



Block and blend: a mixed method investigation into the impact of a pilot block teaching and blended learning approach upon student outcomes and experience

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ABSTRACT

The transition to online teaching as a result of the COVID-19 pandemic led many universities to think strategically about the delivery of learning, teaching and assessment and the subsequent implications for student engagement and attainment. This piece of research builds upon literature around ‘immersive scheduling’, referred to as ‘block delivery’ alongside ‘blended learning’ by presenting findings from a mixed method study of a pilot block and blend delivery approach at one UK University. Qualitative data was collected from 94 students studying on 22 modules selected for the pilot. Secondary data analysis of outcome data and deferral requests for modules delivered in a traditional format in the academic year 2019/20 were compared to outcome data for modules delivered in a block and blend format in 2020/21. The findings suggest that a block and blend approach has positive implications for attainment, the frequency of deferral applications and leads to self-reported student engagement via a sense of accomplishment, focus and enhanced flexibility. The study highlights the potential of a combined block delivery and blended learning approach in enhancing student experience and attainment.

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Introduction

The COVID-19 pandemic has resulted in the rapid, mass move of learning, teaching and assessment into a fully online environment. While this transition was triggered by an emergency response to an unprecedented situation, the increased use of technology can be viewed as a catalyst for a more permanent, strategic change in the ways in which learning, teaching and assessment are delivered (Barber 2021). The Quality Assurance Agency (2020) report shares the experiences of universities in responding to the pandemic, and highlights the challenges of digital poverty, see also Office for Students (2020), and the innovative approaches universities have taken to continuing delivery, in consultation with their student communities. In the uncertainty of an ongoing and post-COVID 19 era, many universities are embracing new ways of student engagement underpinned by the requirement to ensure they continue to deliver high-quality learning and teaching that demonstrates academic rigour and meets threshold standards in Higher Education (HE).

Conceptual frameworks for student engagement are largely derived as a result of on-campus face-to-face delivery (O’Shea, Stone, and Delahunty 2015), positioning engagement as ‘a student’s emotional, behavioural and cognitive connection to their study’ (Kahu et al. 2014, 523) and

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highlighting the importance of structural and psychosocial influences (Kahu 2013). The rapid move to online has, undoubtedly tested these connections, particularly the ‘emotive concepts such as belonging and community’ (Brown and Parkin 2020, 6) while also landing students in online spaces where some of the challenges and barriers to online learning, as identified by O’Shea, Stone, and Delahunty (2015) include, for example, perceived value, the ability to forge and sustain positive relationships, and a reluctance to engage in online learning become new realities for staff used to working in face-to-face contexts.

The Wonkhe and Pearson student expectation survey (Wonkhe and Pearson 2020) reported that students had experienced wellbeing and practical difficulties as a result of the transition to online, and importantly, envisaged that they would continue to do so if learning and teaching were largely online in the coming academic year (2020–2021). However, more positively, the follow-up survey, in December 2020 (Wonkhe and Pearson 2021), reported that over 80% of students agreed they would like to continue some of the elements of online learning experienced, recognising the flexibility of virtual learning and the ability afforded to work at their own pace.

What these surveys and the Barber report on online learning (Barber 2021) seem to indicate is that increased use of technology creates greater accessibility, new ways of widening participation and can facilitate improved student engagement with learning. Key to this thinking is the belief that students want and need to engage in active modes of learning and technology-enhanced learning, and which can be flexed to fit with the complex lives of learners.

This study aims to add to the literature on the experience of higher education learners during a period intra-COVID learning through the evaluation of the response of one provider. In the immediate period of the first national lockdown, the host institution also completed a rapid transition to online learning, teaching and assessment, recognising that in large part, these initial moves were more of a ‘lift and shift’ to online delivery rather than a more consciously, and instructionally designed approach to an online or hopefully, blended pedagogy. The University, also fully cognisant of the impact of COVID-19 on the already complex lives of the student population, for example, the ability to balance work and family with study, and other factors presented by Farrell and Brunton (2020) as being impactful on online student experiences and retention, moved beyond the utilisation of technological advancements to reshape curriculum design and delivery. In the academic year 2020–21, the University piloted a move to a block mode of learning and teaching to understand if this, together with a blended pedagogy, would better manage the complexities of social distancing on campus, maintain the health and wellbeing of students, staff and the wider community and increase retention, achievement and experience (Nerantzi and Chatzidamianos 2020; Buck 2020).

Literature review

Block teaching

The development of block teaching, increasingly adopted across HE, is a mode of learning where the course is structured so that students engage with a single module at a time. Associated learning activities such as lectures, seminar discussions, resources and formative assessment tasks are presented to students in an intensive short block. Summative assessment typically takes place at the end of the single block of learning giving students access to early assessment experience and early feedback, something that is known pedagogically to be critical in the early stages of student life.

Block learning is not a new development and has existed in many guises across the FE and HE sector both nationally and internationally. Sometimes referred to ‘intensives or intensive courses’, block delivery has received some academic attention in terms of investigating its effectiveness in enabling students to achieve learning outcomes, as well as perceived satisfaction with delivery. For example, findings from a US study (Kucsera and Zimmaro 2010) suggest that intensive course delivery (9-week and 11-week) led to increased effectiveness ratings and similar ratings of instructors when compared with ‘traditional’ delivery (15 weeks). Furthermore, in a 2006 review of the use of

intensive formats in the HE sector (Davies 2006), intensive formats were identified as having several pedagogical and logistical advantages, such as enhancing motivation, concentration, commitment, diversity of teaching and stronger relationships. However, it was acknowledged that a large majority of literature focuses on modules in which skill acquisition is key, as opposed to more theoretical, conceptual learning (Davies 2006). Similar caveats with regard to the accessibility and impact of block delivery being subject dependent have also been highlighted elsewhere (Dixon and O'gorman 2020; Loton et al.). Nonetheless, research appears to suggest that block or intensive modes of teaching lead to similar, or clear improvements in levels of attainment and knowledge retention (Daniel 2000; Sheldon and Durdella 2009; McCluskey, Weldon, and Smallridge 2019).

A block mode of learning and teaching has been adopted across multiple universities in Australia. In a review of intensive delivery amongst these universities, it was identified that the most frequent adaptation of block has been at a postgraduate level, and research investigating the pedagogical underpinnings or impact of intensive delivery was somewhat inconclusive, needing further exploration via systematic mixed method approaches (Harvey, Power, and Wilson 2017). Nonetheless, a recent evaluation of block mode delivery for first year students at a widening participation institution in Australia revealed that block mode led to increased performance amongst students, particularly younger students, those from low socio-economic backgrounds, students with lower admission scores and students with English as an additional language (Loton et al.).

In the UK, the adoption of block has been trialled in universities such as Liverpool John Moores University (LJMU), the University of Bedfordshire and more recently, Manchester Metropolitan University (MMU), largely as a response to increasing pressures within the HE sector to improve engagement, attainment and reduce attrition, but also to cope with the impact of COVID-19. Swain (2016) identified that for first year students, block provided a useful transition mechanism, was preferred by students, led to better attendance and attainment. However, practical concerns around timetabling, but also staff fatigue were highlighted, suggesting that block led to limited time for reflection upon teaching delivery and materials. An exploration of academic's perspectives at the same institution also revealed concerns around the impact of student absence and the long-term impact upon student learning of a block delivery mode (Dixon and O'gorman 2020). On the other hand, block was also discussed as a useful transition tool, as well as helpful in promoting a continuous learning experience, enabling a sense of accomplishment. At the postgraduate level, block has led to increased student performance and satisfaction, while also controlling for assessment quality and rigour (Kofinas et al. 2017), 6-week modules in a block format are still offered across postgraduate business and STEM courses at the University of Bedfordshire. Finally, although in the early stages of delivery, Nerantzi and Chatzidamianos (2020) discuss their framework for block delivery at MMU, suggesting that this mode requires a change in pedagogical approach, including careful consideration of curriculum patterns, assessment design and adoption of inclusive, blended synchronous and asynchronous learning activities.

Blended learning

Definitions of blended learning are varied and based on a multitude of models and conceptualisations in research, subsequently the phrase could be identified as more of an umbrella term to describe the use of technology in education settings (Hrastinski 2019). Blended learning, or 'hybrid learning', is an approach to delivering higher education that integrates elements of online learning activities and resources with face-to-face 'classroom based' learning activities (Graham 2006). Blended learning allows more flexibility in the learning trajectory but still requires both tutor and students to be physically together at certain points. Watson (2008) describes blended learning as a significant component of a continuum between fully online teaching and learning to face-to-face delivery.

Blended learning, with a combination of synchronous and asynchronous activity, is suggested to be effective in both combining opportunities for connectedness with flexible practice (Gilpin 2020). Not only this but use of asynchronous learning activities online has been suggested to improve and enhance the quality of face-to-face directed study (Köse 2010), and lead to better student learning outcomes, particularly for STEM subjects within HE (Vo, Zhu, and Diep 2017).

There has been substantial growth in the use of online and blended learning (Heilporn and Lakhal 2021), transforming the reach and delivery of the educational offer. The COVID-19 pandemic has no doubt accelerated a pace of adoption, as education providers globally moved their offer online in the face of lockdowns (Srinivasan, Ramos, and Muhammad 2021). However, approaches adopted in response to the pandemic, which could perhaps be defined as emergency responses to an emergency situation, do not necessarily maximise the affordances blended learning can offer. As Spanjers et al. (2015) noted, the move to an online or blended delivery is requires a rethink of instructional design, to models which provide greater flexibility of access, a more personalisable learning experience, and support more diverse student populations. These sentiments have been echoed in literature published during the COVID-19 pandemic, with Adel and Dayan (2021) highlighting the reality that online cannot – and indeed should not replace traditional delivery; but rather should emphasise [the value/place of *author's words*] traditional delivery, and Anthony, Kamaludin, and Romli (2021) recognising the need for a less lecture-centred and more student-centred pedagogy of interaction and activity.

Boelens, De Wever, and Voet (2017) identify four key challenges in the delivery of effective and high-quality blended learning: the incorporation of flexibility, stimulating interaction, the facilitation of the students' learning process and the fostering of an affective learning environment. The pandemic refocused universities on the impacts for their students, not just in how they could best support them to access learning, but to also support the management their learning in complex, and often digitally challenged environments. The need for blended (and at times entirely online) learning, which promotes a desire to keep learning and engage, enables interaction, and speaks to collective and personal interests, is arguably more critical and needs to drive our understanding of learning models.

A pilot block and blend model

At the host institution, a block and blend approach to learning and teaching has been adopted as a pilot, but also to respond to the restrictions imposed by the global COVID-19 pandemic and the changing HE landscape. Full-time, undergraduate courses are typically delivered through 12-week modules of, learning and assessment. It has been common practice for full-time students to engage in up to three modules per semester taught consecutively and will be referred to as 'conventional learning'. For new students at Level 4, conventional learning models see them undertake three modules per semester with 48 hours of contact time per module. This equates to approximately 4 hours of contact time per module each week comprising 12 hours per week in total. Learning activities and formative assessment tasks have been usually spread throughout the 12 weeks of the semester with summative assessment activities typically undertaken across all three modules after 12 weeks of learning. Instead, certain modules across Level 3, Level 4 and Level 7 within the School of Social Science and Humanities, School of Engineering, Arts, Science and Technology and the Business School moved to block delivery. Each block is equivalent to 20 credits and consists of up to 4 weeks academic content (lectures/practical work/seminars/tutorials, etc.) and a fifth week is then used to deliver final module assessment, and enable students to complete reading, and prepare for the next 4-week block. During the 4-week block, students are expected to engage in 12 hours of contact time each week. For those in Block 1 and 2 and part of Block 3, a blended approach was encouraged prior to the announcement of further lockdowns in England, in which academic staff were asked to provide both offline and online synchronous and asynchronous learning activities.

This article presents the mixed method approach taken to the rapid evaluation of the impact of block and blend learning and teaching upon student attitudes, experiences and outcomes on the programmes included in the pilot. The evaluation was conducted in January 2021, after the delivery and assessment of the first three modules or blocks. Following the presentation and discussion of the findings, the paper concludes with next steps for the university and reflections on what this data adds to our current understanding of learning and teaching post-COVID-19.

Materials and methods

Research design

The research forms part of a larger study design, which incorporates both staff and student experiences of a pilot block and blend approach to learning and teaching. Previous research has identified an increase in student attainment associated with immersive scheduling (Turner, Webb, and Cotton 2021); however, fewer studies have qualitatively investigated student experience of block or immersive teaching. Subsequently, the host university, situated in the East of England, utilised a concurrent mixed method approach (Leech et al. 2009) focusing on the analysis of comparative secondary datasets, in addition to a dominant focus on subjective experience of students engaging with a pilot block and blend approach to learning and teaching. Mixed method evaluations seek to integrate quantitative and qualitative approaches to theory, data collection, data analysis and interpretation. The purpose is to strengthen the reliability of data, validity of the findings and recommendations, and to broaden and deepen our understanding of the processes through which intervention or programme outcomes and impacts are achieved, and how these are affected by the context within which the intervention or programme is implemented (Greene, Caracelli, and Graham 1989). Alongside the analysis of quantitative secondary datasets for student attainment and extenuating circumstances applications, an online questionnaire with seven open-ended questions was disseminated to students enrolled onto block and blend modules to capture qualitative data. Ethical approval for the study was received by the university ethics committee (RETH20/030).

Participants

Participants were Level 4 (first year) university students enrolled onto block and blend modules across two different academic schools during the start of the 2020–2021 academic year. For the purposes of this analysis, only level 4 students enrolled onto modules across two academic schools were included, to prevent the likelihood of skewed findings resulting from inclusion of level 3 and 7 students, as well as students in the school of Engineering, Arts Science and Technology, in which there were smaller numbers and fewer pilot block and blend modules. Participants were recruited via module notifications on the virtual learning environment, advertising via social media and snowballing via academic teams. Responses were received from 94 students enrolled onto block and blend modules, the demographic information for students is available in Table 1. Almost all respondents suggested they had experienced both face-to-face and online learning as part of their course since

Table 1. Demographic data.

Level of study	Level 4 (first year)	94 (100%)
Mode of study	Full-time	88 (94%)
	Part-time	6 (6%)
Experience of teaching	Blended (face to face teaching and online learning)	85 (98%)
	Online teaching only	2 (2%)
Academic School	School of Social Science and Humanities	74 (79%)
	Business School	20 (21%)
Self-disclosed disability	Yes	17 (18%)
	No	76 (81%)
	Prefer not to say	1 (1%)

September 2020. Of the 18% of the student cohort who self-disclosed a disability or multiple disabilities, three reported a specific learning difficulty, one student reported a physical disability only, five reported a mental health condition and one student selected other disability. The remaining seven students selected a combination of the above disability categories.

Data collection and measures

Students were surveyed at the end of the first semester in January 2021 and therefore had experienced at least one block and blend teaching module. The survey instrument included 5-point Likert scale questions related to the level of agreement with various statements linked to the experience of block and blend learning and teaching, as well as seven open-ended questions. Open-ended questions asked students to describe advantages and disadvantages of a block approach to teaching, a blended learning approach, a combined block and blend approach and suggestions for improvements (see [supplemental material](#)). Qualitative survey questions allow larger numbers of participants to respond in an in-depth fashion, facilitating richness of data as opposed to restricting responses (Braun, Tricklebank, and Clarke 2013). Anonymised quantitative secondary data, including module attainment data and extenuating circumstances applications, were also analysed and compared with matched module data from the previous academic year (2019–2020).

Quantitative data analysis

Data were analysed using IBM SPSS version 25. Paired samples t-tests and chi-square tests of independence were conducted to compare module-level attainment outcomes and differences in extenuating circumstances application/referral data.

Qualitative data analysis

Qualitative survey responses were analysed using thematic analysis, to identify codes and subsequent themes (Clarke, Braun, and Hayfield 2015). An inductive approach was taken at a semantic level, where themes were identified directly from the data itself (Braun and Clarke 2006). The data analysis was primarily conducted by the second author, in collaboration with the first author, both engaging in familiarisation with data and subsequent reviewing and discussion of possible codes and themes. Data was initially coded based on the overarching questions of advantages or disadvantages of block and blend learning and teaching approaches using semantic codes, such as 'focus', 'learning styles', 'convenience', which was followed by a second round of coding to identify patterns of meaning and subsequent steps to refine potential themes. The second phase of coding utilised a more analytical approach, for example, identifying where multiple students had discussed the implications of a block teaching approach in narrowing the opportunities to make mistakes or fail when studying, leading to the theme 'margin of error'. Themes were subsequently reviewed, and subthemes alongside broader overarching themes were developed. A thematic map to highlight relationships between themes was created, alongside the identification of key quotes to refine the narrative.

Findings

Quantitative findings

To investigate the preliminary impact of the move to block and blend upon accomplishment and student outcomes, aggregated secondary data obtained from the virtual learning environment was analysed. A total of 24 modules were identified for analysis, these modules had taken place during both 2019/2020 and 2020/2021 academic years and were limited to blocks 1 and 2 for comparative

analysis. The mean assessment grade per module was analysed for deviation from statistical assumptions, outliers were identified and removed (including modules in which average grade was significantly high (100%) and modules with only one student enrolled ($n = 5$)). A total of 6 modules had missing data for mean grade result, the majority of those being in the 2020/2021 academic year, possibly resulting from an omission in updating the virtual learning environment, or delayed publishing of module results, or due to length of block/extension into block 3. One level 3 module was also removed. The final sample contained 12 level 4 modules, from across two academic schools, in which direct comparisons could be made.

A paired samples t-test was conducted to investigate the relationship between curriculum type (block and blend vs. traditional delivery) and mean assessment grade. On average, students experiencing the block and blend curriculum delivery received higher assessment grades ($M = 66$, $SE = 3.56$), than those experiencing the traditional curriculum delivery during the previous academic year ($M = 55$, $SE = 1.69$) (Figure 1). The difference, -11.41 , 95% CI $[-17.73, -5.08]$, was significant $t(11) = -3.966$, $p = 0.002$, and represented a large effect size of $d = 1.13$. It is worth noting that the deviation from the mean for grades whilst experiencing block and blend was higher ($SD = 12.35$) than that for traditional delivery ($SD = 5.88$), meaning that while on average assessment grades were higher, scores are more varied.

Further anonymised individual-level data was provided for deferral requests for modules delivered in 2018/19, 2019/20 during traditional delivery and 2020/21 during block and blend delivery. A total of 18 deferral requests were received during the block and blend modules delivered in the first half of semester one, in comparison to 47 deferral applications in 2019/20 and 65 deferral applications in 2018/19, when comparing matched modules in the traditional delivery format.

A chi-square test of independence was performed to examine the association between curriculum type (block and blend (20/21) vs. traditional delivery (19/20)) and deferral outcome (accepted/reset or rejected). The relation between these variables was significant, $X^2(1, N = 66) = 11.59$, $p = .001$. Deferral requests were more likely to be accepted in traditional delivery formats in comparison to block and blend module delivery. In total, 20 students with a declared disability requested a deferral in comparison to 46 students who did not declare a disability. The frequency of deferral applications for students with a disability and those without were also similar across curriculum types.

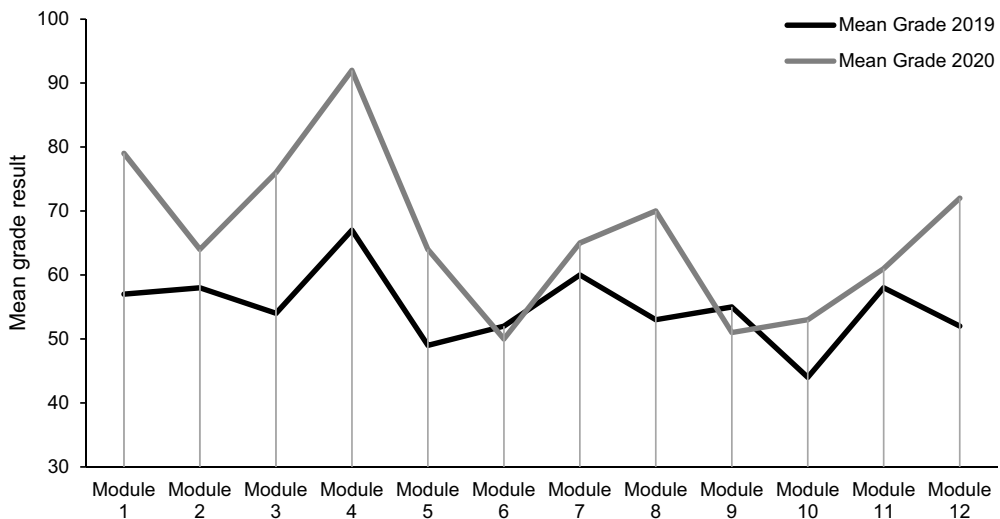


Figure 1. Mean grade result 2019/20–2020/21 comparison across 12 matched modules.

Qualitative findings

The number of responses to open-ended qualitative survey questions varied from 84 to 59 responses per question ($M = 75$). From initial coding, nine themes were developed, followed by three more conceptual overarching themes. As evident in Figure 2, there is considerable overlap amongst themes, reflecting the complex experiences and perceptions of learners and how these interlink with learning and teaching design and delivery.

Accessibility

Accessibility consisted of three themes, flexibility, resources and ‘margin for error’ (a phrase used by a student to highlight a fear of falling behind, with block perceived as affording ‘no room or margin for error’). Many students described how online learning (in combination with face-to-face teaching for modules taking place from September–December 2020) facilitated a sense of ease and convenience during delivery of block and blend modules, enabling students to ‘fit learning in around other commitments’ particularly for commuter students and students with caring responsibilities. Students also suggested that reduced time spent ‘in the classroom’ had positive financial implications, in terms of travel costs and childcare costs. Many students suggested that a reduction in travel times enabled additional independent learning, as well as enhanced enjoyability of learning as a result of studying in comfortable environments as outlined by Renae:

Blended learning is great, especially with my disability, I do not need to travel into uni everyday I have really enjoyed the mix of at home and on campus lessons. (Renae, Social Science and Humanities)

Linking closely to flexibility, were student’s perception of increased accessibility to resources via online delivery of learning activities, including the ability to watch pre-record, recorded and live-stream sessions, as well as access to content in advance facilitated by the block approach to teaching.

Flexibility during times where I need it most. Being able to catch up on lectures missed online because they were recorded has made a huge difference. It’s also nice to mix up our learning rather than doing the same thing over and over again. (Jacob, Business School)

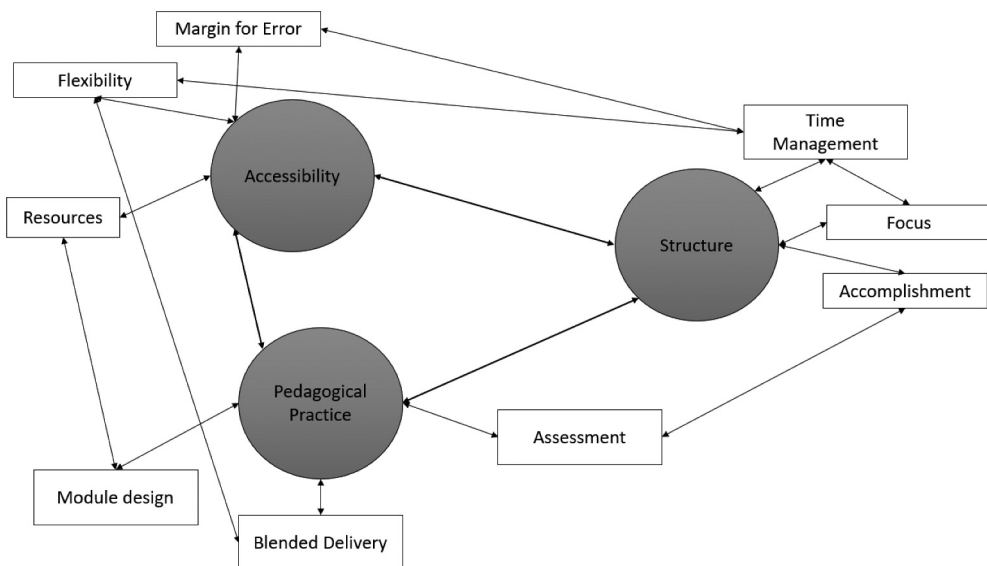


Figure 2. Thematic map.

In a fast-paced block module, the ability to re-watch and digest content online is important for students broadly, but also students such as Caitlin, in which disabilities can impact upon learning experience.

Works way better with my disability as if I am having a bad health day, I can attend my lecture from home without having to go out. So much easier to have the option of either in person or online. Recorded lectures give me more time to process learning content I am visually impaired and feel less disabled when I can learn virtually as I don't feel different to anyone else and don't struggle with seeing a whiteboard etc as I can use all my own IT equipment at home which is adapted for my needs. (Caitlin, Social Science and Humanities)

The effective and universal adoption of available technological tools in learning and teaching delivery could prevent a narrow margin for error for students completing block and blend modules. Some students, for example Claire described concerns relating to falling behind due to missing block module sessions, suggesting that late arrival at the institution, delayed course starts, part-time study, illness and caring responsibilities without access to module content could lead to lower levels of attainment.

I had to miss one or two sessions due to childcare issues, but these were unable to be live streamed as the equipment wasn't available, which was a shame as the subsequent modules could be. Thankfully, no one had to take 2 weeks off for self-isolation during this time or I fear they would never have caught up. All in-class sessions should be live-streamed and recorded. (Shannon, Social Sciences and Humanities)

On the other hand, some students highlighted that although the fast pace of block teaching led to limited time between seminars and lectures for engaging with course material, this did not necessarily influence attainment levels. Instead, the pace and structure of block delivery could lead to enhanced time management skills amongst students.

Structure

Structure consisted of three themes, time management, focus and accomplishment. The composition of block and blend modules appeared to assist students in structuring their time, due to the intensity of delivery. Many students discussed how they enjoyed the consistency and continuous learning process and a blended approach offered 'the best of both worlds'. It was acknowledged by students that the module format led to an intensity of pace, however accompanied by a consistent structure facilitated effective time management.

You only have to focus on one module at a time, this makes it easier to organise work. It also means deadlines and assessments are spaced out. (Marco, Social Science and Humanities)

The theme mentioned most frequently was focus, with students suggesting that the structure of block and blend modules enabled them to focus on the module in its entirety and to take a 'deep dive' into the contents. The described certainty, in a time of global uncertainty, offered by this mode of delivery meant that students felt able to concentrate on learning and developing their assignments as described by Maria and Chris:

I feel like I can focus on my assignments better, I don't feel overwhelmed with work, I know exactly what I need to do, everyone's on the same page so it means we can work as a class better. (Maria, Social Science and Humanities)

I really like the block learning approach because it allows me to focus my attention on one module at a time, rather than juggling several modules at a time. I think that it makes the teaching flow better as well as it's easier to remember what was talked about in previous lectures. (Chris, Suffolk Business School)

In turn, the ability to focus on, and complete, one module at a time led some students to feel a sense of accomplishment. It is apparent therefore that for many student respondents, the combination of the accessibility of blended learning with the structure of block delivery has the potential to lead to a sense of accomplishment, time management skills and high levels of attainment.

Sole focus on one module, it's easier to learn and give your all to that topic. Assessment week with no lectures, allowing for time to complete assignments. There is a sense of being organised and 'ticking off' modules - personally, I like that, and I feel going through a module one by one makes me feel more on top of things and accomplished. (Lucy, Social Science and Humanities)

Pedagogical practice

Although the combined block and blend approach seems to lead to self-reported positive outcomes amongst students, it appears to be mediated by the adoption of effective pedagogical practice. Pedagogical practice includes three themes, module design, blended delivery and assessment. Some students describe limitations to module design, such as 'content cramming'; seemingly recognising that the 'lift and shift' approach to reshaping traditional semesterised learning as block negated the advantages, they recognised that block and blend learning afforded. Designing modules, so that an appropriate mix of blended synchronous and asynchronous learning activities are utilised, in addition to active management of expectations by provision of appropriate module content in a timely manner, were suggested by student as ways to enhance learning experience.

I feel that some lecturers deliver online lectures and seminars in an engaging way and still manage to involve activities such as watching videos, discussions in breakout rooms, which I feel more lecturers could do to make the online teaching more engaging. (Alex, Social Science and Humanities)

The ratio of online to face-to-face learning was an important consideration for students when discussing blended learning experience. Students, such as Lydia, who described experiences of face-to-face in addition to online learning activities identified an enhanced sense of social connection, confidence and motivation in class, as well as greater focus during independent online study.

You get the social aspect of the classroom, discussing ideas with peers, making friends. Reassure each other about work. Nice to still come in, but not daily. Feels nice and relaxed and makes coming in more enjoyable. My first module was a blended learning approach - I liked that it split the time well. When we were online, we were given pages to go through and make notes, they would have pictures, videos and small paragraphs. So it was interesting to look at, there would also be formative quizzes at the end of each topic. If you got stuck, there was a discussion forum where the lecturer was available to answer any questions. I really liked this approach as I felt that it split the time well and we weren't just having to sit and listen for 15 hours a week. It made it easier to concentrate when we attended seminars in person. (Lydia, Social Science and Humanities)

Linking closely with flexibility and time management, a blended approach to block teaching facilitated students to 'manage my time according to where I most need it', which was of importance in a fast-moving immersive delivery mode. Nonetheless, students frequently highlighted the importance of the 'physical' experience of higher education, to engage with peers and build social connections, which was lacking in online spaces for some.

Closely linked with design and delivery of block and blend modules is student experience in assessment. The utilisation of formative or summative assessments and associated deadlines varied by course and module, meaning student experience varied greatly. The pace and structure of block, specifically where redesign of assessment may not have adequately reconsidered assessment load, type and timing, meant some students expressed difficulty in completing assignments in the allocated time. Equipping students with the time and resources necessary to complete assignments is crucial to positive student experience of block and blend curriculum delivery.

I spend so much time studying and have no free time just because I'm trying to wrap my head around it, coursework is given due to be in 2/3 days - I had to write 2,500 words in a weekend (Arya, Social Science and Humanities)

Ensuring that assignments are due at the end of the assessment week, so you have time to do them (Malik, Social Science and Humanities)

It is widely acknowledged that a block and blended approach to learning, teaching and assessment needs a considerable and compassionate alteration of pedagogy. For block, changes to module content and assessment structure are required, and with regard to blend, a careful balance of online content and consideration of the ratio of face-to-face and online synchronous and asynchronous activity is necessary. For both, the linking of content through and across modules supports students in re-engaging with themes and topics and scaffolds the learning across learning spaces.

Discussion

The findings indicate that the accessibility of a blended approach in combination with the focus and structure facilitated by block delivery teaching is positive for both student engagement and attainment. This discussion reflects on these findings to identify the critical considerations for block and blend success, and implications for practice.

The increase in attainment levels demonstrated here reflects the findings of previous research (Daniel 2000; Sheldon and Durdella 2009; Mccluskey, Weldon, and Smallridge 2019). The institutional block and blend pilot realised increased assessment outcomes across all nearly all modules from the previous academic year, suggesting that well-designed block delivery may work across a range of subjects, rather than it being subject dependent as not be as subject specific as reported in the previous research (Dixon and O'gorman 2020; Loton et al.). Yet, while this study identifies the realisation of generally higher grades, it has also identified greater variance across the cohort group. Full understanding of the influencing factors will be possible through the analysis of longitudinal data but given agenda, such as access and participation and TEF, looking for more immediate solution is critical.

When looking to explain the general efficacy of immersive scheduling, previous authors have pointed towards its capacity for reducing the cognitive load faced by students, through limiting the volume of competing demands (see, for example, Jansen 2004; Richmond et al. 2015). Our data suggest that students were less likely to apply for a deferral whilst engaging in block modules in comparison to matched modules delivered in the traditional format. When comparing data from the same modules across the different delivery types, the number of deferral submissions was substantially lower in the block delivery (18) than in traditional semesterised delivery (47). This finding could support the hypothesis that block reduces cognitive load, but it could be attributable to the perception, by students, that block delivery leaves 'no margin for error'.

The data in this study, and perhaps most importantly the qualitative data received from students in relation to time management, focus and confidence, are congruent with the suggestion that a reduced cognitive load helps performance. Students have clearly articulated their appreciation to be able to better manage their time, focus and build confidence. This associated sense of confidence in self, and self-efficacy is well established in literature on engagement (Kahu 2013), but also future academic functioning and self-regulation (Bandura et al. 1996; Caprara et al. 2008). The early indications of an increase in confidence together with a reduced number of deferral applications and increased attainment suggests that a move to a block and blend delivery model could have substantial impact on the retention and success of students at the university.

Conclusions

The data from this study and subsequent analysis have clearly indicated the potential for increased engagement and attainment through the adoption of a block and blend model. To maximise the affordances that a move to such a model creates, considerable of curriculum must be completed, thinking beyond content and subject benchmarks, to flexible methods of learning, the creation of social learning opportunities and frequent opportunities to test knowledge and skills gain; in effect building confidence and sense of self as competent and capable learner.

The study suggests that adoption of block or indeed blend as a pedagogy in isolation might have had some, but not all the same positive impacts. Being able to focus and immerse in well-structured and clearly mapped learning one module at a time supported those students juggling a multitude of demands. Blended learning also supported a desirable flexible and accessible approach to learning, and the ability to revisit learning post-live delivery. It also created opportunities for students to develop emotional bonds with their peers and become part of a learning community.

It is also important to consider the confounding factors, which may have influenced changes but also variance of grades, for example, temporary 'safety net' assessment regulations adopted as a result of COVID-19, but also changes to assessment type, which may have influenced student outcomes either negatively or positively.

Students' perspectives were predominantly drawn from level 4 experience, in which students are unlikely to have experienced any other form of teaching at HE. Nonetheless, the findings largely reflect those found by others in which a comparison between block and conventional delivery was possible (Swain 2016), where students largely prefer this method of delivery, having a positive influence upon confidence, time management, learning, achievement and concentration.

Further research into the longitudinal impact of block and blend on student engagement, achievement and retention would be of interest, enabling analysis of the impact of the advantages block and blend seems to present on later years of study, self-efficacy and self-regulation in learning.

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