Whither the LMS: Is the LMS Still Fit for Purpose?

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Abstract

Learning management systems (LMSs) have long been adopted by tertiary education providers to be the conduit through which courses are delivered. However, debates about the capacity of the LMS to meet all the required current and future needs of both students and educators have become more pronounced over the past few years, particularly given the rapid shift to online learning during Covid-19. This qualitative study aimed to examine practitioners' current experiences in using the LMS for formal teaching and learning in tertiary environments. To discern the possibilities and issues, a focus group was held with fourteen practitioners from Australasia (Australia and Singapore), Canada, and the UK (England and Scotland) attending virtually. Adopting a novel and recognised approach to thematic analysis, a Delphi process was adopted on the de-identified webinar and chat transcripts. Analysis revealed several key themes ranging across pedagogical, technological, and managerial issues with the LMS. The findings in this paper have become even more pertinent as a result of Covid-19 with institutions urgently reviewing standards for teaching in the LMS whilst also reviewing their overall technology ecosystems to ensure a suite of complementary teaching and learning tools to enable best teaching and learning practices. It appears the LMS still has a key role to play in contemporary learning ecosystems.

Practitioner Notes

1. The role of Learning Management Systems (LMS) is being called into question in terms of meeting teaching and learning needs in Institutes of Higher Education. Covid-19 has only intensified this questioning.
2. Practitioners working in an institution's LMS come from a range of roles and perspectives, from management, educators and learning designers and this fact can lead to competing and conflicting perspectives on the use of the Learning Management System.
3. Research literature and teaching practices are calling into question whether the LMS is fit for purpose. The learning needs of our students are of paramount performance here, particularly in terms of students having agency in their learning.
4. During and in the aftermath of the global disruption of Covid-19, institutions are reviewing minimum pedagogical standards for teaching in the LMS, and this work is intensifying questions about the role of the LMS in teaching and learning.
5. We need to think in terms of an institutional vision for a learning ecology that balances the diverse needs of multiple stakeholders with a vested interest in the teaching and technology space, not least of all, students themselves.

Keywords

Introduction

Learning management systems (LMSs), or virtual learning environments (VLEs), are adopted by tertiary education providers to be the conduit through which courses are delivered. Over the past few decades, they have become big business as various companies develop products to serve the higher education sector. Over this time, numerous studies have been conducted on the use of the LMS from a teaching and learning perspective (Emelyanova & Voronina, 2014; Koh & Kan, 2020; Koh & Kan, 2021; Makumane, 2021; Sinclair & Aho, 2018; Tawalbeh, 2017), providing insightful contextual suggestions on how students' perceptions of the LMS could be enhanced through quality pedagogical practices (García-Cabrero et al., 2018; Hamutoglu, 2020), including students' attitudes to online learning (Ferrer et al., 2022). Meanwhile, debates about the capacity of the LMS to meet all the required stakeholder needs have become more pronounced in recent years (Masterman, 2017), particularly following the Covid-19 disruption and subsequent general move to online teaching (Green et al., 2020). Stakeholder needs is an important focus here, as the LMS potentially serves different purposes for different stakeholders. Although there is a focus in this paper on learning and teaching practice, we have purposely not ascribed a definition to the LMS because we did not want to pre-empt how the LMS was understood by the research participants.

The question of whether the LMS is 'fit for purpose' is a vexed one with as many multiple interpretations of what the term means, as multiple viewpoints on whether the LMS is still fit for purpose or not. In this context, a key question of the role of the LMS in teaching and learning practices within institutes of higher education is how institutions make decisions about whether the LMS serves all their needs. In terms of teaching and learning practice, one component relates to the minimum standards that institutes of higher education specify for courses/units delivered through their LMSs. These standards are common in institutes of higher education in Australia and, likely, in institutions across the world. For example, Edith Cowan University has 'Standards for Technology Enhanced Learning and Teaching' (Edith Cowan University, n.d.), and Western Sydney University has the Digital Learning Threshold', which are described as "standards for quality design and enhancement in our Online Learning Environment (OLE), vUWS" (Western Sydney University, (n.d.).

Universities had established these minimum standards for the use of the LMS prior to Covid-19. However, Covid-19 entailed a complete shift to online learning, which brought to the fore the capacity of the LMS to meet the teaching and learning needs of diverse faculties, diverse schools, and diverse disciplines. Covid-19 also brought about a review of established minimum standards for course and unit sites within the LMS to ensure pedagogically sound teaching and learning practices along with a quality learning experience for students. One of the authors of this paper works at a higher education institute that has redefined the minimum standards for teaching and learning in the

LMS, including specifying the pedagogical principles that need to be embedded in unit sites. This work, which has taken more than fifteen months to complete, points to the absolute centrality of the LMS within the institute's strategy for the delivery of teaching and learning. Thus, whilst the LMS has been declared 'dead' by some (Cohen, 2010; Damato, 2017), the latter ultimately concluded that "the value the traditional LMS delivers isn't going away, but we've got to make a shift in the way we define it, so we can accommodate what today's users need" (para 12). The advent of Covid-19 has only exacerbated that objective, and the findings of this paper go some way towards exploring what might be involved in that change process.

Overall, then, the question of whether the LMS is still fit for purpose has become even more topical because of Covid-19. Furthermore, whilst LMSs can and do meet the minimum standards for teaching and learning, as specified by institutes of higher education, Covid-19 has highlighted some key pedagogical areas where the LMS does not do so well. One of these areas is teamwork and during Covid-19, at least some institutions started to make use of Microsoft Teams to facilitate student teamwork activities (Tan et al., 2022). Whilst this is just one example of a complimentary technology for the LMS, it does point to the importance of institutions reviewing their technology eco-systems in the context of their new or revised minimum standards for teaching and learning. In addition, Covid-19 transformed the conception of learning spaces in a broader sense (Guppy et al., 2021), with the LMS being a key element of the way in which learning spaces and learning experiences have become redefined, again pointing to the continued and current importance of the LMS in overall learning ecologies (Li et al., 2022). This paper reinforces the importance of the LMS for teaching and learning practices whilst, at the same time, highlighting that the teaching and learning lens is one amongst several institutional lenses on the LMS.

Method

A tried and tested approach to gain insights into the experiences of those working with similar technology, but in different contexts, is the focus group. Focus groups (FG) are interactional (Tadajewski, 2016), informal facilitated discussions among a group of people with experience in and around a given topic (Acocella, 2012). As such, they are useful in qualitative data collection. The session facilitator guides the discussion or debate around related guiding questions, and practitioners draw from their own daily lived experiences in the discussion (Tadajewski, 2016). This article reports on the findings of an FG in which the following research question was posed: Is the LMS still 'fit for purpose' as the main conduit for teaching and learning in a higher education context? The resulting data were then used as part of several refining cycles of the Delphi process. The question posed was deliberately broad to give practitioners scope to interpret the question (and the LMS itself) according to their own lived experiences with the LMS. Our findings show the merit of defining a broad question as it yielded multiple interpretations of 'fit for purpose', thereby gaining insights into the thoughts and feelings of individuals and using exemplars from the practitioners 'own narratives (Sutton & Austin, 2015).

In 2018, through an Australasian professional organisation, a call was disseminated to participate in an online 'fika' FG to discuss the key research question about whether the LMS was still fit for purpose. The Swedish word 'fika' refers to chatting over a break, in this case an inclusive group discussion via live webinar. The research team had no control over who participated as participation was open to anyone who wanted to take part in the session. Answering the open

invitation, fourteen practitioners from Australasia (Australia and Singapore), Canada and the UK joined in the lively discussion. All practitioners were involved in teaching and learning in a range of roles, including several learning designers; one practitioner had recently been a graduate student so was able to add insights from a student perspective.

This research approach differs from research that conducts a focus group designed to ensure a representative sample of practitioners across, for example, age, gender, socio-economic background, and roles with respect to the institutional use of the LMS. However, the fact that practitioners were members of an Australian professional organisation for the use of technologies in teaching and learning, meant that each of them chose to attend because they had knowledge of and/or an interest in the role of the LMS within institutes of Higher Education. With this point in mind, our aim was not to gain a fully comprehensive and representative sample of views on the use of the LMS within institutes of higher education. Rather, the aim was to generate findings that might inform current thinking on the use of the LMS and lead to further research foci and questions that would be important in the current debate on the place of the LMS in teaching and learning.

The 50-minute conversation was held online on Wednesday 21 March 2018 to accommodate the various practitioner time-zones. The session was facilitated by a host and a moderator, guiding discussions verbally and visually via shared PowerPoint slides around the key research question ("Is the LMS still 'fit for purpose' as the main conduit for teaching and learning in a higher education context?") and related sub-questions. These sub-questions included: "If not, what hybrid or alternative solutions are people coming up with?"; "Is the LMS forcing conformity in terms of institutional teaching and learning practices as well education-related administrative processes?"; "Do institutions find themselves adapting to the model of teaching and learning embodied in the LMS rather than vice versa?"; "With the move towards hybrid (more flexible) solutions, there is also the drive towards learning analytics which suggests a continuing role for a large centralised system (i.e. the LMS) to collect the data required. Are these requirements incompatible with each other?"; "Students continue to use apps external to the LMS regardless, such as social media. Sometimes this use is in opposition to institutional policy when used for formal learning (as opposed to informal learning). How do we respond?"; and finally, any closing thoughts? The host and moderator ensured opportunities for all to participate, and encouraged debate through the caveat that there were no wrong responses in the discussion, and all viewpoints were welcome and indeed encouraged. This also went some way in avoiding group think, which is more common in traditional focus groups (Krueger, 2014). Practitioners were advised that the session would be recorded, and the recording made available on a public website. This complied with the ethics approval obtained via (Monash University Human Ethics Committee (Project ID#: 18452). In addition to their verbal contributions, practitioners also added comments in the webinar chat. Both the webinar (WR) and chat (CH) transcripts were subsequently de-identified by the research lead, and participants were assigned codes, before the thematic analysis was performed by the broader research team.

For the thematic analysis of the two transcripts, a Delphi process (Bazeley, 2009; Brady, 2015) was adopted. A Delphi is a structured process for the purpose of consolidating group consensus, by means of a series of iterative 'rounds' for refinement (Willems, Sutton & Mayberry, 2012), which makes it different from traditional focus groups. The Delphi approach was chosen over other thematic analysis approaches for several key reasons. The first was practical and related to the

geographic dispersion of the research participants, their time zone differences, and the logistics of balancing individual work constraints. The second was that the process allowed each individual researcher an individual deep immersion into the two lengthy transcripts to form their own opinions of the data and debate their considerations with the broader team. Finally, the Delphi process provided a unique iterative opportunity for collaborative analysis over an extended time span. This can be seen as both a positive characteristic and a limitation in adopting a Delphi process for thematic analysis.

In a Delphi process, there are usually three rounds, and at the end of each round, group feedback is summarised and presented back to for further consideration to reach final group consensus. This iterative approach can be justified to overcome a challenge in thematic analysis, potentially resulting in "shallow reporting in which themes are typically presented using a brief summary and with a quote for each point as 'evidence' for the theme" (Bazeley, 2009, p. 9). Such approaches do "not convey how widely [a particular] theme might have applied, or for whom, or how it links to other themes. Themes only attain full significance when they are linked to form a coordinated picture or an explanatory model" (ibid).

In Round 1 of the Delphi, the researchers individually examined both the de-identified webinar and chat transcripts using the process suggested by Brady (2015), noting first the 'example of response', and the key 'concepts' they believed the quote pertained to, followed by the 'categories' these concepts might belong to plus suggesting the 'definitions of the category', and finally, what the 'overarching theme' might be? Round 1 of the Delphi process included three months of reading time of the transcripts for familiarisation (February to April 2019), with the individual thematic analysis taking place over two months between May and June 2019. All the individual responses from Round 1 were subsequently collated into a single summary document by the lead author; any replication was then synthesised.

Delphi Round 2 took place over two months between September and October 2019, with the individual researchers using the Round 1 summary plus the de-identified transcripts to suggest additions or changes. These individual contributions were collated into the Round 2 summary document by the lead author. While Covid-19 disrupted the process, Delphi Round 3 analysis took placed in December 2020, whereby the Round 2 summary formed the basis for the research group to reach final consensus on the themes, categories, definitions and concepts, including exemplar quotes. The lead author then finalised the qualitative findings. Thus, the Delphi process facilitated both an identification and honing of the broad themes across the cohort of participants, and a diversity of elements and opinions that would fit under those broad themes. The iterative process is what gives this Delphi method its strength, because it illuminates the depth of reflection behind the broad themes.

Findings

Through the Delphi process, four key themes and related categories, definitions, and concepts, were discerned:

- LMS and technology-enhanced learning;
- Student learning via the LMS;
- Teaching via the LMS; and

- Role of management and senior leadership in LMS decisions.

A fifth theme of 'Data and security' was also identified; however, this has been folded into our discussion of the other themes. This does not suggest it is of less importance; rather that data security is not the primary focus of this paper, which is more focused on teaching and learning practices in the LMS.

LMS and technology-enhanced learning

The first theme, labelled 'LMS and technology-enhanced learning', was further divided into four categories:

- definition of an LMS;
- fit for purpose;
- diversity of staff and student needs; and
- commercial versus open source LMSs.

In the first category, the LMS was broadly defined as an online learning environment that allows students to locate learning materials and activities related to their studies from any location with internet access. However, the data showed considerable diversity of opinion about the purpose of the LMS and its key emphasis: is it *"administration of learning or learning itself? Or both?"* (CH; Practitioner 4). This came out of frequent discussions around its limitations, and a sense that the LMS was often *"pushed beyond its strengths"* (CH: Practitioner 8). The latter further related to the notion that LMS technologies were felt to be outdated and not agile enough. In other words, there was considerable scepticism about its 'fitness for purpose' (second category in Theme 1). However, this response was complicated by the wide variety of different lenses through which 'fit for purpose' was viewed, including the LMS's purpose in a general sense, its institutional purpose, its purpose from a student's perspective, its purpose from a staff perspective, and its purpose as a content repository. The staff and student perspectives were even further complicated by the diverse needs identified *amongst* both students and staff, hence justifying a separately coded category of diversity of staff and student needs (third category), for as one practitioner noted: "*How staff use it and what students need from it can diverge*" (CH; Practitioner9).

The fourth category of 'commercial versus open source' related more to the organisational choices and the business cases around cost versus benefit of whether to adopt an open source LMS option such as Moodle or a commercially licensed product such as Blackboard, and how this in turn aligned with the perceived fitness for purpose. Five additional concepts were identified in the data under this category:

1. commercial options;
2. limitations of commercial options;
3. limitations of open source or customisable equivalents;
4. comparisons of inflexible versus flexible option; and
5. open source as more flexible and customisable.

Again, a wide range of perceptions was identified here, with one practitioner making a strong case in favour of open-source affordances: "*I run my own Moodle site where I have complete flexibility to call out the user community if there's something that I feel I want as part of my pedagogical*

design that I can't do on my own" (WR; Practitioner 7). The starting point for this practitioner was clearly pedagogical requirements, which was echoed by many others. However, reflecting diversity of perspectives, other practitioners were not as convinced that open source was the answer in that respect: "*open source is not always as open as it seems – prone to sharp practices as anything else*" (CH; Practitioner 11).

Student learning via the LMS

The second theme revolved around student learning via the LMS. Four main categories emerged:

- student learning experience;
- student-centred learning;
- learning communities; and
- student agency.

Each of these categories were further divided into more specific, but related, concepts that were frequently mentioned. For example, category 1 ('student learning experience') was further subdivided into:

- student experience, which is "*heavily dependent on its use by academics*" (CH; Practitioner 3);
- keeping pace with what students want from technologies, which relates to the perception that students are immersed in technology and use what they want, which is often outside of what the LMS offers; and
- student perspective, where some practitioners felt that students just saw the LMS as a 'vehicle for downloading PDFs'.

The second category in Theme 2 – 'student-centred learning – captured the sense that the LMS was not perceived as being properly equipped for student-centred learning, or being adequately used in that sense, but was rather a space *"where we do stuff to students"* (CH; Practitioner 5).

By extension, learning communities (the third category) were seen as an important part of student-centred learning and social-constructivist pedagogies, and the data showed major doubts about the ability of the LMS to provide an appropriate space to develop learning communities.

Finally, the fourth category in Theme 2 captured the notion of student agency. It was ultimately sub-divided into:

- the importance of the LMS being customisable;
- the LMS's affordance of students creating their own learning resources;
- student autonomy ("*they are not spaces where students have autonomy where they can express themselves*" [WR; Practitioner 1]);
- student voice, which is related to student autonomy as it refers to students having some control over their own learning and learning environment; and
- student restrictions in the LMS, which then reflects on the other four concepts.

Overall, considerable concerns were raised under this theme about the fit for purpose (or lack thereof) of the LMS to support student learning.

Teaching via the LMS

The third theme – teaching via the LMS – contained five categories:

- teaching conformity;
- learning design;
- staff capacity for using the LMS;
- teacher agency; and
- institutional restrictions that are placed on the LMS.

The category of teaching conformity related to the role of the institution in requiring alignment with institutional teaching and learning approaches, in contrast to institutions that chose an LMS to allow flexibility in approaches to teaching and learning. With respect to flexibility, one respondent reported that, "*open-source solutions were important so that we could build in the flexibility that we needed to support different um…ways that people want to teach or use the LMS*" (WR; Practitioner 4).

The category of learning design yielded responses that, broadly speaking, ranged across the rather traditional uses of the LMS to replicate the lecture-tutorial model through the posting of PowerPoint presentations and use of the discussion forums, in contrast to the possibilities of the LMS to support more innovative approaches to teaching and learning. Thus, one practitioner reported that, "*[It's the] lecture-tutorial model transposed to LMS [equals] PowerPoints and discussion forum. Use has not extended far beyond this*" (CH; Practitioner 1), whilst another respondent noted: *"If we actually thought about what we wanted to do with teaching and learning, the LMS is actually quite capable of supporting a whole range of approaches, from problem-based to case based to a project-based, to whatever*" (WR; Practitioner 1).

Staff capacity was defined as the varying ability of educators to build a learning environment in the LMS; several responses showed staff attitudes towards teaching and towards the LMS impacting significantly on the uptake and use of the LMS. The following quote highlights this:

> *I know amongst my own colleagues...for many years a lot of academics were just simply not interested. I mean the LMS was there, they use it as a depository because in a way they're forced to, but they're not really interested in using technology in their teaching at all. Ah, they don't really see the need; they feel their traditional approaches are good enough.* (WR; Practitioner 7)

The importance of training staff was also noted. For example:

> *… there's an added issue there that even if we are bringing in more things to [use in] the LMS, we still need to be able to train people to use it effectively and that has resource implications as much as anything else.* (WR; Practitioner 2)

The category of teacher agency yielded responses that talked about teachers making use of alternative technologies to the LMS and there was a perception of these people as mavericks. For example, "*in some places I have worked, academics have walked away from the LMS and done their own thing on the open web - I call this the outlaw movement*" (CH; Practitioner 11). "*Wild West! Teacher as rebel!*" (CH; Practitioner 4). "*LOL - bring on the cowboys/cowgirls - we need pioneers and a way to learn from possible creative solutions*" (CH; Practitioner 8).

Furthermore, there was an acknowledgement of, "*the fact that whether we want to admit it or not disaggregated solutions are in existence and people are using them*" (WR; Practitioner 8).

The final category related to institutional restrictions on the use of the LMS and covered the awareness of the institutional consequences that might result from seeking out and using alternative technologies to the LMS. For example:

> *If it does go to the ombudsman...their position is: "what were your policies, and did you follow them?" And if there are any gaps then they rule in favour of the students [which] makes universities scared and overstate policies and procedure.* (CH; Practitioner 9)

Role of management and senior leadership in LMS decisions

Three categories emerged under the fourth theme of the role of management and leadership in making decisions about the LMS:

- administrative considerations as the primary driver for the choice of the LMS;
- commercial considerations as primary drivers of LMS choice and functionality; and
- technocratic considerations as primary drivers of LMS choice and functionality.

The category of administrative considerations driving the use of the LMS yielded several perspectives, including senior management wanting LMS usage to evidence their KPIs, which would be more difficult if staff made their own technology choices. University control came up again in terms of a mandate to upload all assessments to the LMS. For example, "*now we actually have to have everything in real time up on the LMS, and that's another big move by the university to centrally, again, control and restrict us and in no sense is [this] removing flexibility*" (WR; Practitioner 7). There was a further line of thought that the fact of administrators being in control of the LMS meant that staff were not making best use of the system. For example:

> *But the tools that the LMS has got inside it weren't being used as much and of course that's difficult if administrators have control of it, and it means that the academics even if they do know about them, they don't have the opportunity to get to know [such tools]* (WR; Practitioner 4).

Category two, relating to commercial considerations as the primary drivers for the choice of LMS and LMS functionality, yielded responses about how cost was a primary driver in not purchasing 'add-ons' for the LMS. The question of cost was also seen as a reason for sticking with the LMS as opposed to moving to alternatives. For example, "*hybrid or alternative solutions that people are coming up with and at [some institutions] they were encouraged not to [use] because of the money spent in analytics*" (WR; Facilitator 2). The cost of migrating from one LMS to another appeared to play a part in institutions sticking with their current LMS. For example:

> *I don't think they wanted to wear the cost of what a migration might mean in relation to everything else the Uni is trying to do. So, it's really hard to take a teaching and learning focus when there's other business practices coming over the top.* (WR; Practitioner 9)

Discussion

Based on the analysis of results and discussion amongst the researchers, the following key findings and teaching and learning implications were identified (Table 1).

Table 1. *Summary of key findings and teaching and learning implications*

Key findings	Teaching and learning implications
1. The challenge for the LMS to meet the needs of multiple stakeholders.	1. Senior management needs to recognise that multiple stakeholders have a vested interest in the Learning Management System (LMS).
2. Lack of clarity how institutions could leverage on the LMS to conceptualise new approaches to learning and teaching.	2. Institutions need a teaching and learning vision for the LMS if it is to be used effectively and widely by teaching staff.
3. Lack of fundamental understanding of how LMS could support 'quality teaching and learning' as part of a technology ecosystem.	3. The Learning Management System is one tool amongst many and COVID has accelerated the adoption of alternative technologies.
	4. Institutions need to map their technology ecosystems with a focus on what constitutes good teaching and learning.

Key finding 1: There is a challenge for the LMS to meet the needs of multiple stakeholders

Specifically, the challenge seems to focus on how the LMS could fit its institutional purpose, its purpose from a student's perspective and its purpose from a staff perspective. As Marshall (2018) notes, "many of these systems are compromised by their focus on organisational needs rather than those of the learner" (p. 262). For example, from an administrative perspective, they provide a certain level of coherence, control, and perceived security. This has been called the LMS as the 'walled garden' (ANON, 2011). Thus, when Zanjani et al. (2017, p. 19) talk about learning free from time and space limitations, they significantly add "in a secure environment". They then develop a list of affordances of LMSs: they facilitate the organisation and management of course content, provision of feedback to students, setting up groups, organising grades, and assessing students.

However, some functions are significantly administrative and even when they are directly focused on learning (e.g., feedback to students), there are tools in addition to the LMS that can be used by practitioners to move beyond the constraints of the LMS. For example, a portfolio tool facilitates student learning and provision of feedback to students whilst also giving students a greater degree of control over how they represent their learning to themselves. Institutional portfolio tools are also secure environments, one of the touted advantages of the LMS. This raises the question of

whether the LMS is an outdated concept? Marshall (2018) argues that "the LMS is used in ways that meet a set of expectations defined by an older meta technology of learning and teaching framed by constraints that no longer exist" (p. 262). Of course, LMSs are not static entities, yet there are questions around their capacity to stay relevant.

Even with the addition of social elements to bolster LMS functionalities, it can be argued that they do not keep pace with rapidly changing technology, or provide the interactivity of social tools like Facebook and Twitter (Zanjani et al., 2017), even if some are exploring opportunities to leverage mobile technology in the form of a mobile LMS (Joo, Kim & Kim, 2016). Furthermore, there are examples of specific contexts where the rigidity of the LMS creates barriers to engagement for some student cohorts (Hall & Maughan, 2015), and it is questionable whether LMSs are responsive enough to adapt to changing learning needs at the speed that may be required (Demmans Epp, Phirangee & Hewitt, 2020; Raza et al., 2021). In conclusion for key finding 1, there are clearly multiple perspectives on the utility of the LMS within institutes of higher education, with the needs of practitioners and students being just one of the considerations in the use of the LMS.

Key finding 2: The lack of clarity on how institutions could leverage on the LMS to conceptualise new approaches to learning and teaching

The analysis of results indicates that institutions focus on administrative and commercial considerations as primary drivers for the choice of the LMS. An unclear direction for use by management may lead to staff not knowing "what the strategy was for using the VLE" (Sumpter & Gribble, 2020a, p. 9). Further:

> a key need is for all staff to buy into a clear approach for any kind of technology or process… Where there is a lack of leadership and direction, we find there is often a real lack of drive and enthusiasm from staff. (Sumpter & Gribble, 2020b, n.p.)

Thus, university management and senior leadership play a key role in deciding which LMS an institution will adopt and evaluating the success of the decision. Their decision is based upon multiple criteria that extend beyond pedagogical considerations, such as cost, security, configuration flexibility, integration with existing university systems such as student administration systems, user friendliness and accessibility (Anand & Eswaran, 2018; Kasim & Khalid, 2016). Rather than an explicit focus on pedagogical considerations – a belief about how people learn – there can be a focus instead on other affordances of the LMS features (Anand & Eswaran, 2018; Kasim & Khalid, 2016). That said, in making a choice about an LMS, features are noted in terms of learning, communication, and productivity tools. For example, communication tools enable interaction between lecturers and students, and interaction between students. This speaks to the importance of the teacher role and to the value of social learning but there are few systematic reviews of the LMS against pedagogical ideals (García-Cabrero et al., 2018). Furthermore, in a general sense, there is a strong perception by academic staff of top-down approaches to the adoption and incorporation of learning technologies, including the LMS (Huang, Matthews & Lodge, 2021).

This point is noted by Cavus (2013) who argues that selection of LMS needs to match an organisation's definition of learning and teaching. Cavus categorises the LMS in terms of

functional areas relating to teaching and learning goals: pedagogical factors, learner environment, instructor tools, course and curriculum design, administrator tools, and technical specifications. Looking at Cavus' descriptions for these, pedagogical considerations are at best implicit rather than explicit. For example, pedagogical factors refer to students being able to determine course objectives and being able to engage in activities to reach those objectives. Learner environment refers to communication between learners and between learners and the teacher. Instructor tools are tools to create learning experiences. Course and curriculum design refer to managing the curriculum and customising the look and feel of the course. Administrator tools refer to activities such as authenticating users and managing backup processes. Finally, technical specifications refer to help and support.

It can certainly be argued that senior management must take multiple factors into account in making decisions about which LMS to adopt, including cost, security, hosting requirements and functionality. However, the fundamental purpose of the LMS is to support 'quality teaching and learning' and from that perspective we would argue that pedagogical considerations should have a primary and explicit place in the decision-making process (García-Cabrero et al., 2018). However, senior management are not always clear about the pedagogical purpose of the LMS, which can lead to staff being unsure of why and how to use the LMS (Sinclair & Aho, 2018). Staff may then default to using just the basic LMS functions such as content upload, discussion forums and management of assessment. Students consequently experience the LMS as a place to get content and to upload their assessment tasks (Hamutoglu et al., 2020).

The surprising or perhaps alarming fact is that limited usage of LMS features has been the case for many years (Malikowski, Thompson & Theis, 2006; Malikowski, 2011) even though early researchers (Malikowski, Thompson & Theis, 2007, p.1) recommended a model for "research that equally considers technical features and research about how people learn". In the wake of COVID-19, there is a further urgent need to understand how students experience learning in digital environments (Bolumole, 2020), and again, whether the LMS is still fit for purpose in this context (Cheng & Yuen, 2019; Hamutoglu et al., 2020). Here it might be argued that the current focus on revised minimum teaching and learning standards for course and unit sites in the LMS represents institutes of higher education considering the utility of the LMS for teaching and learning. However, this work is not so much questioning the value of the LMS as applying new standards to an existing technology for teaching and learning.

At the same time, Microsoft, Apple, Google, and Facebook are all establishing a strong presence in the online learning space (Phipps et al., 2018) making the LMS question even more vexed. The question is whether institutions will learn from what might be perceived as their LMS mistakes and focus on communicating a clear pedagogical message to staff and students? While the answer is unknown, what we can say is that COVID-19 has accelerated the thinking of universities around the use of technologies for teaching and learning and the ways in which technologies might be purposefully used to deliver a high-quality teaching and learning experience (Maguire, Dale & Pauli, 2020). In this context, technologies such as Zoom, Microsoft Teams and portfolio tools such as PebblePad have come to the fore to support students in their learning. Thus, we have seen a shift during and beyond Covid from the traditional use of the LMS to the use of an extended tool set for teaching and learning. Here we would argue that pedagogical considerations must remain of primary importance and that the role of the LMS for teaching and learning needs

to be defined in the context of an extended ecosystem of tools for teaching and learning. In other words, just because there is a whole suite of potential tools that may be used does not mean they should be used all the time.

Key finding 3: The final key finding is that there is a lack of fundamental understanding of how LMS could support 'quality teaching and learning' as part of a technology ecosystem

This is evident in the findings. For example, there are staff who are still treating the LMS as a 'vehicle for downloading PDFs'. This point is also made in the Jisc report in which teaching staff:

> saw the VLE as the place where items are put for learners and students to access learning content. There was rarely any indication of how items should be ordered. Many staff felt that the VLE's main role was as an online repository. (Sumpter & Gribble, 2020a, p. 7)

The LMS may be therefore seen as unidirectional; "too 'one way'" (Sumpter & Gribble, 2020a, p. 9). Student agency is generally restricted to being able to post to a discussion forum, but discussion forums are an antiquated technology and have changed very little since the inception of the LMS. They could quite rightly be described as "clunky" (Dahlstrom, Brooks & Bichsel, 2014, p. 11) in comparison to the social media that many students use in their daily lives. In summary, we might say for now that the LMS has acted as an excellent administration system rather than as an enabler of learning (Brown, Dehoney & Millichap, 2015).

Meanwhile, students are making use of sophisticated social media platforms in their personal lives in their learning (Bateman & Willems, 2012; Grevtseva, Willems & Adachi, 2017; Willems et al., 2018), with these platforms giving users significant control over what and how they present information (Sleeman, Lang & Dakich, 2020), and how they respond to others' contributions. Students are more comfortable in such environments; therefore, some teachers use social media platforms, and increasingly MS Teams or Slack, over LMS collaboration tools (Hai-Jew, 2020; Sumpter & Gribble, 2020b). It may well be time to acknowledge that the LMS needs to be supplemented with additional tools (Joo, Kim & Kim, 2016; Mott, 2010) to enhance teaching and learning, particularly in terms of empowering students in their learning and enabling them to personalise their learning environments.

Biggs and Tang (2011) have argued that effective learning environments have seven characteristics: quality teaching; metacognitive control/reflective learning; social learning; a base of interconnected knowledge; appropriate motivation; relevant learner activity; and formative feedback. These characteristics can be fleshed out to the extent that we can ask whether the LMS can support good teaching. For example, quality teaching occurs when the teacher acts as a guide for students and progressively scaffolds them to develop deeper levels of knowledge and increasingly advanced skills (McWilliam, 2007). Relevant learner activity actively engages students in the learning process (Stetson-Tiligadas, 2018) through authentic, real-world activities. Good teaching is feedback-focussed, with feedback enabling students to make judgements about their performance and to improve (Australian Institute for Teaching and School Leadership, n.d.; Nieminen et al., 2021). Finally, good teaching is inclusive, providing all students with an equal opportunity to succeed in their learning (Birmingham, 2015).

If the purpose of the LMS is to facilitate 'good teaching' as defined above, then it can certainly be

argued that the LMS is fit for purpose. The teacher can act as a guide in the LMS through being present in synchronous teaching sessions and through engaging with the discussion forums. Teachers can set relevant real-world activities using the affordances of the LMS, including engaging students in projects using a variety of different media. The LMS supports assignment submission, along with provision of detailed feedback to students, aligned with a marking rubric that can also be made available through the LMS. Finally, the LMS can afford all students the same opportunity to learn. For example, BlackBoard Ally provides accessibility data against all the 'objects' that are in the LMS and teachers can improve accessibility through captioning videos and ensuring that all images have descriptive 'ALT' tags.

However, while a pedagogical focus can entail that the LMS supports quality teaching and learning, the question of student agency in the LMS remains a vexed one. For this reason, we suggest that the concept of an ecology for learning is needed to conceptualise the use of technologies in a broad, inclusive manner (Barnett, 2017; Barnett & Jackson, 2019; ANON, 2019; ANON, 2017). Here we can think in terms of the LMS combined with a range of institutional and non-institutional technologies to support teachers and learners with an effective teaching and learning environment that meets everyone's needs. An example might be the use of the LMS along with a portfolio tool and social media platforms to realise the seven qualities of a quality teaching and learning environment (Biggs & Tang, 2011). Thus, a well-defined and clearly mapped out learning ecosystem could make best use of the LMS and additional technologies to realise an effective, high-quality teaching and learning environment. We will return to this point in our conclusion.

Limitations

There were several research limitations which need identification. The first limitation was the small practitioner cohort, with limited global representation. Second was the length of time that the Delphi approach to thematic analysis took, especially in Rounds 1 and 2, with researchers working individually on documents. It would have been simpler to run the data through a qualitative analysis tool, such as N-Vivo. However, this would have missed the depth of insights of practitioners as researchers and experts in this process. A third related limitation was the impact of COVID-19 and associated time pressures. Finally, the Delphi process was used for the thematic analysis of qualitative data; a quantitative component to the research would have further supported the findings.

Future research directions

Three key future research directions were suggested by the research practitioners: taking a holistic approach, a participatory research design which would include the student voice, and a global perspective. In terms of a holistic approach, one research practitioner suggested: "looking at things like consistency; the experience of staff and students; looking at maybe competing agendas and…needs; and how we go about…creating an experience that…allows some freedom within a framework in the LMS" (WR; Practitioner 4; 04:19).

Several practitioners expressed the notion of inclusion of "the student voice angle on learning design" (CH; Practitioner 9; 57:00). For example, one suggested that "There should be some studies to look into the feedback that we can gather from students in terms of using LMS across

the various countries and institutions" (WR; Facilitator 1; 44:35). Similarly, another suggested: "I do agree also that yeah, there should be some studies to look into the feedback that we can gather from students in terms of using LMS um across the various countries and institutions. That'll be interesting to find out" (WR; Facilitator 1; 43:06).

A third suggestion referred to a global perspective, with one practitioner suggesting that *"There should be some studies to look into the feedback that we can gather from students in terms of using the LMS across various countries and institutions"* (WR; Facilitator 1; 44:35). An amplification of this concept was further evolved by another practitioner:

> *It seems to be fairly popular, so if you want to get published right now, you know, deal is to study what students are feeling and thinking about the online learning experience and the LMS. I think there needs to be more research on that because there's such a contextualised kind of topic, so getting major themes from multiple jurisdictions and experiences would be very informative for us.* (WR; Practitioner 8; 47:44)

Conclusion

Our paper does not present definitive answers regarding the use of the LMS for teaching and learning purposes. However, our findings do present areas for consideration when interrogating the use of the LMS to support quality learning and teaching. We need to think in terms of an institutional vision for a learning ecology that balances the diverse needs of multiple stakeholders with a vested interest in the teaching and technology space, not least of all, students themselves who, post-Covid-19, are returning to a blended learning environment which needs to be grounded in clear pedagogical approaches that are clearly communicated to students and that meet students' expressed learning needs. If there is a way to navigate the multiple perspectives on the use of the LMS for teaching and learning, then Covid-19, which has "propelled forward" digital and online learning and teaching practices has also pointed us towards the importance of listening to our students about their experiences with technologies in teaching and learning.

In summary, the impact of COVID-19 since early 2020 has seen a disruption to higher education, including rethinking the use of the institutional LMS. While this process was already underway, COVID-19 has created an accelerated focus, albeit borne out of necessity. With this, additional tools for teaching and learning such as Microsoft Teams and Zoom have since been adopted by universities to support the rapid transition to online learning. It is too early to say whether these new tools will complement, or whether they might ultimately replace, the LMS as an institutional teaching and learning platform. However, we can say that COVID-19 has severely disrupted the institutional technology space by bringing teaching and learning requirements to the fore with the student voice being of paramount importance in current teaching and learning practices.

Conflict of Interest

The authors disclose that they have no actual or perceived conflicts of interest. The authors disclose that they have not received any funding for this manuscript beyond resourcing for academic time at their respective university. The authors report no use of artificial intelligence during this manuscript's design or development.

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