

ARTICLE

VLEs: A Metaphorical History from Sharks to Limpets

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In this paper we chart the history of selected metaphors that have been used to describe Virtual Learning Environments (VLEs) over the last 15 years. Martin Weller famously claimed in 2007 that “the VLE is dead”. This provocation positioned the VLE as an object of history, forcing us to consider its past, present and future. This notion of historical mapping is important as many educational technologies that failed to deliver on their promises can be easily forgotten.

Hence, we sought to develop a short history of VLE metaphors. Using a defined search and selection strategy we selected 30 metaphors spanning a 15-year period from 2004 to 2019 derived from a variety of sources ranging from social media to scholarly publications. We first arranged the metaphors according to a chronological timeline. Next we sought to unpack their significance by thematically analysing them using the notion of metaphorical concepts.

Through this thematic analysis, six organizing metaphorical concepts were generated: Straitjacket, Behemoth, Digital Carpark, Safe Space, Smorgasbord and Pathfinder. We then used these metaphorical concepts as a lens, to map and explore historical developments and debates over the past two decades of educational technology.

As the world scrambles to go online during the COVID-19 pandemic there has never been a more important time to remember and reflect upon digital learning history. Through this work we contribute to the history of educational technology by remembering its metaphors and what they have taught us. After we had navigated these historical seas, we noticed that the VLE was still here, as a limpet resolutely awaiting the next wave.

Keywords: VLE; Metaphors; Virtual Learning Environments; Digital Learning History

Introduction

Such is the oligopolistic position that Virtual Learning Environments (VLEs) occupy in modern higher education, particularly in the wake of the COVID-19 pandemic it is noteworthy to recall that in 2007 Martin Weller proclaimed that ‘the VLE is dead’ (Weller 2007). As a result, much of the subsequent discussion has been dominated by debates as to whether it is indeed dead, in rude health or if it has simply morphed and consequently, we suggest that either/or debates are overly simplistic and add little to the discussion. In relation to the dead or dying metaphor our position is similar to Mark Twain’s 1897 protestation that reports of the VLE’s death have been greatly exaggerated. Regardless of whether people revile or regard VLEs there is little doubt that they occupy a central place in institutional delivery of online and blended learning. As such they provide a useful way of examining developments within and across the wider ed tech world.

The world of educational technology, while it undoubtedly has success stories, has had its fair share of false dawns and outright failures (see Watters 2019). While a

series of platforms and technologies have come and gone over the past twenty years the VLE sails on steadily, continuing to underpin the delivery of online education in the higher education sector (Newman, Beetham & Knight 2018). That said, the VLE is not without its detractors and critics who question the influence and reach it has to the detriment of alternative ways of supporting and delivering online learning, especially in the light of the affordances presented by Web 2.0 technologies (Phipps, Cormier & Stiles 2008; Meishar-Tal, Kurtz & Pieterse 2012). In fact, there are those that have (as previously mentioned) questioned whether the VLE’s time has come and gone (Weller 2007; Stiles 2007).

Though the VLE is now ubiquitous, its various forms, the role it plays and how it is seen are constantly changing. This may be difficult for current practitioners to appreciate if we accept the contention that “the edtech field is remarkably poor at recording its own history or reflecting critically on its development” (Weller 2018: 34). As one of the dominant pieces of educational technology infrastructure (Costello 2014) the VLE is in many ways a useful proxy, bell weather or synecdoche for educational technology itself (Weller 2009). Regardless of whether one considers them to have made a positive or negative contribution, VLEs have “shaped what many people think ed-tech looks like, how it works, whose needs it suits,

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what it can do, and why it would do so" (Watters 2014). An example from practice may help illustrate the role and position that the VLE now holds and how embedded it has become in higher education. In early January 2020 Andy Jaffrey, the head of the Office for Digital Learning at Ulster University, tweeted regarding usage of his institution's VLE. Based on analytics, he noted that over 1,000 users (mostly students) had accessed the VLE on one particular day (Jaffrey 2020); that day was December 25th.

Watters (2019) has also documented an extensive stream of overhyped technologies and products that promised to "fix" or "supersize" education in some almost miraculous way. There are myriad examples of these phenomena but a useful one that may have faded somewhat from our recent memory is the UK government sponsored eUniversity (Garrett 2004). The leaders of the project decided to custom-build a new VLE from scratch for the venture, claiming that existing systems were inadequate for the scale of the proposed new university which was intended to rival successful online mega-universities from the United States. Garrett (2004) muses that the project might have succeeded had a usable VLE been put in place from an early point, as momentum might have been created. Ironically, it could be argued that most of the UK government's aims for the eUniversity were later realized through the OU (Sclater 2008). In 2004 the OU committed GB £5 million to Moodle's development (a fraction of the budget for the eUniversity platform).

Part of the problem of a discipline that keeps forgetting its history is that the dream is much easier to sell than the doom. The narratives are those set by the marketeers and salesmen of the big ed tech companies. They have the gloss and the glitz of the uncomplicated frictionless digital we are sold through the "silicon valley narrative" (Weller 2015: 1). Language is important as mere words can power grand narratives. There are "metaphors we are colonised by" (dos Santos Ferreira et al. 2019: 1), through this colonisation process there is the risk that these metaphors may shape and frame and (if we are not careful) limit our understanding of VLEs. Hence, part of the motivation for this article is to help its readers remember. We hope that we help not just to remember events but also the language of the events. We invite teachers, researchers and educational leaders to think more about the language of ed tech. However, our aim is not to undertake a socio-linguistic analysis; rather we foreground several important and memorable VLE metaphors and use them as a lens. Through this lens, we seek to map and explore historical developments and debates over the past two decades of educational technology.

Methodology

Technology can at times seem overwhelming especially when it becomes so all encompassing. Untangling claims and counterclaims can be difficult; particularly as we increasingly rely on it in our everyday practice. Given the increasingly complex relationship between society and technology, we need conceptual tools to help us understand, describe and interrogate the underlying issues. Metaphors are one such tool. They offer a means through

which we can derive meanings that ultimately "govern our everyday functioning" (Lakoff & Johnson 1980b: 454). While acknowledging that metaphor analysis has previously been employed to some extent in education research, Mason (2018: 539) argues that it is still a relatively new area of research interest, "particularly related to educational technology".

However, as with any conceptual tool one must be aware of potential limitations. Pitcher (2013) highlights that one of the perceived issues with metaphor analysis is that it can be regarded as relying on intuition and thus it is not sufficiently rigorous. Different people may identify different words as metaphors. Metaphors offer a way of framing the world, but in creating this framework there is the risk that it configures the world in a particular way, in turn "shedding light on some aspects whilst obscuring others" (dos Santos Ferreira et al. 2019: 3). This double-edged sword is in effect a trade-off. On the one hand metaphors make abstract thinking possible but "on the other hand, they keep human imagination within the confines of our former experiences and expectations" (Sfard 1998: 6).

Drawing upon the work of Steinke (1999), Schmitt (2005: 380) proposes that the rigour and reliability of metaphor analysis can be enhanced by means of "broad documentation of the research process...interpretations in groups [and] using a standardized procedure". Adopting these three principles the process of constructing the final list of metaphors was undertaken in a four-step process involving the three members of the research team initially working individually and subsequently in concert.

The first step involved the three researchers searching the literature independently to generate an initial list of metaphors. There are various approaches to conducting a literature search. For example, systematic reviews are constructed in terms of answering a specific question, such as assessing the efficacy of a method or technology (Petticrew & Roberts 2008; Okoli & Schabram 2010). Our search however sought to undertake a more general exploration. As outlined previously, our intention was to explore the range of metaphors that have been employed to describe and/or characterise VLEs since their introduction in the late 1990s which in turn would provide us with a conceptual vehicle which would enable us to track developments over time. In this sense it would be more appropriate to characterise our approach as a narrative literature review rather than a systematic one (Robinson & Lowe 2015).

Clear identification and utilisation of search terms is important when undertaking a review (Aveyard 2014). It is advisable to identify all possible keywords in advance of the search; however, it is often an iterative process requiring adaptation and modification, and so it proved in this instance. Initial searches utilised the following keywords and phrases: ('virtual learning environment' OR 'VLE' OR 'learning management system' OR 'LMS' OR 'learn* management system' OR 'course management system' OR 'CMS') AND 'metaphor*'. However, it quickly became apparent that several authors who employed metaphors did not use the term 'metaphor' in either in their title or abstract, and consequently the terms 'as', 'like' and 'simile'

were subsequently utilised in conjunction with the VLE, CMS and LMS keywords. This allowed us to construct search queries that included string fragments such as “VLE is like a”, “VLE as” and so on.

The primary database utilised in this research was the Web of Science Core Collection incorporating the following citation indexes: SCI- EXPANDED; SSCI; A&HCI; CPCI-S and CPCI-SSH. The inclusion criteria were English language (dual language papers were included) and given that the “earliest systems which satisfied the ‘consensus view’ of VLE elements began to appear in the period 1995 to 1997” (Stiles 2007: 32) the timeframe was set at 1999–2019. The nature of educational technology research and commentary is highly temporal; hence the propensity for many commentators to not only publish in ‘traditional’ journals but also to use conference proceedings, blogs and other informal publishing outlets as encapsulated in the notion of the digital scholar (Weller 2011; Veletsianos & Kimmons 2012). For example, Onwuegbuzie and Frels (2016: 208) suggest that the “time is ripe for reviewers to use [Twitter] to expand their literature review and to help move them toward a comprehensive literature review”. Hence, our aim was not just to draw on ‘traditional’ academic literature but also on this rich vein of “grey literature” (Kitchenham 2004). This also allowed us to admit material to our analysis that may be more negative or critical than peer reviewed research papers which can be biased towards publishing more positive findings (see for example Dawson and Dawson (2016) who highlight this in the field of education). Consequently, Google Scholar and Google were utilised in addition to Web of Science. The use of Google as a search engine proved to be particularly fruitful as can be seen in the findings section where the majority of examples we found (especially from 2011 onwards) were from ‘non-traditional’ publishing outlets such as blogs or social media, for example, the most recent metaphor is taken from a 2019 Twitter thread.

Secondly, through a process of shared working, this list was continually amended over an eight-month period from May 2019 until December 2019 with the final agreed version produced in early January 2020 (see **Figure 1**). During this phase the researchers met periodically to discuss inclusion or exclusion of specific metaphors. As previously indicated, one of the issues that we faced was that not every author used the word metaphor when alluding to a characteristic or feature of a VLE. As such there was a certain degree of subjectivity in attributing where a specific phrase could or could not be categorised as a metaphor. This is where the group approach to classification proved to be beneficial although at times the process was subject to much debate.

Findings

The search and selection strategy ultimately produced a list of 30 metaphors spanning a 15-year period from 2004 to 2019 derived from six source types:

- 14 Blogs
- 10 Journal Articles
- 2 Books

- 2 Conference Proceedings
- 1 Report
- 1 Twitter Thread

The metaphors are presented chronologically in the timeline in **Figure 1** below.

Once the list of metaphors was finalised, the third step was to begin the process of thematically grouping the metaphors into ‘metaphorical concepts’ (Lakoff & Johnson 1980). In order to work through this thematising process, we drew on the work of Mason (2018) and Lakoff and Johnson (1980a & 1980b, 1999) to create an analytical framework or schema. Through this process six organizing concepts were generated. Each concept organizes or summarizes a key aspect that the metaphor is attempting to capture. Although we present them as six discrete concepts there is a degree of blurring at the edges between and across a number of the concepts. Hence, a metaphor can appear in more than one category in our schema. Next we present each category in turn and describe its constituent metaphors.

Metaphorical Concept: Straitjacket

Constituent metaphors: Classroom with seats bolted to the floor (Dale 2004); Walls (Watters 2014); Silos (Groom & Lamb 2014); One size fits all (Clark 2016) and Bus (Downes 2015).

Description: In the sense that it relates to a physical boundedness where the structure or features of the VLE constrain the lecturer and/or the student from engaging in the learning process that is iterative and personalised, this metaphor could be considered to be a spatial metaphor such as Watters’ (2014) walls and Groom & Lamb’s (2014) silos. Dale (2004) suggests that if you were in a face to face class setting you could arrange and rearrange the seats as you wished, which in turn creates a different dynamic in terms of class interaction. These boundedness metaphors also alert us to the restrictive nature of VLEs in the sense that access to learning is generally limited to those who have institutional access.

Metaphorical Concept: Behemoth

Constituent metaphors: Any color you like as long as it’s Blackboard (Dron 2006); Undead Vampire (Wheeler 2009); Blackborg (Young 2009); Shark (Burgamy cited in Carter 2012); Zombie (Clark 2016); Minivan (Hill 2015) and Baby Clothes (Narayanan 2019).

Description: One could argue that there is a degree of overlap between ‘straitjacket’ and the ‘behemoth’ concept. However, this category suggests that any constraints experienced are less to do with the inherent architecture of individual VLEs; rather they are the result of a hegemonic VLE ‘industry’. Audrey Watters (2014) argues “It [LMS/VLE] has shaped what many people think ed-tech looks like, how it works, whose needs it suits, what it can do, and why it would do so”. In this sense VLEs have effectively become the horizon of the taken for granted (Hall 1988). Institutions believe that they effectively have a limited choice and they must take what’s offered. There is a sense that institutions need to have a VLE or at least

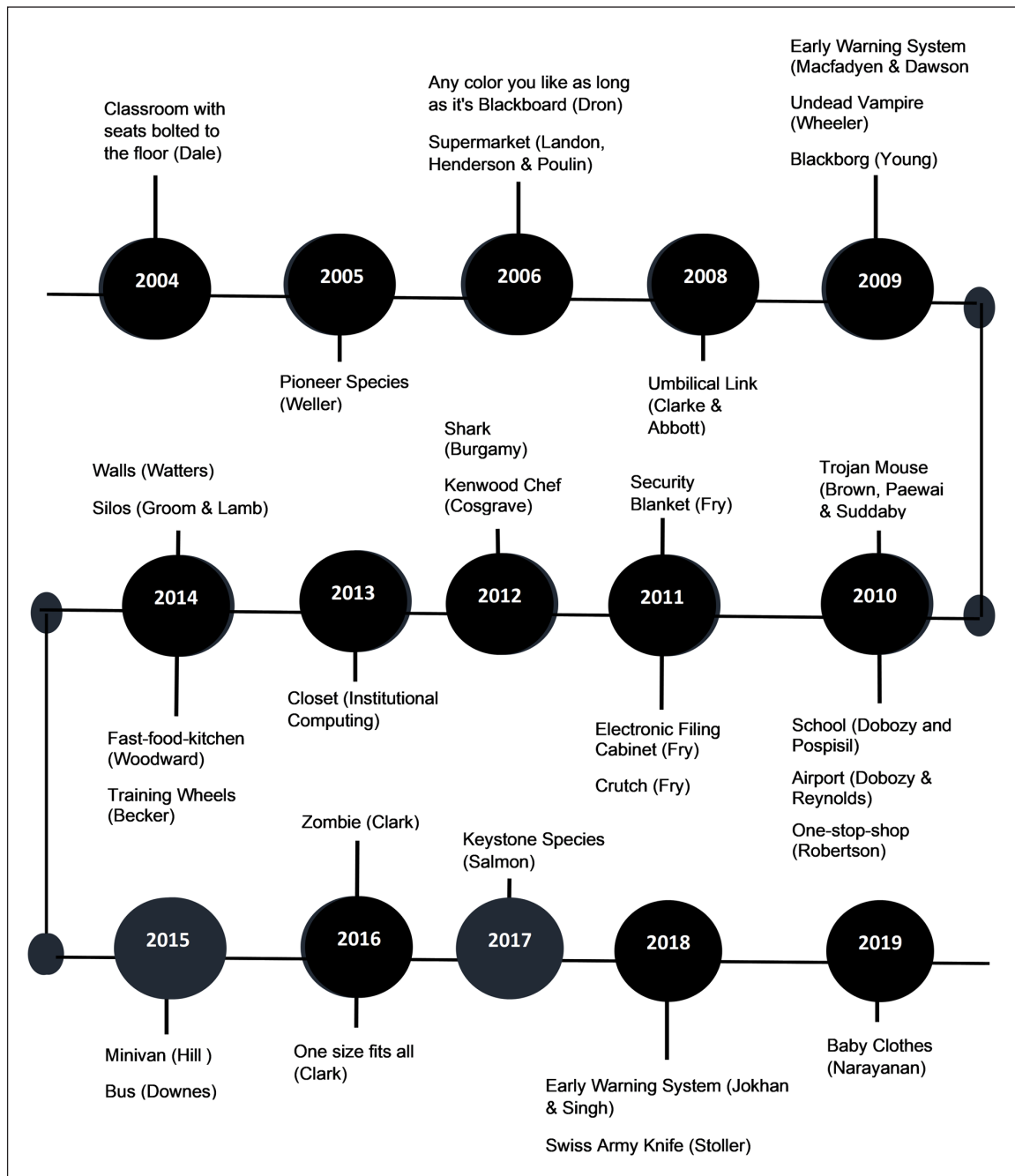


Figure 1: VLE Metaphors 2004–2019.

be seen to have a VLE but are not overly sure what to do with it.

Metaphorical Concept: Digital Carpark

Constituent metaphors: Electronic Filing Cabinet (Fry & Love 2011); Supermarket (Landon, Henderson & Poulin 2006); Training Wheels (Becker 2014) and Fast-food Kitchen (Woodward 2014).

Description: This concept is intended to capture those metaphors that characterise VLEs as a place where online teaching content is simply dropped into, rather than as places of potential learning and interaction. Through these metaphors a sense of disappointment is conveyed that VLEs are little more than remote content repositories, possibilities have not been realised, with the majority of

the available functionality eschewed in favour of 'drop' or 'grab and go' convenience.

Metaphorical Concept: Safe Space

Constituent metaphors: Umbilical Link (Clarke & Abbott 2008); Early Warning System (Macfadyen & Dawson 2009); One-Stop-Shop (Robertson 2010); Crutch (Fry 2011); Security Blanket (Fry 2011) and Early Warning System (Jokhan Sharma & Singh 2018).

Description: This metaphorical concept incorporates a range of metaphors that highlight the way that VLEs provide a supportive environment. In this sense the closed nature of the interaction and communication is regarded in positive terms and not regarded as a restriction. Fry's (2011) metaphors of crutch and security blanket convey

the sense of certainty and structure that VLEs provide to lecturers. The umbilical link (Clarke & Abbott 2008) conveys a sense of supportive tethering for students when they are on placement physically away from their institution. Robertson's (2010) one-stop-shop metaphor captured the way that the VLE provided a readily accessible platform for a group of largely non-traditional students to access library and information systems, thus improving participation and inclusion. Participation and inclusion are echoed in the two early warning system metaphors that highlight the capacity of VLEs to act as a vehicle for tracking and hence monitoring student online activity; in turn providing a mechanism that can alert institutional staff of students at risk.

Metaphorical Concept: Smorgasbord

Constituent metaphors: School (Dobozy and Pospisil 2010); Airport (Dobozy & Reynolds 2010); Kenwood Chef (Cosgrave 2012); Closet (Institutional Computing 2013) and Swiss Army Knife (Stoller 2018).

Description: In some ways this concept could be considered to be a development of the digital carpark. However, it does not regard limited functionality use of VLEs as a negative. From this concept's perspective, VLEs offer a wide variety of choice in terms of functionality. Even if the majority of staff are not using them to their potential they provide a gateway to more expansive use as familiarity and expertise grows. As Cosgrave's Kenwood Chef (food processor) metaphor acknowledges, the majority of users generally only use a small amount of the available functionality (just to make smoothies), but increased familiarity may improve confidence and hence more expansive use in the future.

Metaphorical Concept: Pathfinder

Constituent metaphors: Pioneer Species (Weller 2005); Trojan Mouse (Brown, Paewai & Suddaby 2010); Keystone Species (Salmon 2017).

Description: The pioneer and keystone species characterise the role that VLEs play in terms of being the basis for development of future institutional ed tech practices and applications. In effect, "VLEs can be seen as the *sine qua non* for the implementation of such systems" (Weller 2006). Playing on the Trojan horse imagery, the Trojan mouse metaphor certainly alludes to the role that VLEs can play as pathfinders, however surreptitiously that route may be found.

Discussion

While distance education certainly predates 1995, "nothing before has captured the imagination and interest of educators simultaneously around the globe more than the World Wide Web" (Owston 1997: 27). Increasingly sophisticated and affordable computers coupled with an internet that was now easily accessible meant that the integrated educational delivery, student coordination and management systems that ultimately became VLEs could become a reality for institutions. Given that the first integrated systems that could be readily described as a

VLE emerged in the late 1990s the rate of adoption was staggering. For example, research carried out by Browne, Jenkins & Walker (2006) reported that 95% of UK higher education institutions had adopted a VLE by 2005. Similarly, high penetration rates were highlighted in the US by Hawkins and Rudy (2008) where they recorded that across almost 1,000 HEIs surveyed, less than one percent had not adopted at least one VLE. Such was the rate of penetration that within less than ten years, "a VLE was rapidly becoming as important to the identity of a university as a library" (Costello 2014: 2). Given the central place that VLEs occupy in educational technology provision, the metaphorical mapping and analysis of the different ways and means that they are deployed and employed provides a useful window into educational technology developments over the past twenty years.

As can be seen by the 'straitjacket' metaphors there is a school of thought that bemoans the one-size-fits-all offerings dictated by a system that is less to do with affording individualistic responses and divergent use of the technology and more to do with offering a predefined package of educational tools. However, Pettit & Mason (2003: 155) argue that establishing the "connection between your own values and the way in which you might use a VLE" is a crucial step in one's adoption and engagement with technology. Depending on one's viewpoint "teaching online can be a threat or an opportunity, a straitjacket or a useful set of templates" (Pettit & Mason 2003: 155).

Whilst one person can see boundedness, another person can view the VLE as a place that provides a framework and surety that does not require a high degree of computer skills proficiency. Consider for example the skills and resources needed by what Tony Bates (2000) characterised as the 'lone ranger' approach. The lone rangers are individuals who are motivated but largely unsupported faculty who develop and support their own individual digital learning spaces. However, the lone rangers' skills and resources are not readily available or possessed by the majority of teaching staff. Bates (2000: 2) argues that the lone ranger approach is "a useful means by which to get faculty members started using technology, but it is a costly and inefficient method of teaching with new technologies". The amalgamation of course content, communication and student management into one coherent system that became known as the VLE meant (in theory at least) that individual faculty no longer required a high level of ICT skills, in other words it provided a 'safe space'.

The 'safe space' metaphorical concept raises a number of highly pertinent issues and clearly highlights how VLEs, while being vehicles that support, can be interpreted in a number of ways, across a positive to negative spectrum. For example, the two early warning systems metaphors, separated by an eight-year span clearly show how changing social concerns can impact how a particular technology is regarded. In the Macfadyen & Dawson 2009 paper, VLEs were presented as providing the opportunity to think in terms of VLEs providing a mechanism through which we could assist students, benign monitoring if you will, although it is interesting to note that at that stage the

term 'learning analytics' was not employed in the article. Contrast this to the second early warning system article where there is an explicit reference to learning analytics. From a historical developmental perspective, we can see a shift in emphasis in the role and potential that VLEs can offer; less concerned with the content delivery and communication aspects but rather its predictive power to assist institutions identify and support students. The 2018 article (Jokhan, Sharma & Singh) also refers to VLEs as being an early warning system but consider how much the background context has changed in the intervening years. In recent years increased concerns about data privacy, the introduction of GDPR in 2018 and the Cambridge Analytica scandal, have changed the education landscape, asking those who control data to consider what is and is not acceptable. In a world where data is considered to be the new gold (Goddard 2019) any institution that has a platform that gathers and aggregates large datasets needs to consider the possible implications and act accordingly. Less than ten years ago Web 2.0 technologies were being heralded as the means by which we could provide interactive, accessible and responsive learning platforms that were an attractive alternative to 'clunky' VLEs; perhaps we might now consider VLEs as providing a bulwark against external privacy threats. In fact, as previously highlighted there were those who questioned whether the VLE's time had come and gone. However, far from retreating from the higher education landscape VLEs have demonstrated a remarkable ability to sustain and grow. They are becoming

increasingly entrenched. While the relative positions of the main providers may have changed in recent years (IBL News 2019, see **Figures 2 and 3**) institutions are not dispensing with VLEs; they are simply switching providers.

Seeing VLEs as behemoths is a recurring theme. Their individual mass is oppressive, as is their collective scale. The growth and consolidation in the sector has been stark. It has shrunk from a wide field of different VLE vendors, including home-grown independent entities, to an ever-narrower range of players. Much of this has been achieved through corporate 'accusations'. This is the genesis of the Blackborg metaphor, of a dark assimilation and an implied road to conformity, if not enslavement. Of any colour you like (as long as it's Blackboard). This metaphorical theme has also featured prominently in VLE history through the famous "LMS squid diagram" – see **Figures 2 and 3**. These diagrams, from the eLiterate reports showing VLE market share over time, suggest the ominous shape of giant cephalopod.

Conclusion

Such is the complexity of the higher education landscape with its wide range of push and pull factors it is almost impossible to characterise what the current state of play is with technology enhanced learning at the present. That said, there is no denying that the COVID19 pandemic has changed our perceptions of what is possible and the certainties that existed at the end of 2019 have been swept away. The internet as we know it is just over 30 years old,

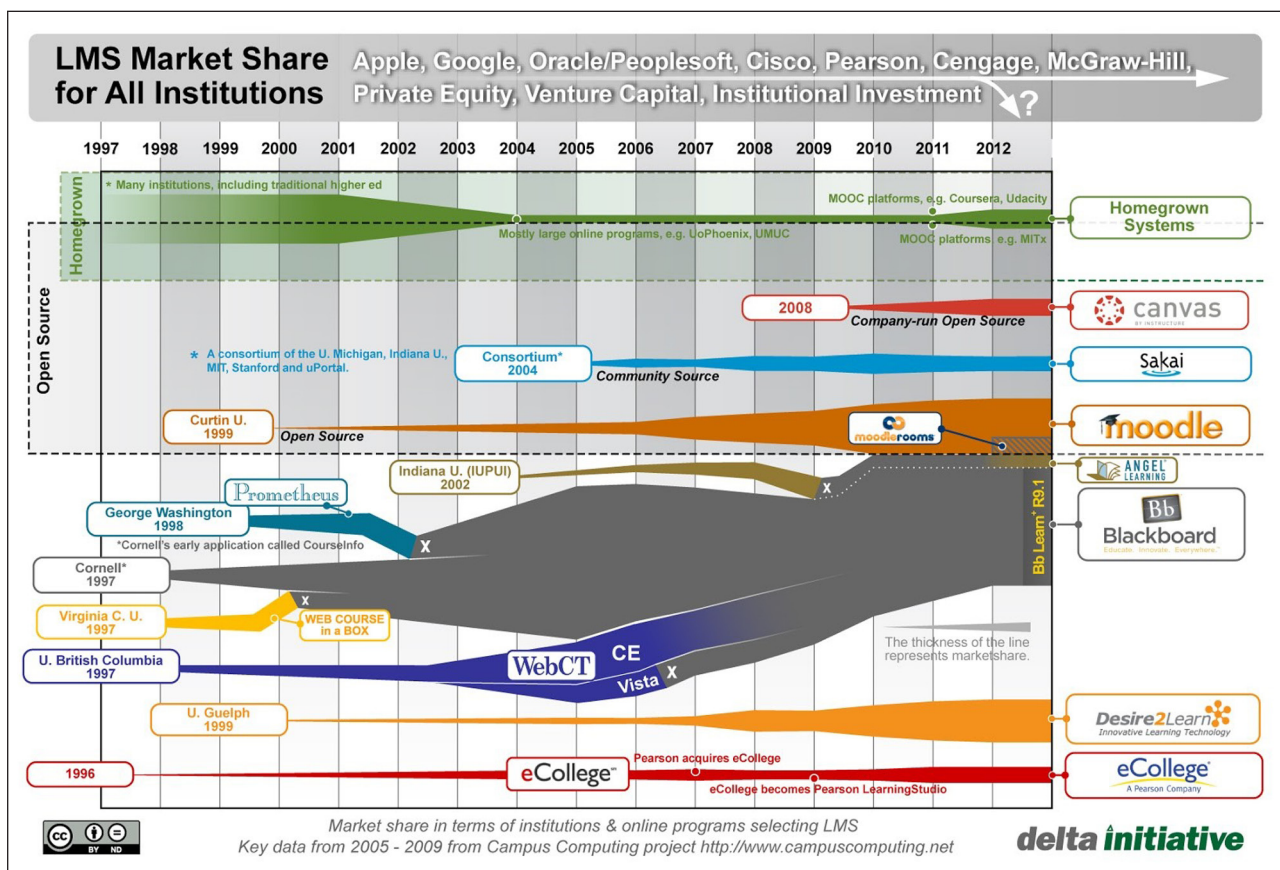


Figure 2: Market share in terms of institutions and online programs selecting LMS. Key data from 2005–2009 by Campus Computing project, CC BY.

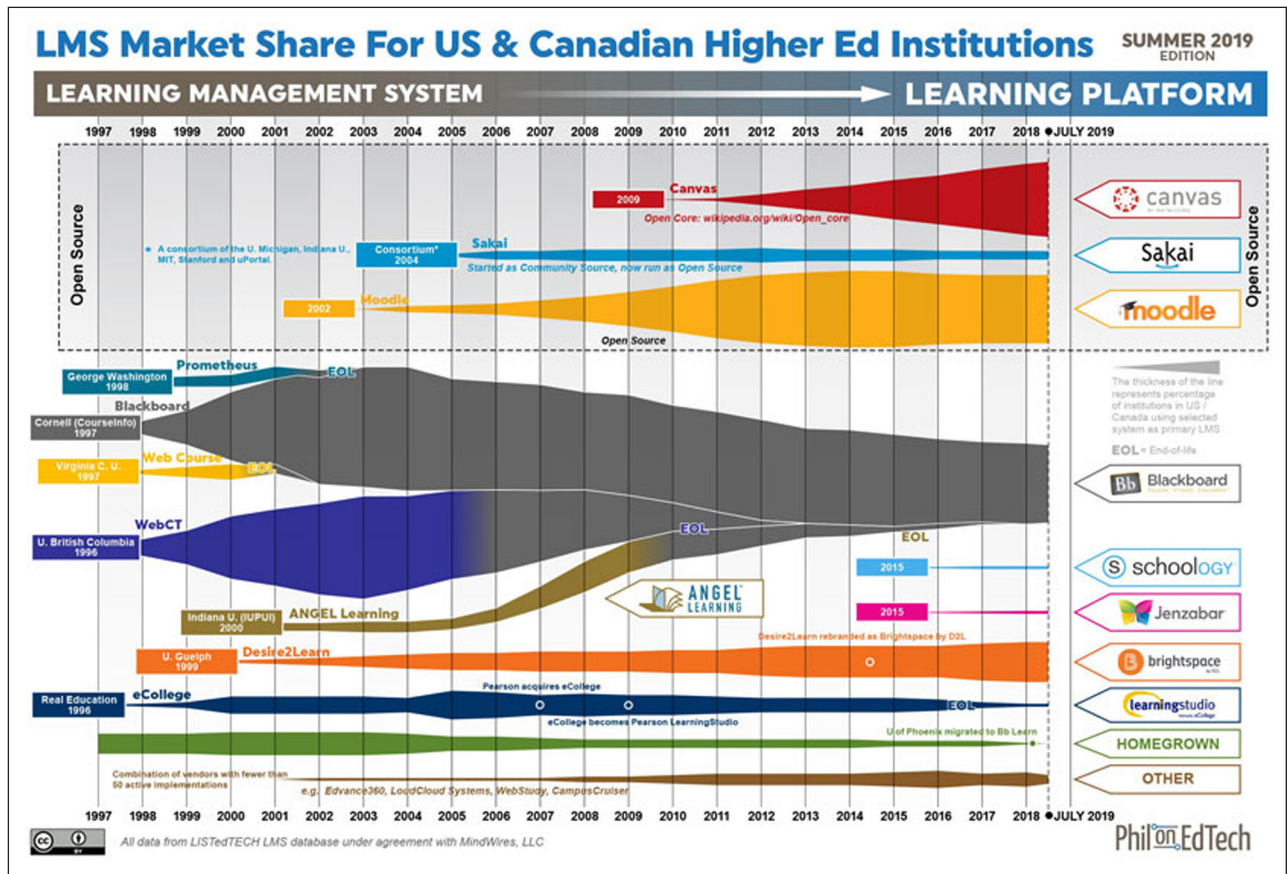


Figure 3: Market share in terms of institutions and online programs selecting LMS. Key data from 2005–2018 by Campus Computing project, CC BY ND.

yet its presence has become so omnipotent and pervasive that it is hard to imagine a world that existed before it. In terms of educational technology, we have seen platforms rise and fall. Yet amidst the carnage and wreckage of false dawns and unfulfilled promises, the VLE in its various guises and forms remains an entrenched and resilient part of the landscape. As we have highlighted, VLEs can mean different things to different people in different contexts, being regarded in both positive and negative terms; equally they can enable and constrain.

At this point in time, if we were to use a metaphor to characterise the VLE, it would be a limpet. The educational tide may rise and fall; political, economic or biological storms may lash the higher education sector, yet VLEs have shown a remarkable ability to adapt and ingrain themselves into the teaching and learning landscape. In fact, as educational providers have pivoted into a world of purely online delivery, VLEs have become the de facto campuses of the world. Returning to our previous example of the University of Ulster – on April 8th, 2020 a tweet claimed that they had 3 million Blackboard page views from 62 countries over the preceding three weeks (Hamber 2020) with similar traffic levels being widely reported elsewhere (Hill 2020; Ballhaus 2020).

Facing into a drastically changed education landscape, one can only speculate what metaphors will emerge in the wake of the COVID-19 pandemic. Through this historical analysis of VLE metaphors we hope to provide an

opportunity to reflect on historical developments and contribute to the ongoing conversations around technology enhanced teaching and learning.

Competing Interests

The authors have no competing interests to declare.

Author Contributions

All three authors contributed to the research, writing and editing of all versions of the paper.

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