rapid pivot to asynchronous teaching.

Taking all this into account, we believe that our approach has two main implications for professional learning and higher education policy. First, for professional learning practice, it invites institutions to critically examine the long-term pedagogical impact of materials and teaching habits developed during the pandemic. Institutions should avoid defaulting to asynchronous delivery without interrogating its pedagogical suitability and alignment with student learning outcomes. Second, in terms of

policy, our findings suggest the need for new incentive structures that support pedagogical experimentation and reward teaching innovation on par with research performance. This could take the form of revised promotion criteria, resourcing for learning design, or assessment reforms that reduce overreliance on satisfying learning behaviours.

Our heuristic model provides a testable framework for future research to investigate the extent and effects of asynchronous specificity in different institutional settings. Empirical studies could explore how existing online materials constrain or enable innovation post-covid, how students and staff experience pedagogical change under different incentive regimes, and whether shifting institutional priorities can meaningfully raise our conservatism threshold (C). As such, the model serves both as a diagnostic tool and a research agenda prompt. In addition, future research could adopt a bottom-up, qualitative approach to investigate how personal pedagogical commitments, emotional responses, disciplinary norms, and professional identity shaped academic responses during this period. Such work could illuminate how some academics resisted or reinterpreted institutional directives, or how innovation emerged in localised, informal, or hybridised ways. Interview-based or narrative inquiry studies, for example, could provide a valuable complement to the structural focus of our model by foregrounding the voices of academics themselves.

Important questions remain, given the extent of the investment in developing online materials: Will we see increased and embedded innovation and development going forward? Are the developed materials, however defined, going to continue to be utilised? Or are we going to revert to pre-covid-19 provision, with only slight adaptations? These are questions that only in time will we be able to answer. However, if institutions continue to treat emergency responses as pedagogical progress, they risk institutionalising a model that was never designed for long-term learning. The legacy of covid-19 may not be an acceleration of innovation, but its quiet erosion – through a growing reliance on templated, non-interactive delivery. Without active policy and incentive reform, the path-dependent logic of asynchronous specificity may well shape a future of compliance over creativity in higher education teaching.

Note

1. NB: We take cognisance of the varied response by different outlier types of HE institution due to their geographic location, size, specialist subject, or their overall focus (that is, teaching or research). The model we develop is based upon the mean aggregate response of the sector in general for a teaching and research HE institution.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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