Blended learning: A review and source reference for the development of strategy, course design and practitioner use

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Abstract

As universities around the world slowly emerge from the lockdowns imposed by the Covid-19 coronavirus pandemic, attention turns inevitably to what the future holds with respect to teaching and learning and the prospect of blended learning as a singular vision of the 'new normal'. As a still emerging but rapidly evolving mode of delivery, however, blended learning is not an uncontested field. Planned, resourced and introduced with sensitivity, care and attention devoted to central themes arising from within the research literature, including strong institutional leadership and a distributed sense of ownership, blended learning nevertheless offers the potential for a truly diverse, flexible, immersive and transformational student experience that no one form of delivery can achieve alone. Systemic pressures associated with the development of any new and fully blended teaching and learning ecology will inevitably challenge existing institutional cultures, norms and values which will require support and time to adapt and change if expectations are to be fully realised.

Keywords: Blended learning, strategic leadership, course design, course evaluation, student experience

Introduction

The review presented here was undertaken in June 2021 as universities across the UK were in the process of emerging from 'national lockdown' in response to the Covid-19 coronavirus pandemic. Covid-19 resulted in immediate and responsive sector-wide changes to practice not only in the UK but around the world, involving for the most part a shift from largely 'traditional' and face-to-face (f2f) provision to remote or distance and online teaching employing a range of digital technologies and pedagogies for the majority of students (Crawford et al. 2020; Marinoni et al. 2020; Purcell and Lumbreras 2021; QAA 2020a; Watermeyer et al. 2020; Pokherel and Chhetri 2021; Wonkhe 2021). With blended learning increasingly identified as the preferred model of choice to underpin the teaching and learning strategies of many institutions as the sector unlocks (with strong advocates of a return to f2f seemingly in abundance), the purpose of this review is to provide insight into the field to inform

policy making, strategic planning and course design going forward, and to offer a useful source reference of interest for practitioners.

While there is sector-wide acknowledgement of the advances and digital transformations made during unprecedented times, and that the higher education landscape has changed and continues to change as a result, even the most recent developments in teaching and learning may no longer be fit-for-purpose (QAA 2020b). As the sector emerges from the current pandemic, the University of Lincoln, among other institutions, finds itself presented with an ideal opportunity to not only redesign and further develop the coherency and cohesiveness of its current digital and blended provision in particular, but to become a sector leader in the field with the potential to establish an exciting new research focus, to diversify its consultancy activity and sources of external research funding, and to attract research students both nationally and internationally.

Beyond the most basic of definitions, however, many unanswered questions about blended learning remain, driven partly in the 'rush' to enhance institutional reputation by remaining digitally and technologically current in the face of ongoing innovation. Blended learning, at least in its 'early days', was often assumed, for example, to offer 'more' than traditional f2f teaching alone, simply because 'it must', but often without any foundation in evidence (Kirkwood and Price 2013; Price and Kirkwood 2014; Bernard et al. 2014). In addition, the adoption of blended learning, sometimes elevating operating cost savings and technology above pedagogy and effectiveness, also assumed an accepted sense of what effective blended learning and effective blended learning technologies looked like, what blend of f2f and digital was appropriate, and that all staff and students were equally qualified and motivated to cope with and adjust to the introduction of often new practices and related ways of working. With such beliefs and convictions often firmly held and promoted, this also needs to be qualified within the context of a rapidly evolving and emerging field yet to prove itself against its more traditional counterparts (Schneider and Preckel 2017). While also tempting to associate blended learning almost exclusively with undergraduate provision, policy, strategy and course design also extends to postgraduate and other forms of provision (e.g. PGT and PGR), about which even less is known.

In the light of time constraints, access to materials and the vast literature-base available, only peer reviewed articles, academic texts and high-level reports are considered here. Keywords entered into Google and Google Scholar alone (e.g. different combinations of blended learning with higher education, teaching and learning strategy, models, course design and evaluation), with a closer inspection of indicated titles and abstracts, resulted in the identification of 57 relevant sources. With the first mention of blended learning often attributed to Paul Myers of the BBC College of Journalism in 2000, but with a more complex history and heritage and almost certainly introduced and adopted earlier and throughout the 1990s (Garrison and Kanuka 2004), the volume of material available on blended learning is simply staggering rendering a sensible review at a subject or disciplinary level beyond the

scope of this work. For that, readers are directed initially to Garrison and Vaughan (2008) and Kitchenham (2011) as starting points or to consider browsing for case-studies within any of the journals highlighted (see Appendix).

Blended learning: Towards a common understanding of terms

One of the many challenges for any newly emerging or rapidly evolving field involves arriving at a shared understanding of terminology and definitions and blended learning is no exception. With almost as many definitions as there are articles on the subject, creating no end of ambiguity, Hrastinski (2019) asked 'What do we mean by this umbrella term and how is it understood?' In a comprehensive review and deconstruction of some of the most frequently used and cited early definitions since the field gained momentum (e.g. 'face-to-face instruction with computer-mediated instruction' and 'the thoughtful integration of face-to-face learning experiences with online learning experiences'), Hrastinski went on to demonstrate how existing definitions tended to focus on physical or surface-level characteristics rather than pedagogical or psychological and came to promote certain models of teaching and learning over others which, in turn, promoted different conceptualisations of blended learning itself.

While many contemporary definitions of blended learning remain as broad and generic as their predecessors, others include at least some elaboration. AdvanceHE (2020) define blended learning as using 'multiple methods to deliver learning by combining face-to-face interactions with online activities' while Jisc (2020a) suggest that blended learning 'provides a combination of face-to-face learning and dynamic digital activities and content that facilitates anytime/anyplace learning'. Jisc (2020b), also refer to blended learning as 'a combination of in-person activities and digital tools and resources designed to deliver the best possible learning experiences'. These are all valuable, 'first level' definitions, of course, emphasising different combinations of student engagement, digital pedagogies and digital technologies with temporal and spatial dimensions to good effect. They also remain open to asynchronous as well as synchronous methods of delivery.

QAA (2020b) considered the use of terminology and definitions at a finer level of granularity with publication of its *Taxonomy for Digital learning*. This is a helpful document as assumptions over the meaning ascribed to commonly used words and expressions can lead to confusion particularly when used interchangeably. This is illustrated in the following examples:

- Blended learning: Commonly abbreviated to BL or bLearning. Learning that takes place partly f2f or in-person, on-site, and partly in a digital environment. Sometimes used interchangeably with hybrid, flexible or mixed-mode learning, particularly beyond the UK (hybrid, flexible and mixed-mode are also often seen by some as earlier and more obsolete terms). The flipped classroom might be considered one particular form of blended learning.

- Face-to-face: Commonly abbreviated to f2f. On-campus or on-site delivery. Used synonymously with in-person which is clearer in terms of engagement and physical requirement. Similarly, on-campus and on-site are used synonymously, the latter clearer where institutions exist over several locations or when 'campus' in the traditional sense is inappropriate.
- Digital: Used originally in connection with data storage or use of computer technology but now considered a more valuable and neutral term (e.g. digital learning, digital environment). Lacks the connotations of other related terms (see below).
- Online: Useful umbrella term in common usage. Focuses on connectivity. Connotations with being only web-based, used at a distance or for convenience. Not a desirable term for all students as a result.
- Virtual: Overcomes some issues with online as offers a different experience. Connotations with artificial, inauthentic or not real. Less desirable for some students as a result.
- Distance or remote learning: An older term predating the more recent 'digital revolution' (e.g. used for correspondence courses). Remote learning implies 'removed' from the provider.

Institutions making greater use of blended learning might also wish to consider whether or not 'blended learning' is indeed the best term at all, suggesting, for example, a principled and 'next generation' alternative that promotes benefits and synergies rather than basic operational descriptions.

A review of reviews

International reviews of literature, including UK examples, provide valuable overviews of topics or areas of interest and blended learning is no exception. Among the most recent and useful include the works of Torrisi-Steele and Drew (2013), Caravias (2015), Ma'arop and Embi (2016), Wahab et al. (2016), Pima et al. (2018), Nortvig et al. (2018) and Raes et al. (2019). While there are also special journal issues devoted to blended learning, these can appear relatively dated with respect to the accelerated pace of innovation. More recently, and at the time of writing, the *Journal of Perspectives in Applied Academic Practice* was in the process of organising a special issue on the transition to blended learning, with further special issues due to appear in future editions of *Education Sciences* and the *British Journal of Educational Technology*.

In the first summary presented here, Torrissi-Steele and Drew (2013) looked at 827 published sources of information to better understand blended learning practices. Despite the number of sources consulted, information surrounding the availability of professional development and support for lecturers was lacking, including why some chose to engage in blended learning fully while others chose more minimally impacting approaches. Torrissi-Steele and Drew determined that the overwhelming majority of publications available, which determined the blended learning landscape at the time, focused more on 'how to' operational matters (69.4%), with fewer

focusing on students (25.6%) and lamentably few on staff (5.0%). In their conclusions, Torrissi-Steele and Drew pointed to the 'dire need for academic development and support that promotes the implementation of transformative blended learning environments' and concern over a 'scholarship landscape' characterised by a 'severe deficiency' of blended literature which would form the basis for the formulation of appropriate strategies to facilitate better implementation.

Following on only two years later, Caravias (2015) began her review of 97 sources of information by highlighting the advent, use and increasing necessity of Learning Management Systems (LMSs), including Blackboard and Moodle, which supported blended learning delivery. The main features of any LMS system for blended learning were considered at that time to provide opportunity for:

- Asynchronous and synchronous staff-student and student-student communication.
- Content development and delivery.
- Formative and summative assessment.
- Class user management and administration.

With reference to the *Blended with Purpose Multimodal Framework* presented by Picciano (2009), which usefully recognises that in blended learning environments students cross generational boundaries and come with different personality types and learning preferences, Caravias went on to present four main conceptions of blended learning teaching among lecturers, not all of which were particularly productive: teaching as helping students develop and apply new concepts, teaching as developing student understanding through aligning media to intended learning outcomes, teaching as providing students with information and teaching as replacing part of the responsibility of the lecturer. Those factors most likely to contribute to the success of blended learning courses were also identified as:

- Course preparation.
- Course design.
- Communication.
- Motivation.

It was also noted that lecturers tended to focus more on what they needed to know to integrate technology into their teaching rather than on the support tools required to enable students to use blended learning environments effectively and efficiently. In essence, and across the literature-base considered, while many lecturers were adjusting to the challenges of blended learning well, opportunities were being lost due to sometimes misplaced beliefs and a lack of expertise.

Considering a single delivery mode in teaching incapable of supporting student engagement, learner preference, social contact and effective learning alone, Ma'arop and Embi (2016) also focused on the challenges faced when implementing blended learning. With only 8 sources of information identified and consulted, and while

focusing on many of the positive aspects of blended learning noted earlier, Ma'arop and Embi also noted that despite enthusiasm for the widespread acceptance of blended learning, lecturers still faced challenges with finding the most effective ways to implement blended solutions. Among the many factors considered responsible were institutional culture (e.g. lack of policy, technology and support), increased workload physically and mentally (e.g. more effort in fewer tasks such as redesigning modules, preparing materials to be uploaded, dealing with student posts and evaluating student work online), workload (e.g. increased time requirements for planning and preparation), difficulty in finding the right blend and balance for their course (e.g. including the inability of students to meet the demands of blended learning which required high level of student discipline and responsiveness) and technological issues (e.g. limited connectivity and bandwidth). Ma'arop and Embi conclude with five recommendations for improvement:

- Conduct a proper needs analysis concerning institution deliverables and support mechanisms prior to designing a blended learning course.
- Select a blended learning model that is most suitable for the institution.
- Provide skills training for lecturers and administrative staff to continuously enhance the effectiveness of delivery.
- Encourage lecturers to work collaboratively with each other by setting up networking systems to share ideas and best practices.
- Create a support system for lecturers and students for dealing with technological issues in order to ensure smooth delivery.

Drawing on 24 sources of information and also focusing attention on the many technological issues associated with blended learning, Wahab et al. (2016) highlighted, like earlier authors, the need for technologically proficient lecturers with strong technical support for both them as well as their students. In one potentially important observation, Wahab et al. also suggested that dedicated student service support centres to help individuals succeed in their new blended learning environments might also be helpful.

In the work of Pima et al. (2018), and their review of 210 sources published between 2000 and 2016, ten different themes reflecting where the focus of blended learning was taking place were identified. While reflecting major advances in only five years since the work of Torrissi-Steele and Drew (2013), the majority of outputs continued to focus largely on instructional design including models and case-studies of best practice (29.5%), while fewer dealt with various aspects of learner outcome (12.9%) and the professional development needs of staff (1.4%). Notably, comparisons between f2f and digital forms of teaching and learning were increasing (8.1%). Remaining themes included disposition, exploration, technology, interactions, demographic and other miscellaneous areas. The thematic analysis was particularly valuable in drawing attention to areas lacking systematic study and a strong evidence-base from which to draw firm conclusions with any degree of confidence, including examples illustrating the importance of blended learning frameworks. The authors concluded that the concentration of research work on models and case

studies instead of frameworks created a vacuum in terms of the successful implementation and use of blended learning in higher education.

Alongside Pima et al. (2018), more recent reviews have tended to be more focused in what they consider. By way of example, Nortvig et al. (2018) looked at learning outcomes, student satisfaction and levels of student engagement in detail (see also Keskin and Yurdugül 2019). From their review of the 44 sources of information consulted, factors associated with generally positive outcomes included lecturer presence in the digital settings, the opportunity for interaction between students, lecturers and content, and the connections between digital and campus-related activities. Interestingly, Nortvig et al. questioned the relevance of research focusing on direct comparisons between individual teaching formats including digital, blended and f2f by pointing to the contradictory findings presented. Instead, Nortvig et al. emphasised that learning in blended environments does not arise simply from the teaching format or the inclusion of technology alone, but from the combined effects of their interaction. This, in turn, required more attention to wider considerations:

- Design, implementation, capacity building and support (e.g. staff and technological limitations).
- Complementarity (e.g. choice of activities, forms of assessment, technologies and the 'blend').
- Lecturer roles and relations (e.g. presence, sense of connectedness, scaffolding, guidelines, facilitation).
- The student experience of setting and context (e.g. satisfaction, anxiety, task value, belonging and learning community).
- Learner characteristics (e.g. demographic, psychological, behavioural and sense of identity).

Similar warnings about over-simplifying blended learning approaches were also echoed by Raes et al. (2019), who considered newer synchronous rather than the more common asynchronous approaches to teaching and learning in the technology-enhanced spaces where blended learning takes place. Raes et al. considered the 47 sources on synchronous blended learning consulted mostly 'exploratory' in nature, but at least focusing on pedagogical and technological challenges as well as course design, the student experience and implementation (see also Serrate-González et al. 2021). Raes et al. offered 'cautious optimism' over the introduction and effectiveness of synchronous blended learning but with more research needed into different 'pedagogical scenarios' and their impact on student outcomes. Raes et al. concluded with suggestions which apply equally to all blended learning environments:

- Include larger and more-diverse samples to improve generalisability, but also to identify meaningful effects.
- Include more empirical and longitudinal data with participants to investigate the impact of group membership and assessment prediction over time.

- Include empirical, real-time data of the learning experience because engagement and social presence/belonging are multidimensional concepts that are difficult to measure.
- Include the effect on student learning and student outcomes across settings that encompass different pedagogical scenarios but particularly of the digital participants.
- Investigate the most scalable approaches with particular regard to technical and pedagogical capacity and limitations.

Despite the Covid-19 pandemic resulting in the rapid advancement of preparations for blended learning within the UK (QAA 2020a), the relative 'infancy' of the field should not be underestimated. Drawing on other examples with which to drive home this point, Graham et al. (2014) and Hapuarachchi (2016) also pointed to limited efforts to understand and develop blended learning theory with which to guide enquiry and practice through the generation of new knowledge, with, as indicated earlier, an over-reliance on modelling by way of compensation. These authors point out that educational technology as a field on its own has also struggled to find its theoretical roots over several decades. While suggestions in the literature have pointed in many directions, the application of Control-Value Theory (e.g. emotional engagement), Self-Determination Theory (e.g. motivation, self-regulation and behaviour) and Activity Theory (e.g. organisational structures and processes) offer considerable potential. Similarly, Anthony et al. (2020) remind us that only a few studies have ever explored the factors related to blended learning adoption by considering the interactions between lecturers, students and administrators together, as well as neglecting to explore the practices involved during the implementation phase.

The 'blend' in blended learning

While existing reviews of literature have been particularly instructive in many respects, the nature and proportion of the 'blend' in blended learning, which might be considered central to the field, remains something of a mystery. QAA (2020) has prepared a useful taxonomy of the student digital experience which helps shed some light on the balance of provision. This is annotated in italics with reference to Graham et al.'s (2013) broadly similar course delivery modalities as indicated. QAA's taxonomy is not unproblematic, however, and some readers may find the term 'augmented' to denote blended learning as a form of 'enhancement' rather than synergistic entirely unhelpful and inappropriate:

- Passive digital engagement: Where little or no aspect of teaching and learning is delivered digitally. *Traditional f2f. Not blended learning.*
- Supportive digital engagement: Where some teaching and learning activities are supported by digital materials (e.g. 20%). *Technology enhanced, primarily on-site and in-person. Not considered blended learning by some.*
- Augmented digital engagement: Where teaching and learning activities are designed with digital learning as a core aspect of the engagement intended to

enhance students' experience of on-site learning (e.g. 30-70%). Students may choose the extent of digital engagement. *Essentially blended learning*.
- Interactive digital engagement: Where digital teaching and learning activities are designed as the primary way in which students engage (e.g. 80%). Choice over on-site engagement limited. *Mostly digital. Not considered blended learning by some.*
- Immersive digital engagement: Where digital teaching and learning activities are the only ways in which students engage. Completely online, no on-site provision available. *All digital. Not blended learning.*

Without exception, all of the reviews here and the literature-base available as a whole also make reference to blended learning's advantages and disadvantages at macro, meso and micro levels of detail (Vaughan et al. 2017; Dziuban et al. 2018). Summarising the major advantages, blended learning:

- Shifts teacher-centred to learner-centred activities and with that the balance of responsibility.
- Suggests greater flexibility of time for staff and students.
- Enhances the student experience, potentially improving student outcomes by increasing motivation, reflection, critical thinking and problem-solving skills, academic writing and other communication skills, collaboration, social interaction and self-directed, independent learning.
- Promotes continuous, seamless and deeper levels of engagement and learning by establishing communities of inquiry, personal and social learning networks and conversations across multiple spaces and times.
- Provides better opportunities for complementarity.
- Improves accessibility, inclusion and widening participation.
- Accommodates the busy schedules of staff and students.

Summarising its major disadvantages, blended learning:

- Can feel overwhelming, daunting or constantly changing and demanding leading to innovation fatigue amongst staff and students.
- Requires high levels of initial and ongoing guidance and support for staff and students which is either unavailable or poorly resourced leading to insufficient skills and capabilities and poor management.
- Leads to an over-reliance on and restricted range of certain technologies and digital learning materials and activities (including *PowerPoint*).
- Leads to the ready uptake of technologies which have received only scant or no evaluation with respect to how they support teaching and learning effectively.
- Presents ongoing and unforeseen technical issues (e.g. connectivity and bandwidth) including a lack of interaction with the central LMS.
- Results in an unsatisfactory blend of f2f and digital time resulting in inconsistent experiences from the differences between the in-person, on-site

and digital student experience, and a loss of community, cohort cohesion and communication.
- Fails to recognise the challenges associated with the teaching preferences of staff and learning preferences of students for different forms of delivery and interaction (e.g. psychological and behavioural).
- Leads to lower levels of student achievement and grades with absenteeism, poor retention and increased dropout.

Policy, strategy, design and development

From its earliest appearance, high-level challenges associated with the institutional adoption of blended learning include its alignment with institutional goals and priorities, resistance to central organisational decision-making and change, and a lack of organisational structures and direction with which to support its implementation (Vaughan 2007). Get this right, however, and blended learning is demonstrably transformative (Garrison and Kanuka 2004; Garrison and Vaughan 2008). From the very outset, how blended learning is conceived inevitably influences policy, strategy, design and development decisions (Vaughan et al. 2017; Medina 2018; Astudillo 2020; Jisc 2020c). Located within the areas of policy, strategy, design and development sits perhaps the earliest and still influential work of Singh (2003) with more recent and equally influential contributions from Wallace and Young (2010), Graham et al. (2013), Porter et al. (2014), Porter and Graham (2016) and Galvis (2018) among others.

Short though it is, Singh's (2003) contribution was insightful for its time. Commenting initially that 'the realisation that a single mode of instructional delivery may not provide sufficient choices, engagement, social contact, relevance and context needed to facilitate successful learning and performance' was nothing short of revolutionary. Singh's minimalist attention to eight considerations for designing and building effective blended learning programs also remains current even today, despite being frequently overlooked. Drawing on *Khan's Octagonal Framework* for its diagrammatic presentation and content (Khan 2005), these are summarised as follows:

- Institutional: Concerning organisational, administrative, academic and student affairs and services (needs analysis).
- Pedagogical: The combination of content to be delivered (content analysis), learner needs (audience analysis) and learning objectives and outcomes.
- Technological: Choice of and access to a learning management system (LMS), a learning content management system (LCMS) and other hardware, software and infrastructure issues.
- Interface design: The user interface of each element in the blended learning program, support for all the elements of the blend, integration of the different elements of the blend, use of each delivery type and the switch between the different types.

- Evaluation: The usability of the blended learning program, capability to evaluate how effective a learning program has been as well as evaluating the performance of each learner, choice of appropriate evaluation methods for each delivery type.
- Resource support: Choice, availability and organisation of appropriate resources to support staff and students (e.g. physical, financial, human and organisational).
- Management: Infrastructure and logistics to manage multiple delivery types, registration and notification, and proportion and scheduling of the different elements of the blend.
- Ethical: Equality, inclusion, diversity, access and digital poverty, data sharing and security.

Wallace and Young (2010) suggested that to avoid the tempting 'course migration' from f2f to blended, institutions should consider a number of important factors including why blended learning is important, how blended learning will be used, the decision-making processes involved including the decision-making processes for individual courses versus programs, and the need for policy modification or new policy where required. Particular policy challenges were considered in the following areas:

- Management and organisation: Determining the fit of blended learning within the stated goals and priorities of the institution, and its faculties and departments, establishing approval processes and criteria, providing support for development and delivery, and establishing ownership.
- Academic: Establishing criteria to assess parity or equivalency of blended courses, establishing criteria to determine workload for development and teaching.
- Students: Identifying and addressing access issues and orienting and supporting students in using technology in blended courses.

Wallace and Young indicated that policy is important because it challenges often 'taken-for-granted' institutional values and norms and in some instances opens debate on the need to 'rethink accepted protocols that may be ill-suited to the educational opportunities that emerging technologies can present'.

In Graham et al.'s (2013) framework for institutional adoption and implementation of blended learning in higher education, a small number of case study institutions were selected to illustrate various stages of adoption. The cases were used to identify and elaborate on core issues related to institutional strategy, structure and support (see later). Drawing on the nature of innovation, five key policies were highlighted:

- Agenda-setting: Identifying organisational challenges that create a need for innovation.
- Matching: Identifying an innovation that addresses the organisational challenge.

- Redefining and restructuring: Modifying the innovation to fit the organisation and reconfiguring organisational structures.
- Clarifying: Stabilising the relationship between the innovation and the organisation.
- 'Routinising': Making the innovation a normal part of the organisation's activities.

Perhaps more importantly, and in terms of strategy, Graham et al. proposed a framework built around consideration of the three Ss mentioned earlier: Strategy (purpose, advocacy, definition of blended learning, policy and implementation), Structure (governance, models and evaluation) and Support (technology, pedagogy and incentives), offering a valuable self-evaluation 3S checklist for institutional consideration (Table 1).

Less than a decade ago, Porter et al. (2014) remained of the view that, despite claims of being the 'new normal', 'relatively little of the current research on blended learning addressed institutional adoption issues' and that 'additional research was still needed to guide institutions of higher education in strategically adopting and implementing blended learning on campus' (see also Thurab-Nkhosi 2018). Building upon the earlier work of Graham et al. (2013), with Graham as a co-author, Porter et al's framework for the adoption, scaling up and monitoring of blended learning expanded upon institutional development while further evidencing the broader 3S framework. The stages of institutional development included:

- Awareness and exploration: Institutional awareness of and limited support for individual faculty exploring ways in which they may employ blended learning techniques in their classes.
- Adoption and early implementation: Institutional adoption of blended learning strategy and experimentation with new policies and practices to support its implementation.
- Mature implementation and growth: Well-established blended learning strategies, structure, and support that are integral to institutional operations.

In their follow-up paper, Porter and Graham (2016) applied *Rogers' Diffusion of Innovations Theory* (the process by which an innovation is communicated among the members of a social system over time) to determine the degree to which institutional strategy, structure and support decisions facilitated or impeded blended learning adoption among staff. In terms of Rogers' five staff categories ranging from innovators to so-called 'laggards', innovators' and early adopters' implementation decisions were significantly influenced by the establishment of adequate infrastructure and support and by recognising that the institution's purposes for adopting blended learning were congruent with their own. Early majority adopters only took on new innovations when they had compelling evidence of their value. The late majority and 'laggards' felt less comfortable with technological innovation and reported having a secure infrastructure, technical support and one-on-one training most important. Interestingly, the more recent work of Howard (2021) investigating

the conflicted identities of lecturers adopting blended learning is also valuable here, with potential barriers associated with blended delivery modes arising from the 'misalignment with established pedagogical beliefs disrupting professional personas', including challenges with professional agency, reduced self-efficacy, undervalued subject expertise, increased administration and greater division between staff and students.

1. Strategy
   - What is the institutional purpose for blended learning? Has that purpose been published and shared? Is the purpose reviewed and revised regularly?
   - What role does administration take in formally advocating blended learning? What role do faculties/departments/lecturers play in formally advocating for blended learning?
   - What groups are the driving forces of blended learning implementation? How are they implementing it?
   - What is the institutional definition of blended learning? Is the blended learning definition agreed across the institution? Has that definition been published and shared? Is the definition reviewed and revised regularly?
   - Has the institution developed a central policy regarding blended learning? Are there different policies regarding blended learning required more locally? Has that policy been published and shared? Is the policy reviewed and revised regularly?
2. Structure
   - Who oversees and regulates blended learning approval and implementation and at what level? Are staff aware of the approval process for blended learning? Are there robust governance mechanisms?
   - What is the current view/policy on blended learning models? How does the institution encourage utilisation of approved blended learning models in course design and delivery? Does the institution use robust evaluation data to review and revise approved blended learning models and course designs?
   - Do students understand what blended learning course designations signify? What is the source and nature of their understanding? How is blended learning promoted and by whom?
   - What evaluation process is currently used for the blended courses? Who conducts the evaluation? How is the evaluation data used? Are the evaluations uniform?
3. Support
   - What level of technical support does your institution resource and provide? Does your institution offer technical and pedagogical support specifically for lecturers implementing and students using blended learning?
   - What are the institutions blended learning developmental processes? Who oversees the process? Is that process published and shared? Is the process reviewed and revised regularly?
   - What incentives are available for designing and implementing a blended learning course (e.g. workload)? Are staff aware of the incentives?

Table 1: Self-evaluation checklist (after Graham et al. 2013)

In the comprehensive review of good practice and frameworks for strategic decision-making for blended learning, Galvis (2018) also offered the following conclusions and suggestions:

- Make well-informed, strategic decisions to provide focus for the best courses of action concerning the integration of blended learning as a complement to other modes of delivery.
- Select sustainable and expandable blended learning initiatives that add value and competitive advantage in higher education require institutional commitment.
- Pilot test blended learning at the course level to help gain institutional knowledge and commitment (or 'proof of concept' if not possible).
- Recognise that blended learning requires creating appropriate 'ecologies' for staff to (re)design and offer courses that get the best from f2f and virtual learning environments, with time, cost, pedagogical and technological support and quality control important considerations.
- Accept that student-centred teaching using flexible learning environments implies deep cultural changes for staff, students and administrators alike.
- Use operational teaching models which refer to the sets of elements that make it possible to implement educational models. They include decision-making processes, organisational structures to articulate the processes and strategies to manage and evaluate staff, students and resources.
- The careful conception and development of operational and educational models can help to reduce uncertainty.
- Decisions concerning operational and educational models are interrelated and frame course designs, serving to align technologies, organisational structures and change strategies with desired blended learning vision.

Reinforcing these earlier contributions, Jisc (2020c) also remind us that in terms of strategy for blending learning to be effective at course and modular level, it is essential to meet organisational drivers and goals by being clear about rationale, purpose and audience, to design from scratch rather than from what exists already, to create learning environments for learner needs and preferences, to support blended learning ensuring synergy and how the teaching strategies, instructional materials, activities, resources and component parts fit together as a whole, to facilitate collaboration and communication within and outside of contact time, to create opportunities for ongoing monitoring, feedback, evaluation and measures of impact and success, and for orientation including the management of change and the management of expectation.

Evaluation of blended learning programs

Despite the importance of monitoring and evaluating blended learning at every stage from design and development to delivery, involving staff, students, administrators and other appropriate stakeholders, there remains surprisingly little detailed and

systematic study in this area (Bliuc et al. 2007; Vaughan et al. 2017). According to Savoie-Roskos et al. (2018), and as might have been predicted, many lecturers continue to receive limited input on how to evaluate blended learning programs effectively, relying often on existing and generic f2f or digital end-of-module/semester surveys administered separately instead, few of which are suitable or offer any meaningful insight with respect to the complexity of fully integrated provision and its outcomes. Savoie-Roskos et al. also went on to suggest that lecturers should consider utilising a variety of course evaluation methods, formative and summative, as well as qualitative and quantitative, to ensure course learning objectives and student requirements are being met and courses themselves improved. It might also be added that students should also be involved at every stage of the development process, with evaluation proceeding for diagnostic purposes and for the purposes of scaling-up and rolling out trial or pilot projects. As illustrated by Picciano (2009), blended learning does not involve simply adding digital technologies to an existing f2f course or merging existing provision together. Instead, blended learning is like mixing paint, with blue and yellow producing green, an entirely different product with entirely different properties.

Perhaps the single most important study in blended learning evaluation comes from Bowyer and Chambers (2017) who present and review a number of evaluation frameworks already in existence, while noting that most of these are case-study or survey specific with no one evaluation framework seen as being any better than any another. Drawing on the considerations of Pombo and Moreira (2012), Bowyer and Chambers suggest that all evaluations should ask at least four basic questions:

- What is the purpose of the evaluation (e.g. to improve student engagement or overall course quality)?
- Who should be involved (e.g. lecturers, students, administrators)?
- How and when should the evaluation take place (e.g. methods of data collection, during a course or at the end)?
- What exactly is being evaluated (e.g. teaching, learning, perceptions, expectations, outcomes, resources or assessment)?

Bowyer and Chambers also noted that despite the universal importance attached to integration, the majority of evaluation tools available tended towards the digital component (e.g. the Web-based Learning Environment Instrument, the Hexagonal E-learning Assessment Model, the E-learning Framework and the Technology Acceptance Model). Ginns and Ellis (2007), despite noting the problem associated with integration, also developed one of the earliest fully validated research questionnaires for the digital component, focusing on quality of teaching, resources, student interaction and workload (Table 2). Ginns and Ellis concluded that student-focussed methods of evaluation were possible in the relatively new teaching context of blended learning, and that the quality of areas probed was associated with the quality of student approaches to study and learning outcomes. Their work also indicated that lecturers in blended learning contexts needed to focus not only on the technical capacities and functions of on-line materials and activities but to also

understand students' perceptions of this part of the learning environment and how successfully it supported students across the whole course. To get the most out of digital learning in blended contexts, teaching strategies that also clarified the value of student postings and the value of interaction between the students and lecturers online were thought most likely to improve both the student perception and their grades.

1. The lecturer helped to guide on-line discussions between students.
2. The lecturer used the on-line environment to keep students informed about results.
3. The lecturer's responses on-line motivated me to learn more deeply.
4. The lecturer used the on-line environment to regularly update students about relevant course information.
5. The lecturer's interaction with me on-line helped to get the most out of my learning.
6. I didn't receive enough helpful on-line feedback from my lecturer. (reversed)
7. The lecturer helped to focus on-line discussions between students.
8. The on-line activities helped me to understand the face-to-face activities on the course.
9. The on-line learning materials helped me to learn during face-to-face situations.
10. The on-line teaching materials were designed to try to make topics interesting.
11. The on-line teaching materials were extremely good at explaining things.
12. The on-line activities are designed to get the best out of students.
13. The sheer volume of work for the on-line component of course meant it couldn't all be thoroughly comprehended. (reversed)
14. The workload for the on-line component of this course was too heavy. (reversed)
15. I generally had enough time to understand the things I had to learn on-line.
16. Other students' on-line submissions encouraged me to investigate further sources of information.
17. Other students' on-line submissions helped me understand my ideas from a new perspective.
18. I interacted with students' on-line postings/submissions even if they weren't assessed.

Table 2: Student experiences of digital provision (after Ginns and Ellis 2007)

Despite the general lack of any fully integrated and robustly validated evaluation tools and approaches remaining somewhat problematic, Poon (2013) concluded from interviews with lecturers and data from student questionnaires, that, for lecturers who intend to use blended learning in the future, it was suggested that teaching styles should be kept simple but exploratory, with different courses and modules requiring different forms of blended learning to suit, and that adopting a flexible approach was therefore important. It was also suggested that lecturers should attempt to understand how students access and use materials and resources to design blended learning modules that match student preferences and expectations. Poon concluded by recognising that when developing new blended learning programs, training and support for staff and students should include evaluation. Interestingly, Kintu et al.

(2017) recently investigated learner background characteristics and course design features finding that while both contributed towards the perception of an effective blended learning environment, few predicted learning outcomes among participants at all. Ellis and Han (2018) also noted that the extent to which some students on some courses engaged with the digital component alone was related to how integrated they perceived the online environment to be with the course itself, the perceived amount of workload and benefits from the digital component, and their own preference for mode of learning (e.g. f2f or digital). While Hann and Ellis (2020) later went on to prepare a more recent adaptation of their original work with the development and validation of a Perceptions of the Blended Learning Environment Questionnaire (PBLEQ), this seemed to explore the extent to which the digital component complemented the f2f only, rather than evaluate a fully integrated program. Nevertheless, Hann and Ellis claimed the PBLEQ to have potential to help reveal student perceptions of blended learning environments across diverse academic disciplines.

Conclusions

Despite its widespread introduction and accelerated evolution in higher education throughout the late 1990s and beyond, the very nature of blended learning remains something of a mystery, creating opportunity for a more considered, researched, evidence-based and systematic approach to planning, course design and course delivery, at least for the majority of traditionally campus-based or on-site students experiencing blended learning as the 'new normal'. By no means an uncontested field, and still requiring careful consultation and discussion, both strategically as well as operationally, areas for immediate consideration might include nomenclature, definitions, purpose, cost-benefit analysis, modelling the 'blend', modelling provision, digital tools and technologies, related pedagogies including curriculum, governance and validation, equality, access and ethics, evaluation, workload modelling, resourcing, student growth and capacity, physical and digital teaching and learning and social spaces, awareness raising, support, decision-making, communication and voice, collaboration, relationships and monitoring.

Nevertheless, blended learning offers the potential for a truly diverse, flexible, immersive and transformational student experience that no one form of delivery can achieve alone. While studies suggesting clear and statistically significant gains in measurable grade outcomes as a result of blended learning remain few in number, the qualitative and other educational advantages and benefits for staff and students should not be overlooked. Positioning blended learning at the heart of any teaching and learning strategy post-Covid will also require strong institutional leadership and vision, a shared sense of commitment and ownership, and investment, if institutional cultures, norms and values are to adapt and change and expectations are to be fully realised, including improvements in the digital literacies of students and the enhanced employment opportunities, career prospects and social mobilities arising as a consequence. In terms of 'next steps', institutions looking to further develop or to expand upon their existing blended learning provision would do well to begin in

consultation with its key stakeholders and a comprehensive and robust review of impacts and implications at the highest strategic and policy levels, adopting an agentic perspective with staff and students across all academic and professional services areas directly affected. Above all else, blended learning should be introduced with care and sensitivity, exploiting the synergies on offer, yes, but avoiding a simple 'migration' of programmes with little other than a 'juxtaposition' of parts.

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Appendix

Higher education journals focusing on or publishing digital/blended/electronic learning

Most general higher education journals contain some material on blended learning and should be consulted as required (e.g. Higher Education, Higher Education Research and Development, Journal of Further and Higher Education, Studies in Higher Education and Teaching and Learning in Higher Education). The online site *educationaltechnology.net* contains a number of resource areas of relevance including a list of specific peer reviewed educational technology journals which publish articles on blended learning. A selection summarising the breadth and depth of the field is summarised as follows:

- Assistive Technology
- All Ireland Journal of Teaching and Learning in Higher Education
- Australian Educational Computing
- Australasian Journal of Educational Technology
- British Journal of Educational Technology
- Canadian Journal of Learning and Technology
- Computer Assisted Language Learning
- Computers & Education
- Computers in Human Behavior
- Contemporary Issues in Technology and Teacher Education
- Current Issues in Emerging eLearning
- Education and Information Technologies
- Educational Technology Research and Development
- Educational Technology and Society
- E-Learning and Digital Media
- E-Learning and Education
- Electronic Journal of e-Learning
- European Journal of Open and Distance Learning
- IEEE Transactions on Learning Technologies
- Interactive Learning Environments
- Interdisciplinary Journal of e-Skills and Lifelong Learning
- International Journal of Computer-Supported Collaborative Learning
- International Journal of Educational Technology in Higher Education
- International Journal of E-Learning & Distance Education
- International Journal of Educational Technology in Higher Education
- International Journal of Emerging Technologies in Learning
- International Journal of Innovation in the Digital Economy

- International Journal on E-learning
- International Journal on Innovations in Online Education
- The International Review of Research in Open and Distributed Learning
- Internet and Higher Education
- Issues and Trends in Educational Technology
- Journal of Computing in Higher Education
- Journal of Computer Assisted Learning
- Journal of Educational Technology & Society
- Journal of Interactive Online Learning
- Journal of Interactive Technology and Pedagogy
- Journal of Online Learning and Teaching
- Journal of Open, Flexible and Distance Learning
- Journal of Research on Technology in Education
- Journal of Teaching and Learning with Technology
- Journal of Technology and Teacher Education
- Journal of Technology Education
- Language Learning & Technology
- Learning, Media and Technology
- Open Learning: The Journal of Open, Distance and e-Learning
- Quarterly Review of Distance Education
- Research in Learning Technology
- TechTrends: Linking Research and Practice to Improve Learning
- Technology, Pedagogy and Education
- The ACET Journal of Computer Education and Research