Leuven University Press

Chapter Title: The Digital Scholar as Integrator: Why, how and where to bring your teaching, research and social impact to life
Chapter Author(s): JP Bosman

Book Title: Evolving as a Digital Scholar
Book Subtitle: Teaching and Researching in a Digital World
Book Author(s): Wim Van Petegem, JP Bosman, Miné De Klerk and Sonja Strydom
Published by: Leuven University Press. (2021)
Stable URL: https://www.jstor.org/stable/j.ctv20zbkk0.9

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at https://about.jstor.org/terms

This book is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License (CC BY-NC-ND 4.0). To view a copy of this license, visit https://creativecommons.org/licenses/by-nc-nd/4.0/. Funding is provided by KU Leuven Fund for Fair Open Access.

Leuven University Press is collaborating with JSTOR to digitize, preserve and extend access to *Evolving as a Digital Scholar*

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

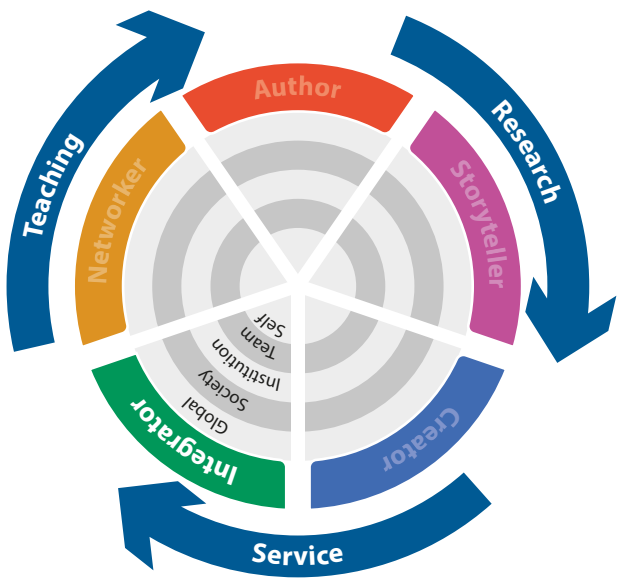
5
The Digital Scholar as Integrator: Why, how and where to bring your teaching, research and social impact to life

JP Bosman

This chapter focusses on

- ✓ Understanding the digital aspects and implication surrounding the practice of academic multimedia integration.
- ✓ The importance of cumulative knowledge-building, universal design for learning, open access and being critical.
- ✓ Useful digital curriculum and pedagogical design strategies, frameworks and planners.
- ✓ The creation of meaningful and persuasive multimedia resources.
- ✓ Pointers to how to design for and teach online.
- ✓ Potential digital platforms on which EDSs can perform their transformative integration 'magic'.

Keywords: Integration; cumulative knowledge building; Universal Design for Learning; Open Access; critical digital pedagogy; curriculum design; learning design; multimedia theory; digital platforms; online teaching.



This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

5.1 Introduction

If an 'integrator' is someone who 'integrates', meaning to "form, coordinate, or blend into a functioning and unified whole",[30] then the evolving digital scholar (EDS) as integrator signifies the practice of skilfully combining separate textual and multimedia elements into powerful vehicles for cumulative academic knowledge-building. One could say that this skill, art or technique is becoming critical as part of the digital fluency of higher education practitioners. By technique is meant the "unnatural approach to a problem that, with practice, becomes second-nature. Technique is the non-obvious solution that amateurs and hard-working beginners rarely stumble upon on their own" (Godin, 2021). In higher education language the above points to the foundational frameworks, pedagogies and theories that are critical in seeing above the fray of the often very confusing and economically hyped-up world of digital technologies for learning, research and social impact. Let's explore the techniques of integration in the creation of valuable, high quality digital resources for teaching, research and social impact.

The Evolving Digital Scholar as Integrator designs, develops and curates multimedia artefacts to convey a message, i.e., with the intention to help the audience really to engage with and learn from it. The message (the story) is creatively and meaningfully designed and mostly packaged in a multimedia product and disseminated more openly with specific groups of people in mind, so that they can extend and apply it into their own contexts. Next to the tools to produce multimedia artefacts, the digital scholar also makes use of channels or instruments for distributing her/his work. These channels or platforms could include, but are not limited to, learning management systems (LMS[31]), personal or course websites, webinars, open-source repositories and possibly even teaching on a MOOC (Massive Open Online Course). In this chapter we explore the practice of "why", "how", and "where" evolving digital scholars can integrate their scholarly work in terms of teaching, research and social impact.

Apart from an introduction to techniques and digital platforms, the evolving digital scholar will discover some foundational theoretical insights into the world of designing for learning (in the digital world), and will learn to ask "to what end?" we are integrating as well as developing a necessary critical stance towards the digital world in which we are practising higher education. Since digital technology is changing by the day, an important reminder is that the practice of the digital scholar is evermore evolving. This asks for a certain digital fluency in which one is not trying to learn individual technologies one-by-one, but rather how digital technologies might

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

function in support of our teaching, research and social impact service towards our institutions and society.

Although the journey of the evolving digital scholar is not necessarily linear (i.e., start with words (Author), then get comfortable with audio (Storyteller), then video (Creator) and then finally start integrating (Integrator)), there is something exciting about the practice of integration. This is because integration usually implies that you are building something of academic value and beauty which has the potential to transform the lives of students, higher education and society. You put something 'together' in a certain way on a digital platform so as to persuade, enlighten and educate. In this way integration is possibly at the heart of the digital scholarly practice. To achieve this persuasive enlightenment means that you should start reflecting on your own practice and understand how others can benefit from your scholarly output through the process of identifying and considering the needs of your audience. Integration also speaks to the ability to develop technical skills as well as the underlying principles/mindset required from you in this digital age. As mentioned in the previous chapter, it encourages you to 'learn to learn' continually – not just as a scholar but also as a digital citizen.

The pertinent digital skills in this section include, but are not limited to, designing blended, hybrid and online courses, by utilising digital platforms and educational applications that focus on visual presentation towards the building of powerful integrated multimedia mediated academic knowledge.

In order to unpack this part of the practice of being a digital scholar we are first going to take a theoretical step back and ask "Why?" or "To what end?" are we integrating. Then we will explore "How?" we integrate by looking at theory-informed frameworks, tools and approaches. Finally, we will end the journey by asking "Where?" our educational artefacts of integration can be built and shared.

5.2 Why or to what end do we integrate?

The field of educational technology in higher education has some potential blind spots which have been pointed out in recent research. We will address a general blindness to knowledge, a lack of design for universal access, lip service to open educational resources and practices and an uncritical adoption of digital technology. We will describe and address these tensions by suggesting a focus on powerful cumulative knowledge-building through semantic waving, developing Universal Design for Learning strategies, committing (even just a little bit) to working towards Open Access (OA),

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

and fine-tuning our ability to have a critical perspective when it comes to teaching with technology. In doing this we highlight some of the bigger goals and ideas around our practices as evolving digital scholars.

5.2.1 Integrate towards powerful cumulative knowledge-building

We first take a look at knowledge itself as the important (often) "missing piece" of the educational/pedagogical puzzle because of a trend among scholars to feel overly comfortable in trusting in the "generic processes of learning" as well as often only focussing on the "knowing" part of knowledge (Howard & Maton 2011, p.103), thereby "obscuring the forms undertaken by knowledge practices mediated or enabled by technology" (Maton, Carvallo, & Dong 2016, p.77). These trends then create a culture among practitioners and especially instructional designers to focus more on the "technical matters" of design. Consequently, the "knowledge practices" or the *what* that needs to be learned often falls by the wayside (Maton et al., 2016 p.77). These actions can be described as a kind of blindness to knowledge (Maton et al., 2016 p.77).

The current mainstream thinking around using technology in education is to focus on learning design (with learning designers), which mostly builds on socio-cultural (social-constructivist) notions of pedagogy, as opposed to more traditional instructional design (with instructional designers), which has a positivist underpinning and a focus on multimedia (Conole, 2013). Even though there is a lot of merit in both these approaches (as will be discussed below), a particular focus on knowledge practices in blended, hybrid, active and fully online learning could be very beneficial for the future design and/or integration of educational resources into more powerful and cumulative knowledge-building strategies. But what is powerful cumulative knowledge, and how does one "build" it?

Knowledge is powerful when it is not segmented but cumulative. Segmented learning is typically either 'stuck' at the highly contextual instances of something to be learned (e.g., a lot of dislocated facts about many different things) or dwells only in the highly abstract/ 'theoretical' world of concepts. The problem is that the knowledge often does not 'travel' from the everyday to the specialised or the other way around (Hugo, 2013). Knowledge is powerful when it creates the "capacity for ideas or skills to extend and integrate existing ideas or skills" (Maton, 2014 p.1) or, in other words, it is about the "essential attribute" of the "recontextualization of knowledge" over time (i.e., cumulative) (Maton, 2013 p.20). To build this kind of knowledge (i.e., to develop your curriculum and pedagogy) one needs to understand the technique of semantic waving (Maton, 2013) or climbing

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

up and down a "spiral ladder" which is a combination of the "transcendent" path into the esoteric abstract and the "immanent" path which "works from inside the everyday and finds in it everything that is needed to educate" (Hugo, 2013 p.28).

Semantic waving indicates that the focus is on the meanings of things (semantics) and that a visualisation of this kind of teaching and learning looks like a wave (waving). Through recent research into this phenomenon using the Legitimation Code Theory (LCT)[32] toolkit it is shown that teachers often use downwards or upwards "escalators" in their teaching practice (*Fig. 5.1*). They either teach by always starting with the concept/ theory/ abstract meaning (i.e., far removed from the context of the everyday) and then going "down" into the everyday world context by giving specific examples of the phenomenon that is learned. Then the next concept is again addressed at the abstract level, and then "applied" again by giving (practical) examples of how it works in specific circumstances. It can also be the other way around, i.e., always start with a practical example and then show what the theory is behind the example (moving "up"). The problem is that these practices often create segmented learning of knowledges that are in silos and students find it very hard (maybe even impossible) to "make the connection" between the different highly condensed meanings and how they relate to each other in the specific field of specialisation. This confusion then leads to the dreaded fear of memorisation for the exam only, with what is learned forgotten as soon as the ink has dried on the exam paper. Knowledge-building (learning) often does not happen because sense- and meaning-making do not happen, as the meaning was not "placed" in a "larger framework and context that holds elements together in a coherent whole" (Hugo, 2013 p.18).

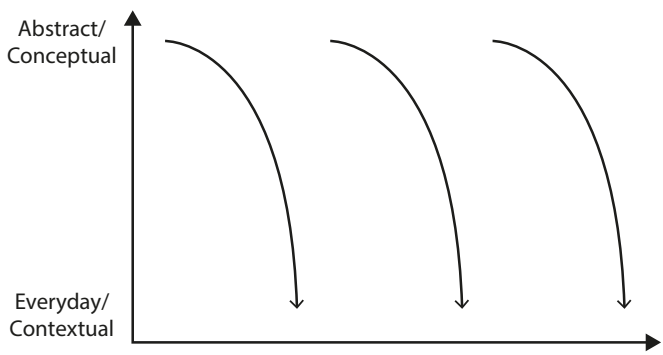


Figure 5.1: Example of teaching with "Downward escalators" in a segmented learning approach (Figure adapted from the heuristic figure in Clarence (2016)).

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

Semantic waving, on the other hand, can be visualised as a more continuous movement up and down between the specialised and the everyday, between theory and application, between the example and the concept:

> "whatever the field, the recontextualization of knowledge – an essential attribute of building knowledge over time – requires both upward shifts from specific contexts and meanings, and downward shifts from generalized and highly condensed meanings. Simply put, semantic waves represent the pulses of knowledge-building" (Maton, 2013 p.20).

A fairly simplified, but useful, approach would be to build one's curriculum, lesson, lecture, video, multimedia resource etc. according to semantic waves (*Fig. 5.2*). You can start (high) by introducing a new abstract concept (generalised and highly condensed), then (moving downwards) "unpack" the different meanings until you are (low) focussing on specific contexts and meanings. From there you then "repack" the meanings until you again integrate the knowledge at the highly condensed level, which then becomes the "platform" for building the knowledge to an even higher level. In so doing we see how "'powerful knowledge' comprises not one kind of knowledge but rather mastery of how different knowledges are brought together and changed through semantic waving and weaving" (Maton, 2014 p.1).

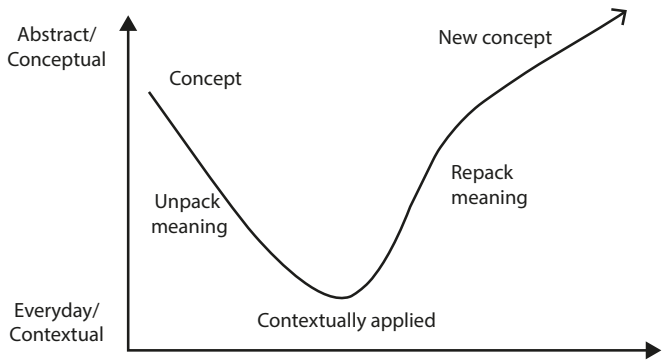


Figure 5.2: Teaching in a cumulative knowledge-building "Semantic wave" (Figure adapted the example in Maton (2014)).

The idea of cumulative knowledge-building through semantic waving (Maton) and of the interplay between the everyday and the specialised (Hugo) resonates with the idea of engagement, which is what lies at the

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

heart of the potential for digital technologies in higher education. In the words of Oblinger (2014, p.14):

> "Many new learning environments foster student engagement that transcends memorization, immersing students in problem solving, collaboration, and active exploration and allowing them to construct, share, and transfer knowledge, not just recall it … Immersive learning experiences … move beyond 'teaching information' to helping students develop the valuable skill of 'transfer' – being able to take what they know and apply it to a new area".

The focus on students (or any audience, like other researchers or the public) brings us to the important question of how accessible "what" we integrate is. We have already seen how powerful knowledge can be made more cumulative by a focus on knowledge and semantic waving and weaving. Now we turn to a second, broader goal we should keep in mind in our practice as digital scholars, namely universal design for learning.

5.2.2 Integrate with the aim of digital access for all – Universal Design for Learning[33]

In a now almost iconic cartoon drawing the heartfelt reality of a non-universal access to a school is depicted. A student in a wheelchair is asking a person shovelling snow to please clean the wheelchair ramp, whereupon the person replies that all the other kids are waiting to use the stairs and that he will first clean the stairs and then clean the ramp. The response from the disabled student is piercing: "But if you shovel the ramp, we can all get in!" The spirit of universal access and universal design is captured poignantly in this cartoon, the basic premise being that if one creates accessible buildings and access to learning for people with disabilities, one is creating a system that is of value to all, both disabled and not. Michael Giangreco, the originator of the cartoon, captions it with the clear message: "Clearing a path for people with special needs clears a path for everyone!" (Giangreco, 2015 p.3).

Case study: A personal experience of print disability

"I recently had laser eye surgery and could not see properly for a good three weeks. To read on my cell phone and computer screen I had to all of a sudden turn to the assistive technologies available like screen readers, zoom text, and text highlighters. It was a very steep learning curve and made me very uncomfortable and tired. It also gave me a first-hand glimpse of what it must be like to suffer from a visual disorder, or a print disability.

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

After that episode I will never not think of how the texts I produce, the videos I make, the audio I record will be experienced by readers, viewers and listeners with various forms and levels of disability. Once you feel it in your heart it makes thinking about and taking action around Universal Design for Learning (UD4L) principles more of a reality." The chapter author, JP Bosman

In this section we look at how we can make our digital practice more aligned to UD4L. The mantra of the UD4L movement[34]/approach (CAST, 2018) can be summarised as follows:

- ✓ *Provide multiple means of **engagement**:* The "why" of learning is addressed by multiple affective and flexible options for engagement in the form of interesting, stimulating learning experiences.
- ✓ *Provide multiple means of **representation**:* The "how" of learning is supported with the teacher providing learning materials in different media and by giving lots of examples.
- ✓ *Provide multiple means of **action and expression:*** The "what" of learning focus points towards multiple and flexible opportunities for action and expression with the student practising differentiated tasks and demonstrating their learning in a diversity of ways.

These core principles emerged from CAST's research work on the neurological basis of learning, in combination with its practical work with learners (Dalton, Mckenzie, & Kahonde, 2012). Digital tools enable the teacher to design their teaching towards achieving these principles, but it can soon become complex and also create problems of its own. The fact that academics in higher education are able to create text, video and audio and integrate it into meaningful learning experiences through easy-to-use software and then instantly make it available through an institutional LMS or other platform can cause difficulties for students with special needs. Many academics do not even know about this crucial approach to creating and disseminating knowledge-building resources in a digital format and the few basic principles that can be followed by everyone to make a big difference.

Digital Practices around UD4L[35]

There are four main categories of disabilities, namely hearing, sight, motor and cognitive disabilities (Shekerev, 2019), and it is especially in the *sight disabilities* category that many of the digitally mediated problems occur. One can also address some aspects of dyslexia (a cognitive disability) under the vision-impaired category.

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

For *hearing disabilities* providing transcripts and subtitles with full captioning when video is used can really help, together with making sure the audio is of a high quality without any distracting background noises (Shekerev, 2019).

For *visual disabilities* like low vision, one should focus on the readability of digital texts, and for colour blindness one should steer away from green and red – although the reality is more complex – and rather work towards creating contrast between words and the background (Shekerev, 2019; World Blind Union, 2007). Of course, for blindness and more serious conditions like tunnel- or peripheral vision and macular degeneration, one needs to create resources and presentations that have an audio option (for video), and certainly for anything that needs to be seen and read on screen (like words and images) one needs to make it assistive technology friendly. This means that screen readers and devices like braille screen-readers must be able to "read" what is on the screen in a logical and clear way, and that images and other non-textual elements must be described using alternative text coding.

The World Wide Web Consortium (W3C, n.d.) provides very useful guidelines to make a start when one needs to understand how to change our web-based academic practices to being more universally designed for learning. The best is to focus on the basics,[36] which include:

(a) Always give images text alternatives (so-called "alt text") and make them meaningful and descriptive of the message the image wants to convey (e.g., if the image shows one how to plug a charger into a phone one should not provide the Alt-text as "Phone with charger" but rather "how to insert the charger into a phone").
(b) Use marked-up headings (e.g., Title, Heading 1, Normal etc.) with a logical hierarchical structure with the headings and labels clearly describing the topic or purpose. This includes making the page compatible with assistive technologies by simplifying the information architecture of your text/website/course and keeping the content clear and concise. And if you make a hyperlink, make the link text meaningful by, e.g., describing the content of the link target.
(c) Around readability, visual contrast (also called contrast ratio/ colour contrast) is key. This includes using clean sans-serif fonts (like Arial) and using text on solid backgrounds (i.e., stay away from background images). Text should also be able to get larger without overlapping other text in the process and one should never need to scroll horizontally to read sentences. There also should be as little moving, blinking

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

or flashing content as possible, and when there is, the user should be able to control it.

(d) Multimedia (video and audio) elements should have alternatives like an audio file (for a video, preferably with more in-depth audio description) and transcripts and subtitles with full captioning for a video.

(e) Practically one can choose tools and platforms that have accessibility built into them (like WordPress, or Google-powered simple websites and blogging platforms) and when you want to inform yourself more there are free and open courses available.[37] It is also advisable to test your website/course/document for accessibility.

These basics are not only for web-developers to take note of (although developers have to go much further into the detailed and coding-oriented guidelines), but need to be taken seriously by the higher education evolving digital scholar as well. All these basics are within the reach and capabilities of academics. What is more, the prominent software- and operating system providers like Adobe, Apple and Microsoft[38] have gone to great lengths over the last couple of years to make their products accessibility friendly. This includes powerful built-in assistive technologies in major operating systems like Windows 10+ and Apple iOS, as well as accessibility checking tools for popular communication-, writing-, presentation- and universal document format software packages.[39] Also, the current LMS systems, like Moodle, Canvas and Blackboard, all have a strong focus on accessibility with supporting tools to move closer and closer to a UD4L offer for all its users.

There really is no longer any reason for anyone to say, 'I did not know (how).'

5.2.3 Be open to being open

In Martin Weller's (open access) book, *The digital scholar,* it soon becomes clear that the important sub-text is that digital scholarship goes hand-in-hand with an open and networked oriented approach to higher education (Weller, 2011). He describes openness as both a technical (like, e.g., open-source software and open standards) and a state of mind (the practice of sharing as a default) phenomenon (Weller, 2011). This commitment to openness is again confirmed in his important book, *The battle for open,* where he states that openness lies at the heart of the changes in higher education and that open educational practices are no longer seen as peripheral but accepted as more mainstream (Weller, 2014).

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

The call to openness in teaching usually gets bundled under the concepts of open access (when it comes to library and information science and publishing), open educational resources (OERs) and open educational practices (OEPs) (when it comes to teaching) and open data approaches (when it comes to research). The interesting thing is that it is now common for big research grants to include the prerequisite that the data collected be published in the open and often that the outcomes of the research be mediated and disseminated in the form of OERs or even (free) Massive Open Online Courses (MOOCs).

OERs are open access (often peer-reviewed) textbooks, documents, presentations, courses and other multimedia resources like images, audio and video. The development of the Creative Commons Licensing system[40] has made it possible to share an open resource in a nuanced and author-controlled way and indicates the different allowances that are provided for use. There are very useful global repositories[41] where one can publish or archive, and of course search for and access, a plethora of these different documents and media for use in courses, publications and research.

Open educational practices (OEP) are broader and "include the creation, use and reuse of OER, open pedagogies, and open sharing of teaching practices" (Cronin, 2017, p.15; see also Cronin & McLaren, 2018). These practices often include the opening up of policies as well as the development of student agency as life-long learners. The Cape Town Open Education Declaration (2007) takes the concept further:

> "open education is not limited to just open educational resources. It also draws upon open technologies that facilitate collaborative, flexible learning and the open sharing of teaching practices that empower educators to benefit from the best ideas of their colleagues. It may also grow to include new approaches to assessment, accreditation and collaborative learning."

Taking a Massive Open Online Course or being part of the development of a MOOC might just be the best thing you or your institution could do![42] It takes one far out of one's comfort zone, but it could contribute to tremendous accelerated digital learning opportunities for the individual scholar and can prove to be a kind of incubation space for an institution. At our institution (Stellenbosch University) the process of creating our own MOOC led to more institutionally focussed strategic thinking around the future of our own academic programmes, and as such led to deeper "organisational learning, resilience, and sustainability" as well as to the professional learning of participating staff members (Van der Merwe, Bosman, & De Klerk, 2020 p.175).

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

The idea of working in the open towards supporting open educational and research practices is difficult for some scholars as they sometimes struggle with their identity as sharing and networked scholars on the one hand and possibly being in a traditional university and department which frowns upon such practices and, therefore, are fearful of negative future career implications on the other hand (Weller, 2014). It also makes one potentially vulnerable to unfair criticism and attack as opposed to healthy critical scholarly debate. In this sense the vulnerability is akin to using social networking to promote your open educational and research practices, which is addressed in the next chapter where we deal with the scholar as networker. One must weigh up the advantages but, in a sense, also the direction in which higher education is moving (teaching and publishing) that pulls one to the side of the open. It is also important to understand that one has a digital 'shadow' on the internet anyway and might want to wrestle some control back by growing one's own digital 'footprint' (Goodier & Czerniewicz, 2015).

The development of open scholarship is intrinsically entwined with the development and use of digital technologies, and this is where we need to be careful not to be overly positive and enthusiastic. Which brings us to our final "to what end?" deliberation, namely, a healthy dose of suspicion.

5.2.4 Always be critical – as a good scholar should

Openness and the use of digital educational technologies are not without their baggage, and the evolving digital scholar should develop a healthy academically informed scepticism for when the next 'silver bullet' for solving all higher education's problems comes flying past, fired from the new OPM[43] 'sheriff' in town's powerful 'six-shooter'.

This is confirmed by Veletsianos and Kimmons when they press for a "critical examination of open scholarly practices, because the dominant educational technology narratives embraced in the field present an overwhelmingly positive picture of technology use in education that we believe is detrimental to our future" (Veletsianos & Kimmons, 2012, p.174). But the foundational fault lines run even deeper.

Laura Czerniewicz writes about the problem of digitalisation in Higher Education as being a sub-set of the extractive technology-based business models of broader society and that we are unable as yet to "provide robust alternatives as we are still in the early stages of imagining, researching and testing what these might be" (Czerniewicz, 2021). She points to the "grand experiment" of HE during the Covid-19 Pandemic and how profits have shot through the roof as proof of the marketisation of HE and what she calls "algorithmic academia" and "academic capitalism" (Czerniewicz, 2021).

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

This phenomenon is built on data extraction and surveillance capitalism strategies, not necessarily of personal data but rather on, e.g., the ambient student data (the "data exhaust") and the considerable risks when these data "become […] consolidated into broader digital economic ecosystems" (Czerniewicz, 2021). Through more attentiveness to these new forms of coloniality, HE should resist this often rose-tinted future as sold by big tech and OPM companies, especially in times of crisis and vulnerability.

Apart from these broader issues, one must also identify how digital technologies can influence curriculum and an equitable student experience itself. Digital technologies often contribute to the hidden curriculum, which Edwards and Fenwick describe as "the things that are learned by students that are not intended outcomes of curriculum and pedagogy" and then goes on to explain that "the hidden curriculum is one of the primary educational ways through which social inequality is reproduced. The workings of the digital within such processes is of great significance" (Edwards & Fenwick, 2017 p.61). We should not see digital technologies as simply innocent tools through which we can do educational good (only), but also be sensitive to the fact that by choosing a technology we are already influencing what is taught and how it is taught. Their call to action is to be aware of these technologies' limitations as well as possibilities and that both lecturers and students should "examine their digital activity more critically" (Edwards & Fenwick, 2017 p.61).

This is not always easy, because the allure of a new educational tool or systems or approach is often so overwhelming that all caution is thrown to the wind as the teaching and learning "endorphins" rush through your brain while unboxing the 'new-and-shiny' or entering your credit card number for access to (almost) magical teaching tools.

With the "Why? Or "To what end?" questions sufficiently addressed, we can now move to things more practical as we first ask "How?" we integrate, and then "Where?" it can happen.

5.3 How do we integrate? Theory-informed practices around Integration

In a sense some of the "Why?" approaches above already are also "How?" integrating strategies, especially if we think of the creation of cumulative knowledge-building artefacts or courses through, for instance, using the semantic waving technique. The "How?" techniques are chosen because they are theory-informed and therefore can potentially be trusted more.

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

But it must also be said that we are now entering the world of curriculum, multimedia and learning design, which are all whole fields of knowledge in their own right. Whatever we do here will only scratch the surfaces of these practices and domains. The point of this section is not that lecturers become multimedia or learning designers, but rather to share some of the basic practices one can introduce in your own projects. We therefore turn firstly to the world of curriculum and learning design, and then to multimedia design and what it means to teach online.

5.3.1 Integrate with a plan – Curriculum and pedagogical design strategies, frameworks and planners

In curriculum development the old adage, "If you fail to plan you are planning to fail", rings true. Add the use of digital technologies to support your teaching and planning becomes critically important. Planning in higher education is usually done by using certain curriculum design processes that are built on particular frameworks which are in turn informed by a particular view of how learning happens.

Curriculum development- and design frameworks

At Stellenbosch University (South Africa), the professional home to three authors of this book, the institutional approach to curriculum or programme renewal is shaped by a typical educational design process and is informed by a learning-centred view of teaching and learning, and is fused to the very established technique of constructive alignment where curriculum objectives, teaching and learning activities (TLAs) and assessment tasks are aligned to create a system where all "components in the system address the same agenda and support each other" (Biggs, 2012 p.45). The students are "entrapped" in this web of consistency, optimising the likelihood that they will engage the appropriate learning activities" (Biggs, 2012 p.45). It is called the **D**esigning **L**earning, **T**eaching and **A**ssessment (**DeLTA**) framework/process[44] and guides departments and individual lecturers through different important aspects of curriculum and pedagogy design, namely: curriculum context, Outcomes, Assessments, Design for learning and Reflection (Figure 5.3). DeLTA is of course the mathematical symbol for change and therefore represents the outcome of following the process leading to transformative teaching and learning change at our institution (Stellenbosch University Centre for Teaching and Learning, 2020).

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

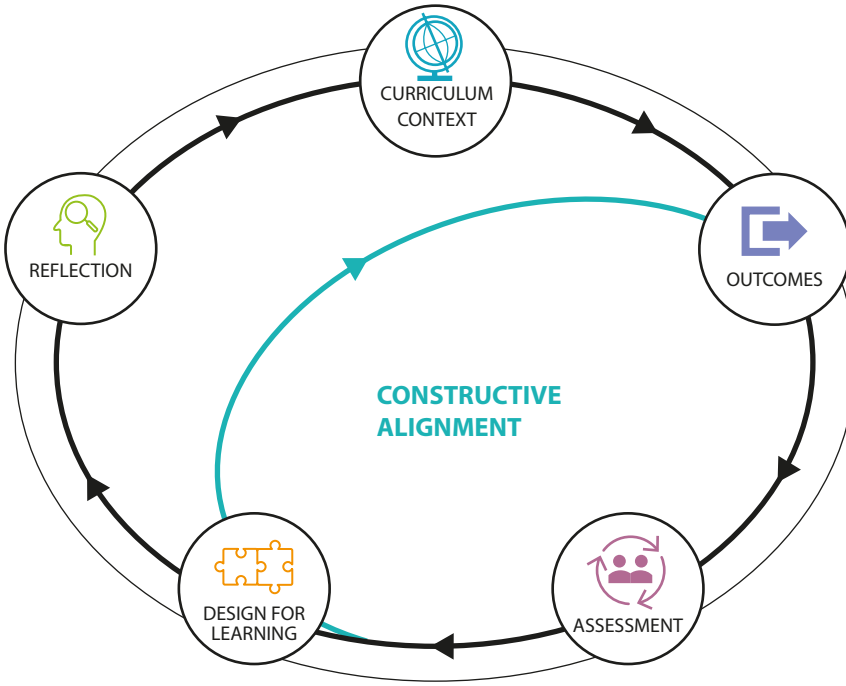


Figure 5.3: The DeLTA curriculum design process (Source: Centre for Teaching and Learning, Stellenbosch University).

Other well-known design frameworks that are proven to help one think through the broader design of one's course or programme (or any educational project) is ADDIE (Analyse, Design, Develop, Implement, Evaluate), (which still is) a favourite of learning designers, various Design Thinking processes and the Carpe Diem process of Gilly Salmon. But often what is needed when one wants to start to use digital technologies for one's teaching are techniques that help one design meaningful blended or online teaching and learning activities.

Diana Laurillard's brilliant book, *Teaching as design science: Building pedagogical patterns for learning and technology,* and the Conversational model that highlights the six (6) types of learning provide powerful thinking tools for designing your course, and at our institution (SU) we have been using it with great success (Laurillard, 2012). University College London's ABC Learning Design toolkit[45] is based on Laurillard's theory and can be of great help to the evolving digital integrator.

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

Gilly Salmon's[46] e-tivities concept is also a wonderful structuring tool for creating active learning activities in online courses. Any e-tivity you design is based on an action-response principle and is aimed at getting every student actively to engage with a "spark" you provide (often in the form of a controversial or very informative reading or video). It starts with crafting the invitation (including the important spark) to the e-tivity and then goes through phases of individual response and then a collaborative dialogue.

Digital curriculum development tools
The digital scholar does not have to look far to find digital tools to help with the planning and design of curriculum or learning activities. Gráinne Conole provides the convincing rationale for her excellent "round-up" digital visualisation and pedagogical planner tools (Conole, 2013, p.97):

> "…teachers are bewildered by the plethora of tools available and the lack of skills necessary to make informed learning design decisions. Therefore, a key facet of all the tools is that they attempt to provide practitioners with some form of guidance and support around their design practice. The aim is to help them shift from an implicit, belief-based approach to design to one that is more explicit and design-based."

Under *Visualisation tools*[47] she reviews the LAMS, WebCollage, CADMOS and CompendiumLD systems. Under *Pedagogical planners*[48] she looks at DialogPlus, Phoebe and The Learning Designer (Conole, 2013). At our institution we resonate with the Learning Designer as it is underpinned by Laurillard's Conversational framework and can help the practitioner build lessons and courses that are rich in learning potential and overtly incorporates technologies as well as other educational "favourites" such as formulating meaningful learning outcomes, Bloom's Taxonomy, and indicating time-on-task, among others. The Learning Designer can be accessed at http://learningdesigner.org – try it out, it works!

5.3.2 Making cognitively pleasing and persuasive multimedia resources

Once one has properly designed for the learning, the next step is to create resources or, more than that, start to build integrated educational resources or experiences. Inadvertently in this digital age one will turn to the combination of words/text, images, audio and video in a meaningful and cumulative knowledge-building experience. Sometimes one has funding and can outsource the whole process to teams of experts. Sometimes one can get help from a team or an individual in a support role at one's institution. But

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

often you (or you and your team) have to just jump in and get your hands dirty. It helps (a little) to have some multimedia design tricks up your teaching and learning sleeve.

In the previous chapter, the evolving digital scholar as Creator,[49] we have already dealt with this aspect and the reader is urged to study that part again.

5.3.3 Teaching collaboratively online (in emergencies) – some pointers

We would be amiss to not say anything about teaching online in emergencies, especially as this book was written in the terrible time of the Coronavirus Pandemic, starting in 2020. The whole educational world was turned upside down, and within the space of a few weeks teaching at our institution had to "pivot online". The approach was later named Emergency Remote Teaching (ERT), and even later Emergency Remote Teaching Learning and Assessment (ERTLA). Our colleagues in the Learning and Teaching Enhancement division at Stellenbosch University (Strydom, Herman, Adendorff, & De Klerk, 2020) compiled a book about an aspect of this experience and we quote extensively from the introduction:

> "The onset of COVID-19 in South Africa came near the beginning of the academic year. Academics across South Africa were obliged to rethink their TLA offerings. Academics at Stellenbosch University (SU) were compelled to prepare for and institute emergency remote teaching (ERT) to replace conventional face-to-face (F2F) student interaction with fully online learning. It was communicated in the SU community that the purpose of ERT was not to create a robust online educational ecosystem. The aim, rather, was to establish a temporary online initiative that could be easily set up and provide opportunity for continuous, just-in-time support by responding to the evolving needs of students and teaching staff. Consequently, ERT required the rethinking and adaptation of our existing offering for delivery via SUNLearn, the university's Moodle-based learning management system (LMS). Our objective was to design for active student involvement and to encourage students to take responsibility for their own learning whilst keeping the approach as simple as possible" (Strydom, Herman, Adendorff, & De Klerk, 2020 p.2).

A new kind of liminal teaching and learning shadow world came into being, not being fully online (as there was not enough time and expertise in the staff complement), but not being able to just turn face-to-face into face-to-screen learning environments.

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

We quickly learned that our main approach should be asynchronous and not synchronous. This means more self-study and flexibly timed learning activities interspersed with opportunities for real-time contact between lecturers and students. It meant the recording of short, knowledge-distilled screencast video-lectures of core concepts. It meant creating (often for the first time) logical, simple and well-structured courses on the LMS. It implied constant and clear communication between the institution, faculties, departments, lecturers, professional academic support staff and students. It required asking radical questions like "Do I really need my students to write an exam?" and emergency adaptations to assessment strategies. It asked institutions and academics alike to listen to the student voice and respond as best possible to their unique fears, anxieties and needs. If students did not have a laptop the institution provided laptops. If the students did not have data for internet, the university provided data-bundles. Never before has the reality of the potential and the pitfalls of teaching and learning in the digital world been more starkly experienced by role players. Professional support and academic staff came together to collaborate and learn from each other. Academics worked collaboratively in departments and faculties to solve common problems and identify possible educational solutions. Students were brave beyond measure – the stories of academic resilience in the midst of great suffering making one humble.

These experiences were situated not only in conventional higher education settings. Some of the authors, for instance, became involved with the African University Network for Higher Education in Emergencies[50] in designing open access augmented webinars related to digital pedagogy in emergency educational environments.[51] Presenters quickly realised that what came as a shock to more traditional HE environments were 'normal' for displaced persons or refugees. By focussing on digital pedagogical strategies that can 'work' for refugee students, we are hoping to develop and co-create the type of knowledge that all HE institutions should be ultimately geared towards, namely a pedagogy that invites and accepts all learners and provides a flexible learning experience. In that sense it supports a Universal Design for Learning approach, but just on a very broad scale.

When we raise our gaze a little towards a more conventional online teaching practice, one of the most helpful frameworks for designing successful online courses is the Community of Inquiry (COI) model. We argue that even in emergency remote teaching environments this pedagogical approach has the potential to make a difference in students' successful learning journeys. Just having good (and even great) content online is not going to create an exciting learning experience for your students. For optimal engagement

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

in an online course the COI "presences" should be strived for. The original description of CoI originated from Garrison, Anderson & Archer (1999): "The Community of Inquiry (CoI) is a theoretical framework for the optimal design of online learning environments to support critical thinking, critical inquiry and discourse among students and teachers".

The basic assumption is that the importance of social, cognitive and teaching presence in a course will lead to a COI focussed on knowledge building (Garrison, Anderson & Archer, 1999):

> ***Social Presence.*** The ability of participants to identify with the community, communicate purposefully in a trusting environment, and develop interpersonal relationships by way of projecting their individual personalities.
> ***Cognitive Presence.*** The extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical Community of Inquiry.
> ***Teaching Presence.*** The design, facilitation and direction of cognitive and social processes for the purpose of realising personally meaningful and educationally worthwhile learning outcomes.

It is, however, not only the individual realisation of the presences, but their interplay with each other, that adds the most value towards a transformative educational experience. Bektashi (2018) gives a very helpful overview of COI and how it supports the use of technology in learning. Volschenk et al. (Volschenk, Rootman-Le Grange, & Adendorff, 2020) draw on COI to underscore their view that successful teaching online is not about technology – it is about humanising:

> "Humanizing online learning is an effective and practical teaching strategy that at its core attempts to inculcate human interaction and an inclusive environment in online teaching … It is posited that through building engaging human relationships/interactions and fostering a sense of community and connectedness among students, effective and authentic learning takes place" (p.70).

The relationality of online pedagogy also extends to the people who 'create' the courses, and this brings us to our final insight. Teaching (and the design thereof) asks for a team approach. Gone are the days of 'going it alone'. For instance, Kahn (Kahn, 2017) argues:

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

> "Teaching in higher education *is* a collective endeavour. It requires the commitment and agency of teachers, learners and others in order to be undertaken well. Excellent teaching is determined on a wider basis than simply the individual competence of lecturers" (p.168).

Because of the digitally connected nature of the world we live, teach and do research in, we can use that connectedness to change the culture of HE to one of open collaboration in support of a more just society.

Now that we know a little bit more of 'how' to integrate, we turn to the last piece of the puzzle: 'where' should we share, publish, advertise, and teach our products of integration?

5.4. "Where" to integrate?

Ninety per cent of the evolving digital scholar's integration projects will probably be on an institutional LMS or other learning platform that is accessible only by those institutions' students and lecturers. The challenge with a closed access system like this is that often the university's copyright and intellectual property policies make it quite difficult to follow the advice of "being open to being open". Learning Management Systems (or Virtual Learning Environments) have been with higher education for almost 25 years and have been associated with different overarching metaphors like 'straightjacket, behemoth, digital carpark, safe space, smorgasbord, pathfinder and now (in the time of the Covid Pandemic) a limpet' (Farrelly, Costello, & Donlon, 2020):

> "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" (p.7).

The challenge is to try and apply the foundations, frameworks and functionalities of curriculum, multimedia and learning design in a course in an institutional LMS. That being said, LMSs have matured and become fairly usable to the point that, with creativity and focus on the basics of blended and fully online learning, one can get quite far and create high quality and learning-centred courses.

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

For the other 10 per cent, there is a whole new world outside the LMS that awaits the brave academic digital traveller. Apart from social media, such as Facebook, WhatsApp and Twitter (which is often the more "open" or "revolting" choice of platform for lecturers who feel handicapped by (only being allowed to use) the LMS), there are emerging digital spaces and systems that allow you to integrate open access, universally designed, knowledge-building practices as needed.

Of course, there are too many options to list here, and they will date fairly quickly, so I will try and create a typology of sorts. Is the platform or service suitable for the institution or more for the academic as individual? And, then, is the platform more open-access, or more closed-access inclined?

The following table (*Table 5.1*) tries to give some ideas of types of platforms within this typology with some current examples to bring it down to current digital realities.

	Open Access possible	**Closed access**
Institution focus	MOOCS, micro-credential type courses and programmes * www.edx.org * www.futurelearn.com * www.getsmarter.com Unstructured, more flexible course delivery platforms: * https://drive.google.com * www.edmodo.com * https://ed.ted.com	Learning Management Systems (LMS) * www.moodle.org * www.blackboard.com * www.instructure.com * https://classroom.google.com * https://teams.microsoft.com
Individual focus	Digital Portfolio platforms that allow lecturers (and students) to build personal- or professional learning portfolios: * www.bulbapp.com * https://sites.google.com Websites which offer a blog component for creating your own internet presence on your own terms: * www.wordpress.com * www.blogger.com * www.wix.com Course hosting sites for when you want to participate in OEP activities and share your knowledge freely (or for a small fee) outside your institution: * www.zillearn.com * https://www.p2pu.org/en/ OER knowledge repositories for when you want openly to license and share your (hard made) image, video, presentation, graph, infographic, notes or course: * www.wikipedia.org * https://www.oercommons.org/ * https://www.oerafrica.org/ * Your own institution's OER repository	Professional portfolios * www.linkedin.com * www.academia.edu MOOC-type or other paid for courses that are open to individual teachers to contribute to: * www.skillshare.com * www.udemy.com

Table 5.1: Typology of digital platforms as they relate to individual-institutional and open-closed perspectives.

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

5.5 Suggested way forward

- ✓ Think about how knowledge "works" in your specific discipline and try and map some of your "lessons", lectures or presentations using the concept of semantic waves. Are you surfing the wave, or are you riding downward escalators?
- ✓ Challenge yourself consistently to practise the UD4L digital basics, like alt-text, using heading styles, thinking about contrast etc., and in that way making a difference in all your students' academic lives.
- ✓ Be more critical when you read about the newest educational technology "silver bullet". See if you agree with the new tool's possible ethical or security implications. Become part of your institution's thinking around digital pedagogies and systems and bring your open or even difficult questions to the discussion.
- ✓ Think of starting an Open Access project in which you (or your students) publish something that can be used openly by anyone in the world. Remember to assign a Creative Commons Licence!

5.6 Some final integratory remarks

What about integration and research, or social impact? Well, one could say that all the knowledge and skills gained as an integrator in the teaching sphere of digital scholarship can also be transferred to the research and social impact domains. We have already discussed in Chapter 3 some strategies for science communication to the public through storytelling and audio, which can be enriched and expanded on to include more daring multimedia adventures.

And then there are gems to be discovered like Jove,[52] a platform for scientists to publish their science and laboratory methods in video format. The site has over 10,000 videos and more than 1,000 participating universities! Or OpenStax,[53] a non-profit organisation that publishes high-quality, peer-reviewed, openly licensed college textbooks that are absolutely free online and low cost in print.

Last but not least, remember your own institution's marketing and communication department, who can be an important ally in your quest to evolve your digital presence as a scholar!

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

References

Bektashi, L. (2018). Community of Inquiry Framework in Online Learning: Use of Technology. In R. Power (Ed.), *Technology and the Curriculum: Summer 2018*. Ontario: University of Ontario Institute of Technolgy.

Biggs, J. (2012). What the student does: Teaching for enhanced learning. *Higher Education Research and Development*, *31*(1), 39–55. https://doi.org/10.1080/07294360.2012.642839

Burgstahler, S. (2015). *Universal Design in Higher Education : from Principles to Practice* (2nd ed.). Cambridge, Massachusetts: Harvard Education Press.

CAST. (2018). Universal Design for Learning Guidelines version 2.2. Retrieved January 9, 2021, from https://www.cast.org/impact/universal-design-for-learning-udl

Sherran, C. (2016). Surfing the waves of learning: enacting a Semantics analysis of teaching in a first-year Law course, *Higher Education Research & Development*, DOI: 10.1080/07294360.2016.1263831

Conole, G. (2013). Tools and resources to guide practice. In H. Beetham & R. Sharpe (Eds.), *Rethinking pedagogy for a digital age: Designing for 21st Century Learning* (2nd ed., pp. 78–101). New York: Routledge.

Cronin, C. (2017). Openness and praxis: Exploring the use of open educational practices in higher education. *International Review of Research in Open and Distance Learning*, *18*(5), 15–34. https://doi.org/10.19173/irrodl.v18i5.3096

Cronin, C., & MacLaren, I. (2018). Conceptualising OEP: A review of theoretical and empirical literature in Open Educational Practices. *Open Praxis*, *10*(2), 127. https://doi.org/10.5944/openpraxis.10.2.825

Czerniewicz, L. (2021). Coloniality, profit making and market expansion – the shape of the past and the future? Retrieved February 15, 2021, from https://czernie.weebly.com/blog/archives/01-2021

Dalton, E. M., Mckenzie, J. A., & Kahonde, C. (2012). The implementation of inclusive education in South Africa: Reflections arising from a workshop for teachers and therapists to introduce Universal Design for Learning. *African Journal of Disability*, *1*(1). https://doi.org/10.4102/ajod.v1i1.13

Edwards, R., & Fenwick, T. (2017). Knowledge infrastructures, digital higher education and the hidden curriculum. In B. Leibowitz, V. Bozalek, & P. Kahn (Eds.), *Theorising learning to teach in higher education* (pp. 59–73). London: Routledge.

Farrelly, T., Costello, E., & Donlon, E. (2020). VLEs: A Metaphorical History from Sharks to Limpets. *Journal of Interactive Media in Education*, *2020*(1), 1–10. https://doi.org/10.5334/jime.575

Giangreco, M. F. (2015). Crisscrossing from Classrooms to cartoons: Social science satire. *Counterpoints*, *463*, 3–15.

Godin, S. (2021). Natural technique doesn't exist | Seth's Blog. Retrieved January 11, 2021, from https://seths.blog/2021/01/natural-technique-doesnt-exist/

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

Goodier, S., & Czerniewicz, L. (2015). Academics' online presence: A four-step guide to taking control of your visibility. *OpenUCT Guides*, 48. Retrieved from https://open.uct.ac.za/handle/11427/2652

Howard, S., & Maton, K. (2011). Theorising knowledge practices: a missing piece of the educational technology puzzle. *Research in Learning Technology*, *19*(3), 191–206. https://doi.org/10.3402/rlt.v19i3.17109

Hugo, W. (2013). Cracking the code to educational analysis. Cape Town: Pearson.

Kahn, P. (2017). Teaching in higher education as a collective endeavour. In B. Leibowitz, V. Bozalek, & P. Kahn (Eds.), *Theorising learning to teach in higher education* (pp. 175–171). London: Routledge.

Laurillard, D. (2012). Teaching as design science: Building pedagogical patterns for learning and technology. New York: Routledge.

Maton, K. (2013). Making semantic waves: A key to cumulative knowledge-building. *Linguistics and Education*, *24*(1), 8–22. https://doi.org/10.1016/j.linged.2012.11.005

Maton, K. (2014). Building powerful knowledge: The significance of semantic waves. In E. Rata & B. Barrett (Eds.), *The Future of Knowledge and the Curriculum*. London: Palgrave.

Maton, K., Carvallo, L., & Dong, A. (2016). LCT in praxis: Creating and e-learning environment for informal learning of principled knowledge. In K. Maton, S. Hood, & S. Shay (Eds.), *Knowledge-building: Educational studies in Legitimation Code Theory* (pp. 72–92). London: Routlegde.

Meyer, A., Rose, D. H., & Gordon, D. (2014). *Universal design for learning: Theory and practice*. Wakefield: CAST Professional Publishing.

Oblinger, D. G. (2014). Designed to engage. *Educause Review*, *49*(5), 12–33.

Shekerev, N. (2019). Accessibility guidebook for web development. Retrieved January 27, 2021, from https://www.telerik.com/blogs/web-accessibility-guidebook-for-developers

Stellenbosch University Centre for Teaching and Learning. (2020). Designing Learning, Teaching and Assessment (DeLTA) process.

Strydom, S., Herman, N., Adendorff, H., & De Klerk, M. (Eds.). (2020). *Responding to the necessity for change: HE voices from the South during the COVID-19 crisis*. Stellenbosch: Stellenbosch University – Division for Learning and Teaching Enhancement. Retrieved from http://www.sun.ac.za/english/learning-teaching/ctl/Documents/Responding to the necessity for change.pdf

Van der Merwe, A., Bosman, J., & De Klerk, M. (2020). The development of MOOCs as incubation space for professional and institutional learning. In K. Zhang, C. J. Bonk, T. C. Reeves, & T. H. Reynolds (Eds.), *MOOCS and open education in the global south: Challenges, successes, and opportunities* (pp. 169–180). New York: Routledge.

Veletsianos, G., & Kimmons, R. (2012). Assumptions and challenges of open scholarship. *International Review of Research in Open and Distance Learning*, *13*(4), 166–189. https://doi.org/10.19173/irrodl.v13i4.1313

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

Volschenk, H., Rootman-Le Grange, I., & Adendorff, H. (2020). Successful online learning and teaching is not about technology – it is about humanizing. In S. Strydom, N. Herman, H. Adendorff, & M. De Klerk (Eds.), *Responding to the necessity for change: Higher Education voices from the South during the COVID-19 crisis* (pp. 69–74). Stellenbosch: Stellenbosch University – Division for Learning and Teaching Enhancement.

W3C. (n.d.). Accessibility – W3C. Retrieved January 27, 2021, from https://www.w3.org/standards/webdesign/accessibility

Weller, M. (2011). The Digital Scholar: How technology is transforming scholarly practice. London: Bloomsbury Academic.

Weller, M. (2014). *The Battle for Open: How openness won and why it doesn't feel like victory*. London: Ubiquity Press. https://doi.org/http://dx.doi.org/10.5334/bam

World Blind Union. (2007). WBU PowerPoint Guidelines: Guidelines on how to make the use of PowerPoint and other visual presentations accessible to audience members who have a vision or print impairment. World Blind Union. Retrieved from https://www.ifla.org/publications/guidelines-created-by-the-world-blind-union-wbu-on-how-to-make-the-use-of-powerpoint-an

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms

This content downloaded from 120.159.55.210 on Mon, 08 Nov 2021 01:36:20 UTC
All use subject to https://about.jstor.org/terms