Indeed, even in 2019, BCcampus still defined open pedagogy as follows:

> *Open pedagogy, also known as open educational practices (OEP), is the use of open educational resources (OER) to support learning, or the open sharing of teaching practices with a goal of improving education and training at the institutional, professional, and individual level.*

However, it is now realised that for open educational resources to be widely adopted, as well as to change teaching practice, they need to be embedded in a much broader ecology of teaching and learning, of which open pedagogy is a critical component. The following definition from the University of Texas Arlington Libraries represents this thinking:

> *Open pedagogy is the practice of engaging with students as creators of information rather than simply consumers of it. It's a form of experiential learning in which students demonstrate understanding through the act of creation. The products of open pedagogy are student created and openly licensed so that they may live outside of the classroom in a way that has an impact on the greater community. Open projects frequently result in the creation of open educational resources (OER). OER are free teaching and learning materials that are licensed to allow for revision and reuse. They can be fully self-contained textbooks, videos, quizzes, learning modules, and more.*

I like the above definition because it focuses on student behaviour, where open educational materials are a by-product of their learning, rather than the starting point, although open pedagogy can also embrace OER as a starting point.

Hegarty (2015) describes eight attributes of open pedagogy:

- **participatory technologies**: socially constructed media such as blogs, wikis and other 'sharing' social media;
- **people, openness and trust**: students' willingness to learn is fragile, with participation and interactions unlikely to flourish unless an element of trust can be built (Mak et., 2010);
- **innovation and creativity**: finding new models of teaching and learning that better exploit OER and more emphasis on choosing digital technologies and methods that encourage the sharing of knowledge and resources;
- **sharing ideas and resources**: an open pedagogy needs peers to share willingly within a connected and trusting and professional community;
- **connected community**: a technologically linked community with common interests;
- **learner-generated:** this requires 'opening up' the process to empower students to take the lead, solve problems, and work collectively to produce artifacts that they share, discuss, reconfigure, and redeploy
- **reflective practice**: when students and teachers collaborate in partnerships, it facilitates deeper pedagogical reflection
- **peer review:** Conole (2014) sees learners as publishers and users of a range of open tools, with peer interactions and critique embedded in the learning experience.

Hegarty also makes the point that it is almost impossible to separate the components of an open

pedagogy into neat, segregated dimensions. Components in each of the eight dimensions overlap in many ways.

Figure 11.4.2 Hegarty's Attributes of Open Pedagogy. Image: Hegarty, 2015

DeRosa and Robison (2017) set out the key idea of open pedagogy in the following:

> *By replacing a static textbook — or other stable learning material — with one that is openly licensed, faculty have the opportunity to create a new relationship between learners and the*

information they access in the course. Instead of thinking of knowledge as something students need to download into their brains, we start thinking of knowledge as something continuously created and revised. Whether students participate in the development and revision of OER or not, this redefined relationship between students and their course 'texts' is central to the philosophy of learning that the course espouses. If faculty involve their students in interacting with OER, this relationship becomes even more explicit, as students are expected to critique and contribute to the body of knowledge from which they are learning. In this sense, knowledge is less a product that has distinct beginning and end points and is instead a process in which students can engage, ideally beyond the bounds of the course.

11.4.2 Examples of open pedagogy

There is a close connection between networking, social media such as blogs and wikis, which enable students to create open educational resources, and open pedagogy.

Jon Beasley-Murray's course where students created a Wikipedia entry on Latin American literature is a good example, as is the Math Exam Resources created by graduate students at UBC (see Chapter 9, Section 8.8.3). This approach is particularly valuable for partly redressing cultural and historical bias, through the organization of Wikipedia edit-a-thons. For two examples, see Women in Red/Indigenous Women. and Indigenous Literature Edit-a-Thon.

The Universidad de Guadalajara (Mexico) has an interesting web site (in English) that provides a number of examples of open pedagogy from around the world, related to its Agora project.

Another practice of open pedagogy are textbook-free degrees, called Zed Creds or Z-degrees but also ZTC (zero textbook cost). Royal Roads University's Masters of Arts in Learning and Technology is the first master of arts degree in Canada to go textbook-free. Students can access all of the course materials through open educational resources, e-books, journal articles and other free digital resources. These types of courses aim to improve access to education and enhance student outcomes.

Many more examples of open pedagogy in practice can be found in Jhangiani and Biswas-Diener (2017) and in the Open Pedagogy Notebook.

Lastly, there is a related movement around open educational infrastructure and technology that challenges educational institutions and students to think about who owns the technology and data being used for teaching and learning and how open education practices can be enabled by open educational technologies (see, for example OpenETC.)

11.4.3 The need to provide a framework to support open educational resources

The search for a pedagogical and organizational framework to support the use of open educational resources has been driven partly by the relative slowness of adoption of OER. To give a simple example, instructors are reluctant to move away from expensive commercial first year textbooks, because these books often come with a wide range of support materials, such as interactive web sites with sample exam questions and answers, multiple-choice questions, and alternative reading. Open textbooks need to come with similar supporting materials, student activities and a wider 'network' of support to compete with commercial textbooks.

Paul Stacey, the Director of the Open Education Consortium, has mused (2018) that too much focus is given to licensing and content development, and not enough to collectively managing open resources so that they are sustainable and dynamic. He argues that OER, to be effective, need 'commoning', which reflects the management and sustainability of common, shared resources and services. He argues for:

- a social system for the long-term stewardship of resources that preserves shared values and community identity;
- a self-organized system by which communities manage resources (both depletable and and replenishable) with minimal or no reliance on the Market or State. Simply having a community and pool of resources is not enough. There needs to be a set of protocols, values and norms devised by the community to manage its resources.

Open pedagogy could provide an important pedagogical part of such a framework, but Stacey seems to be suggesting that support needs to go beyond pedagogy to a social and management structure.

11.4.4 Is open pedagogy a useful construct?

Some of you may feel like Molière's Bourgeois Gentilhomme after a lesson from his tutor: 'I have been speaking prose for 40 years and never realised it.' The concept of 'open pedagogy' has been around for a long time, even if it has seen a revival resulting from the development of OER.

Lord Crowther, in a speech presenting the charter of the British Open University in 1969, defined the Open University as:

- open to people: "We took it as axiomatic" said the Planning Committee "that no formal academic qualifications would be required for registration as a student…Anyone could try his or her hand, and only failure to progress adequately would be a bar to continuation of studies."
- open to places: "This University has no cloisters – a word meaning closed. We have no courts – or spaces enclosed by buildings….Wherever the English language is spoken or understood, or used as a medium of study, and wherever there are men and women seeking to develop their individual potentialities beyond the limits of the local provision – and I have defined a large part of the world – there we can offer our help."
- open to methods: 'Every new form of human communication will be examined to see how it can be used to raise and broaden the level of human understanding."
- open to ideas: "It has been said that there are two aspects of education, both necessary. One regards the individual human mind as a vessel, of varying capacity, into which is to be poured as much as it will hold of the knowledge and experience by which human Society lives and moves. This is the Martha of education – and we shall have plenty of these tasks to perform. But the Mary regards the human mind rather as a fire that has to be set alight and blown with the divine efflatus'.

I am not sure that open pedagogy is the divine efflatus, but Crowther's understanding of openness in methods is much wider than modern concepts of open pedagogy.

Claude Paquette, following the cultural revolution in Québec, wrote in 1979:

> *Une pédagogie ouverte est centrée sur l'interaction qui existe dans une classe entre l'étudiant et l'environnement éducatif qui lui est proposé….Il s'agit d'une façon de penser et d'une façon d'agir. L'éducateur aura donc pour rôle premier de contribuer à l'aménagement de cet environnement éducatif.*

> [My translation: Open pedagogy is focused on the interaction within a class between a learner and the educational environment that is created for him. It is about a way of thinking and a way of acting. The primary role of the teacher then is to contribute to the management of this educational environment.'

Note that there is no mention of free or open educational resources, and the quote could have come straight from Rousseau's 'Emile' (1972). It is the basis for the whole of Chapter 6 in this book.

David Wiley (who was the originator of the term 'open educational resources') writes (2017):

> *"Open" …. does not have anything to say about the nature of learning. …you can't actually build a pedagogy on a foundation of open (well, not one that isn't incredibly impoverished). Your foundational commitments in terms of pedagogy should be to an understanding of how learning happens. Once we have made fundamental commitments in terms of a theory of learning, then we can add open to our list of facilitating methods in order get better leverage.*
>
> *I wonder if it isn't nonsensical to talk about "open pedagogy" at all …… Perhaps we should only use open as a modifier for other pedagogies, like "open constructionist pedagogy" or "open connectivist pedagogy" or "open constructivist pedagogy." It's clear in each of those cases how open gives you better leverage in terms of supporting learning.*

Although many of the practices associated with open pedagogy have been around long before open educational resources were created, OER nevertheless make such practices much easier to implement and more powerful. But does this make a new pedagogy?

Morgan (2017) raises this issue with respect to the project she worked on for the Universidad de Guadalajara's Agora project.

> *The Agora design process was focussed on what an open design would actually be* a means to *which can be summarized as:*
>
> 1. *Open as a means to facilitate a faculty* ***culture of collaboration*** *across the university and across disciplines*
> 2. *Open as a means* ***to connect*** *with a broader, global community*
> 3. *Open as means to* ***challenge and expand existing understandings*** *of student centre learning*
> 4. *Open as means to* ***challenge ways of doing****, in this case, the options and possibilities of digital technology and mobile learning*
> 5. *Open as a means to make the lives of faculty easier in their pursuit of* ***better teaching and learning***
> 6. *Open as a means to create a* ***sustainable approach*** *to faculty development*
>
> *Ultimately we did create content that fits quite nicely with the 5Rs, but the goal of our open pedagogy design process was not to create OERs as a means towards or even as an essential component of open pedagogy. The Agora was alternatively all of the 'isms – behaviourism, connectivism, constructivism, constructionism – but the ism doesn't really matter. Importantly, the open pedagogy design was at times technology-enabled and at times it didn't use technology or the*

internet at all. OERs didn't allow us to practice a different pedagogy, rather the open pedagogy of the Agora was a bricolage of activities and practices that at times resulted in OERs and at times didn't.

Pedagogy is primarily about practice: what teachers or learners do. Obviously, practice is and should be driven by ideas and beliefs, but it is different from philosophy. Learner-centred teaching or learners creating knowledge (with or without OER) is a pedagogy; 'open' is more of an idea and a value. In other words, looking at the quotations above, open is more a philosophy, a way of thinking, that informs practice, rather than the practice itself. However, this is a somewhat academic distinction. OER is enabling changes in teaching practice. However, I prefer a broader vision for teaching in a digital age than one so closely tied to OER.

11.4.5 Another vision for pedagogy in a digital age

The increasing availability of high quality open content is likely to facilitate the shift from information transmission by the instructor to knowledge management by the learner. Also in a digital age there is a need for greater focus on skills development embedded within a subject domain than on the memorisation of content.

The use of open educational resources could enable these developments in a number of ways, such as:

- a learner-centered teaching approach that focuses on students accessing content on the Internet (and in real life) as part of developing knowledge, skills and competencies defined by the instructor, or learners managing their learning for themselves; however, content would not be restricted to officially designated open educational resources, but to everything on the Internet, because one of the core skills students will need is how to assess and evaluate different sources of information;

- a consortium of teachers or institutions creating common learning materials within a broader program context, that can be shared both within and outside the consortium. However, not only would the content be freely available, but also the underlying instructional principles, learning outcomes, learner assessment strategies, what learner support is needed, learner activities, and program evaluation techniques, so that other instructors or learners can adapt all this to their own context. This approach is already being taken by:
    - the Carnegie Mellon Open Learning Initiative
    - to some extent by the UK Open University's OpenLearn project
    - the Virtual University of Small States of the Commonwealth
    - OER Africa
    - OERu

Overall, such developments are likely to lead to a severe reduction in lecture-based teaching and a move towards more project work, problem-based learning and collaborative learning. It will also result in a move away from fixed time and place written examinations, to more continuous, portfolio-based forms of assessment.

The role of the instructor then will shift to providing guidance to learners on where and how to find

content, how to evaluate the relevance and reliability of content, what content areas are core and what peripheral, and to helping students analyse, apply and present information, within a strong learning design that focuses on clearly defined learning outcomes, particularly with regard to the development of skills. Students will work mainly online and collaboratively, developing multi-media learning artefacts or demonstrations of their learning, managing their online portfolios of work, and editing and presenting selected work for assessment.

This is a far broader vision of pedagogy than that built around the use of OER.

11.4.6 Conclusion

In summary:

- increasingly, educational resources are becoming more freely and more openly available for teachers and learners;
- OER open up the possibility of greater student participation in the creation as well as the selection of learning materials;
- it is essential to embed OER within a robust and appropriate teaching framework or pedagogy that exploits the potential of OER;
- OER may lead to a new, open pedagogy, but more likely will lead to the greater adoption and adaptation of existing teaching methods that benefit from the potential of OER;
- it is also essential to create organizational environments or management frameworks that encourage and support the development and use of high quality open educational resources; they cannot successfully exist in a vacuum;
- what should drive open educational practices and use of OERs should be a broader vision of teaching and learning that focuses on the knowledge and skills students need in a digital age. OER should be embedded in a wider concept of pedagogy than just 'open' pedagogy.

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Activity 11.4 Contemplating open pedagogy

1. How does open pedagogy differ from other teaching methods such as experiential learning or problem-based learning? What makes open pedagogy unique, if anything? Does it matter?
2. Look at one of the modules or topics you are currently teaching. How could you re-design it to reflect an open pedagogical approach? What would be the advantages and disadvantages of doing this?
3. What support beyond your commitment and time would be necessary for you to be able successfully to integrate OER into your teaching?

11.5 The implications of 'open' for course and program design: towards a paradigm shift?

11.4.1 An open and free beach, Pie de la Cuesta, Mexico
Image: © Tony Bates 2015 CC BY-NC

Although in recent years MOOCs, emerging technologies and artificial intelligence have been receiving all the media attention, I believe that developments in open educational resources, open textbooks, open research and open data will be far more important and far more revolutionary. Here are some reasons why.

11.5.1 Nearly all educational content will be free and open

Eventually most academic content will be easily accessible and freely available through the Internet – for anyone. This could well mean a shift in power from teachers and instructors to students. Students will no longer be dependent on 'live' instructors as their primary source of content. Already some students are skipping lectures at their local institution because the teaching of the topic is better and clearer on OpenCourseWare, MOOCs or the Khan Academy. If students can access the best lectures or learning materials for free from anywhere in the world, including the leading Ivy League universities, why would they want to get content from a middling lecturer at Midwest State University? What is the added value that this lecturer is providing for the students?

There are good answers to this question, but it means considering very carefully how content will be presented and shaped by a teacher or instructor that makes it uniquely different from what students can access elsewhere. For research professors this may include access to their latest, as yet unpublished, research; for other instructors, it may be their unique perspective on a particular topic, and for others, a unique mix of topics to provide an integrated, inter-disciplinary approach. What will not be acceptable to most students is repackaging of 'standard' content that can easily be found elsewhere on the Internet and at a higher quality.

Furthermore, if we look at knowledge management as one of the key skills needed in a digital age, it may be better to enable students to find, analyze, evaluate and apply content than for instructors to do it for them. If most content is available elsewhere, what students will look for increasingly from their local institutions is support with their learning, rather than the delivery of content. This means directing them to appropriate sources of content, helping when students are struggling with concepts, and providing opportunities for students to apply their knowledge and to develop and practice skills. It means giving prompt and relevant feedback as and when students need it. Above all, it means creating a rich learning environment in which students can study (see Chapter 6). It means moving teaching from information transmission to knowledge management, from selecting, structuring and delivering content to learner support.

Thus for most students within their university or college (with the possible exception of the most advanced research universities) the quality of the learning support will eventually matter more than the quality of content delivery, which they can get from anywhere. This is a major challenge for instructors who see themselves primarily as content experts and deliverers.

11.5.2 Modularisation

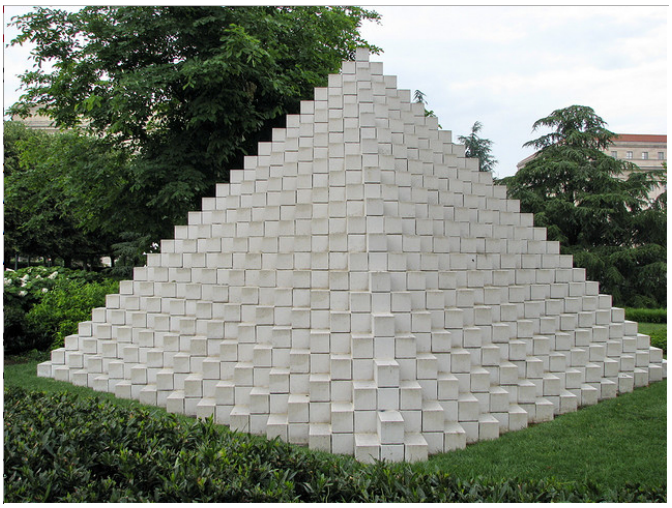

Figure 11.5.2 Four-sided pyramid, by Sol LeWitt, 1999
Image: Cliff, Flickr, © CC Attribution 2.0

The creation of open educational resources, either as small learning objects but increasingly as short ‘modules’ of teaching, from anywhere between five minutes to one hour of material, and the increasing diversification of markets, is beginning to result in two of the key principles of OER being applied, re-use and re-mix. In other words, the same content, available in an openly accessible digital form, may be integrated into a range of different applications, and/or combined with other OER to create a single teaching module, course or program, as in Scenario H.

Between 2015 to 2018, the Ontario government, through its online course development fund, encouraged institutions to create OER. As a result, several universities brought together faculty within their own institution but working in different departments that teach the same area of content (for example, statistics) to develop ‘core’ OER that can be shared between departments. The logical next step would be for statistics faculty across the Ontario system to get together and develop an integrated set of OER modules on statistics that would cover substantial parts of the statistics curriculum. Working together would have the following benefits:

- higher quality by pooling resources (two subject expert heads are better than one, combined with support from instructional designers and web producers);
- more OER than one instructor or institution could produce;
- subject coherence and lack of duplication;
- more likelihood of faculty in one institution using materials created in another if they have had input to the selection and design of the OER from other institutions.

As the range and quality of OER increases, instructors (and students) will be able to build curriculum through a set of OER 'building blocks'. The aim would be to reduce instructor time in creating materials and using their time more in supporting student learning than in delivering content. When they do create original material, it can then be shared with other instructors.

11.5.3 Disaggregation of services

Open education and digitisation enable what has tended to be offered by institutions as a complete bundle of services to be split out and offered separately, depending on the market for education and the unique needs of individual learners. These different services could be as follows:

- academic guidance (assessment of learning needs; admission counselling)
- choice of educational goals/outcomes/competencies
- access to 'open' digital content in the form of OER or MOOCs
- learner support, including a choice of
    - topic guidance (build a curriculum)
    - tutoring on demand (for example, when students are 'stuck')
    - different learning activities (tests, projects, etc.)
    - feedback on learning activities
    - assessment preparation
- assessment on demand

Learners will select and use those modules or services that best fit their needs. This is likely to be the pattern for lifelong learners in particular. Some early indications of this process are already occurring, although most of the really significant changes are yet to come.

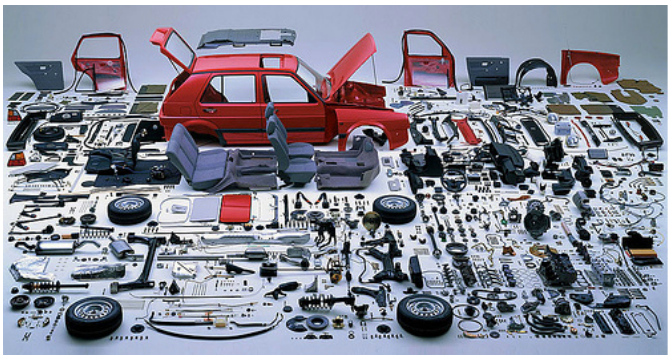

Figure 11.5.3 Disaggregation
Image: © Aaron 'tango' Tan, Flickr, CC Attribution 2.0

11.5.3.1 Admission and program counselling

This is a service already offered by Empire State University, a part of the State University of New York, through its pre-enrollment advisers. Adult learners considering a return to study or a career change can receive mentoring about what courses and combinations they can take from within the college that fit with their previous life and their future wishes. In essence, within boundaries potential students are able to design their own degree. In the future, some institutions might specialise in this kind of service at a system level.

11.5.3.2 Build a curriculum

Students could be advised on an appropriate curriculum that can be built to fit their needs. For instance, Dalhousie University's Faculty of Computer Sciences has built a tool called Daedalus which basically enables the construction of a map showing the inter-relatedness between specific learning outcomes and course content, including course sequencing (see Contact North's Pockets of Innovation for more details).

Once such a map of a degree program or other qualification or curriculum has been built, students can then navigate their own choice of courses or route through a curriculum – and perhaps negotiate what is needed for a degree. This could just as easily be based on OER as classroom teaching.

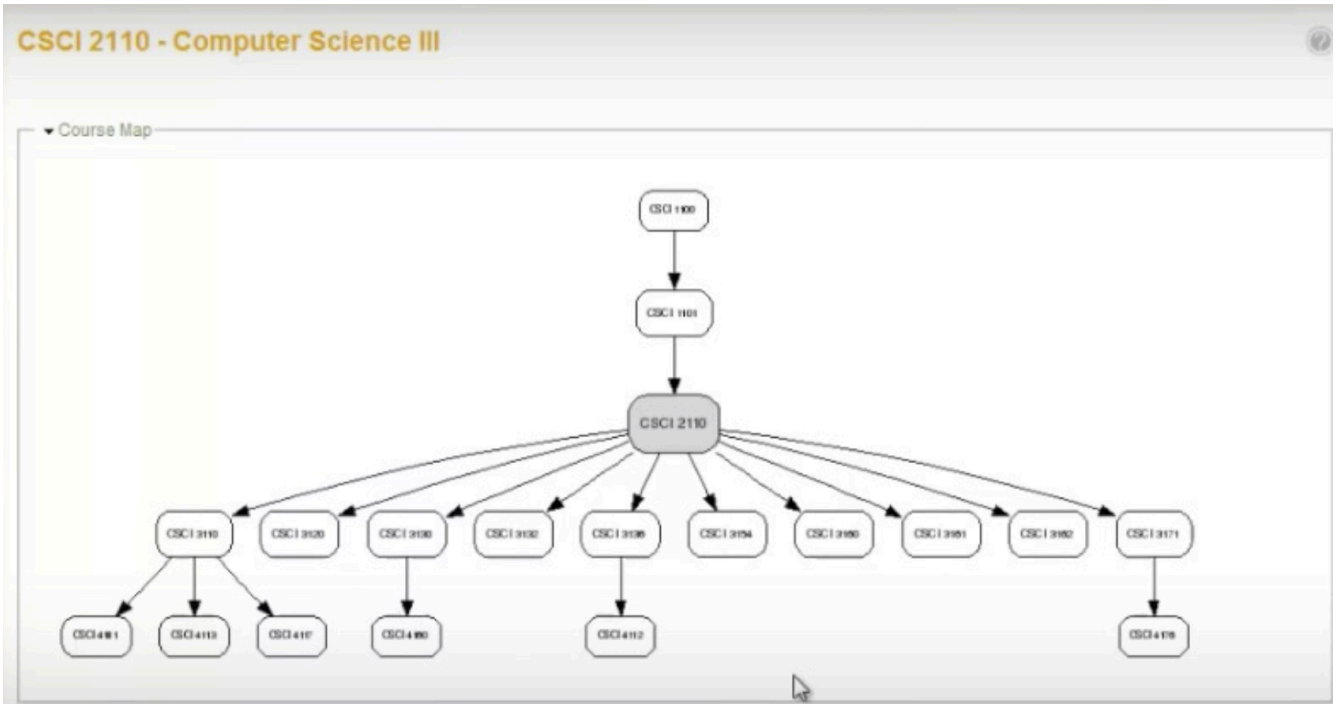

Figure 11.5.4 Daedalus. This shows the relationship between the pre-requisite courses for CSCI 2110 (below) and the courses for which CSCI 2110 is a preparation (above). By clicking on each of the courses listed, students can see the learning outcomes both needed before studying and what they should achieve after studying each course.

11.5.3.3 Learner support

Students may have already determined what they want to study through the Internet, such as a MOOC. What they are looking for is help with their studies: how to write assignments, where to look for information, feedback on their work and thinking. They are not necessarily looking for a credit, degree or other qualification, but if they are they will pay for assessment separately. Currently, students pay private tutors for this service. However, it is feasible that institutions could also provide this service, provided that a suitable business model can be built.

11.5.3.4 Assessment

Learners may feel that through prior study and work, they are able to take a challenge exam for credit. Alternatively a learner may wish to present a portfolio of work to demonstrate their knowledge and skills. All they require from the institution is a chance to be assessed. Institutions such as Western Governors' University or the Open Learning division of Thompson Rivers University are already offering this service, and this would be a logical next step for the many other universities or colleges with some form of prior learning assessment or PLAR.

11.5.3.5 'Assembled' qualifications

Learners may have acquired a range of credits, badges or certificates from a range of different institutions. The institution assesses these qualifications and experiences and helps the learner to take

any further studies that are necessary, then awards the qualification. Prior learning assessment or PLAR is one step in this direction, but not the only one.

11.5.3.6 A discount on fully online courses and programs

For learners who cannot or do not want to attend campus, the course fees would be lower for online courses than for students receiving a full campus experience.

11.5.3.7 Open access to content

In this case, the learner is not looking for any qualification, but wants access to content, particularly new and emerging knowledge. MOOCs are one example, but other examples include OpenLearn and open textbooks.

11.5.3.8 The full campus experience

This would be the 'traditional' integrated package that full-time, campus-based students now receive. This would though be fully costed and much more expensive than any of the other single disaggregated services.

11.5.3.9 Funding models

Note that I have been careful not to link any of these services to a specific funding model. This is deliberate, because it could be:

- covered through privatisation, where each service is separately priced and the user pays for that service (but not for others not used);
- financed through a voucher system, whereby everyone at the age 18 is entitled to a notional amount of financial support from the state for post-secondary education, and can pay for a range of service from that voucher until their individual fund is exhausted;
- all or some services would be available for free as part of a publicly funded open education system
- a mix of the above.

Whatever the funding model, institutions disaggregating services will need to be able to price different services accurately.

11.5.3.10 The argument against disaggregation

There are also strong arguments against the disaggregation of services. Gallagher (2019) argues that the successful colleges and universities of the future will be integrated: coherently and cohesively designed to help students achieve a lifelong learning experience that is more than the sum of its parts.

However, this is not a question of either/or and should be driven to some extent by the needs of learners at different points in their learning cycle. Most younger students coming from high school probably will need an integrated college experience. However, working adults or students who have

graduated may not want, need or can afford the full package. Disaggregation will provide the flexibility needed for lifelong learning.

11.5.3.11 The need for more flexibility in services

In any case, there is now an increasing diversity of learners' needs, from high school students wanting full-time education, graduate students wanting to do research, and lifelong learners, most of whom will have already passed through a publicly funded higher education system, wanting to keep learning either for vocational or personal reasons. This increasing diversity of needs requires a more flexible approach to providing educational opportunities in a digital age. Disaggregation of services and new models of funding, combined with increased accessibility to free, open content, are some ways in which this flexibility can be provided. For alternative views on this issue, see Carey, 2015; Large, 2015.

11.5.4 Conclusions

Despite all the hoopla around MOOCs, they are essentially a dead end with regard to providing learners who do not have adequate access to education with what they want: high quality qualifications. The main barrier to education is not lack of cheap content but lack of access to programs leading to credentials, either because such programs are too expensive, or because there are not enough qualified teachers, or both. Making content free is not a waste of time (if it is properly designed for secondary use), but it still needs a lot of time and effort to integrate it properly within a learning framework.

Open educational resources do have an important role to play in online education, but they need to be properly designed, and developed within a broader learning context that includes the critical activities needed to support learning, such as opportunities for student-instructor and peer interaction, and within a culture of sharing, such as consortia of equal partners and other frameworks that provide a context that encourages and supports sharing. In other words, OER need skill and hard work to make them useful, and selling them as a panacea for education does more harm than good.

Although open and flexible learning and distance education and online learning mean different things, the one thing they all have in common is an attempt to provide alternative means of high quality education or training for those who either cannot take conventional, campus-based programs, or choose not to.

Lastly, there are no insurmountable legal or technical barriers now to making educational material free. The successful use of OER does though require a particular mindset among both copyright holders – the creators of materials – and users – teachers and instructors who could use this material in their teaching. Thus the main challenge is one of cultural change.

In the end, a well-funded public higher education system remains the best way to assure access to higher education for the majority of the population. Having said that, there is enormous scope for improvements within that system. Open education and its tools offer a most promising way to bring about some much needed improvements.

11.5.5 The future is yours

This is just my interpretation of how approaches to 'open' content and resources could radically change the way we teach and how students will learn in the future. At the beginning of this chapter there is a scenario I created which suggests how this might play out in one particular program.

More importantly, there is not just one future scenario, but many. The future will be determined by

a host of factors, many outside the control of teachers and instructors. But the strongest weapon we have as teachers is our own imagination and vision. Open content and open learning reflect a particular philosophy of equality and opportunity created through education. There are many different ways in which we as teachers, and even more our learners, can decide to apply that philosophy. However, the technology now offers us many more choices in making these decisions. Thus there is scope for many more scenarios that aim to extend access and educational opportunities.

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Gallagher, C. (2019) *Integrative Learning for a Divided World* Baltimore ML: John Hopkins Press

Activity 11.5 Build your own scenario

1. Re-read Scenario H. Could you build a future scenario for your own courses and programs, that exploit fully the use of OER and different delivery modes?

(This will be easier and more effective if you could do this with a range of other faculty, instructional designers and web producers, through, for instance, a faculty development workshop).

Key Takeaways

1. Open educational resources offer many benefits but they need to be well designed and embedded within a rich learning environment to be effective.

2. The increasing availability of OER, open textbooks, open research and open data means that in future, almost all academic content will be open and freely accessible over the Internet.

3. As a result, students will increasingly look to institutions for learning support and help with the development of skills needed in a digital age rather than with the delivery of content. This will have major consequences for the role of teachers/instructors and the design of courses.

4. OER and other forms of open education will lead to increased modularization and disaggregation of learning services, which are needed to respond to the increasing diversity of learner needs in a digital age.

5. MOOCs are essentially a dead end with regard to providing learners who do not have adequate access to education with high quality qualifications. The main value of MOOCs is in providing opportunities for non-formal education and supporting communities of practice.

6. OER, MOOCs, open textbooks and other digital forms of open-ness are important in helping to widen access to learning opportunities, but ultimately these are enhancements rather than a replacement for a well-funded public education system, which remains the core foundation for enabling equal access to educational opportunities.

Chapter 12: Ensuring quality teaching in a digital age

Purpose of the chapter

When you have read this chapter, and in conjunction with what has been learned in previous chapters, you should be able to:

- define quality in terms of teaching in a digital age;
- determine what your preferred approaches are to teaching and learning;
- decide what mode of delivery is most appropriate for any course you are responsible for;
- understand why teamwork is essential for effective teaching in a digital age;
- make best use of existing resources for any course;
- choose and use the right technology and tools to support your learning;
- set appropriate learning goals for teaching in a digital age;
- design an appropriate course structure and set of learning activities;
- know when and how to communicate with learners;
- evaluate your teaching, make necessary improvements, and improve your teaching through further innovation.

What is covered in this chapter

- 12.12 Building a strong foundation of course design

Also in this chapter you will find the following activities:

- Activity 12.1 Defining quality in teaching and learning
- Activity 12.2 There is no activity for this section
- Activity 12.3 Re-thinking your teaching
- Activity 12.4 Which mode of delivery?
- Activity 12. 5 There is no activity for this section
- Activity 12.6 Building on existing resources
- Activity 12.7 Mastering the technology
- Activity 12.8 Setting learning goals
- Activity 12.9 Structuring your course or program
- Activity 12.10 Communicating with your students
- Activity 12.11 Evaluating your course or program
- Activity 12.12 There is no activity for this section.

Key Takeaways

1. For the purposes of this book, quality is defined as: *teaching methods that successfully help learners develop the knowledge and skills they will require in a digital age.*

2. Formal national and institutional quality assurance processes do not guarantee quality teaching and learning. In particular, they focus on past 'best' practices, processes to be done before actual teaching, and often ignore the affective, emotional or personal aspects of learning. Nor do they focus particularly on the needs of learners in a digital age.

3. New technologies and the needs of learners in a digital age require a re-thinking of traditional campus-based teaching, especially where it is has been based mainly on the transmission of knowledge. This means re-assessing the way you teach and determining how you would really like to teach in a digital age. This requires imagination and vision rather than technical expertise.

4. It is important to determine the most appropriate mode of delivery, based on teaching philosophy, the needs of students, the demands of the discipline, and the resources available.

5. It is best to work in a team. Blended and especially fully online learning require a range of skills that most instructors are unlikely to have. Good course design not only enables students to learn better but also controls faculty workload. Courses look better with good graphic and web design and professional video production. Specialist technical help frees up instructors to concentrate on the knowledge and skills that students need to develop.

6. Full use should be made of existing resources, including institutionally-supported learning technologies, open educational resources, learning technology staff, and the experience of your colleagues.

7. The main technologies you will be using should be mastered, so you are professional and knowledgeable about their strengths and weaknesses for teaching.

8. Learning goals that are appropriate for learners in a digital age need to be set. The skills students need should be embedded within their subject domain, and these skills should be formally assessed.

9. A coherent and clearly communicable structure and learning activities for a course should be developed that are manageable in terms of workload for both students and instructor.

10. Regular and on-going instructor/teacher presence, especially when students are studying partly or wholly online, is essential for student success. This means effective communication between teacher/instructor and students. It is particularly important to encourage inter-student communication, either face-to-face or online.

11. The extent to which the new learning goals of re-designed courses aimed at developing the knowledge and skills needed in a digital age have been achieved should be carefully evaluated and ways in which the course could be improved should be identified.

12.1 What do we mean by quality when teaching in a digital age?

Figure 12.1.1 What do we mean by quality?
Image: © Wikipedia Commons

If you have followed the journey through all the previous chapters of this book, you will have been subject to a great deal of information: philosophical, empirical, technological, and administrative, set within a framework of issues related to the needs of learners in a digital age. It is now time to pull all this together into a pragmatic set of action steps that will enable you to apply these ideas and concepts within the everyday circumstances of teaching.

Thus the aim of this chapter is to provide some practical guidelines for teachers and instructors to ensure quality teaching in a digital age. This will mean drawing on all the previous chapters in this book, so there will inevitably be some repetition in this chapter of the content of earlier chapters. They aim here is to pull it all together towards developing quality digitally-based courses and programs fit for a digital age.

. Before I do this, however, it is necessary to clarify what is meant by ‘quality’ in teaching and learning, because I am using ‘quality’ here in a very specific way.

12.1.1 Definitions

Probably there is no other topic in education which generates so much discussion and controversy as ‘quality’. Many books have been written on the topic, but I will cut to the chase and give my definition of quality up-front. For the purposes of this book, quality is defined as:

> *teaching methods that successfully help learners develop the knowledge and skills they will require in a digital age.*

This of course is my short answer to the question of what is quality. A longer answer means looking, at least briefly, at:

- institutional and degree accreditation;
- internal (academic) quality assurance processes;
- differences in quality assurance between traditional classroom teaching and online and distance education;
- the relationship between quality assurance processes and learning outcomes;
- ‘quality assurance fit for purpose’: meeting the goals of education in a digital age.

This will then provide the foundations for my recommendations for quality teaching that will follow in this chapter.

12.1.2 Institutional and degree accreditation

Most governments act to protect consumers in the education market by ensuring that institutions are properly accredited and the qualifications they award are valid and are recognised as of being of ‘quality.’ However, the manner in which institutions and degrees are accredited varies a great deal. The main difference is between the USA and virtually any other country.

The U.S. Department of Education’s Network for Education Information states in its description of accreditation and quality assurance in the USA:

> *Accreditation is the process used in U.S. education to ensure that schools, postsecondary institutions, and other education providers meet, and maintain, minimum standards of quality and integrity regarding academics, administration, and related services. It is a voluntary process based on the principle of academic self-governance. Schools, postsecondary institutions and programs (faculties) within institutions participate in accreditation. The entities which conduct accreditation are associations comprised of institutions and academic specialists in specific subjects, who establish and enforce standards of membership and procedures for conducting the accreditation process.*
>
> *Both the federal and state governments recognize accreditation as the mechanism by which*

institutional and programmatic legitimacy are ensured. In international terms, accreditation by a recognized accrediting authority is accepted as the U.S. equivalent of other countries' ministerial recognition of institutions belonging to national education systems.

In other words, in the USA, accreditation and quality assurance is effectively self-regulated by the educational institutions through their control of accreditation agencies, although the government does have some 'weapons of enforcement', mainly through the withdrawal of student financial aid for students at any institution that the U.S. Department of Education deems to be failing to meet standards.

In many other countries, government has the ultimate authority to accredit institutions and approve degrees, although in countries such as Canada and the United Kingdom, this too is often exercised by arm's length agencies appointed by government, but consisting mainly of representatives from the various institutions within the system. These bodies have a variety of names, but Degree Quality Assurance Board is a typical title. However, in recent years, some regulatory agencies such as the United Kingdom's Quality Assurance Agency for Higher Education have adopted formal quality assurance processes based on practices that originated in industry. The U.K. QAA's revised Quality Code for Higher Education is set out below:

The UK Quality Code

Expectations for standards		Expectations for quality	
The academic standards of courses meet the requirements of the relevant national qualifications framework. The value of qualifications awarded to students at the point of qualification and over time is in line with sector-recognised standards.		Courses are well-designed, provide a high-quality academic experience for all students and enable a student's achievement to be reliably assessed. From admission through to completion, all students are provided with the support that they need to succeed in and benefit from higher education.	
Core practices	**Common practices**	**Core practices**	**Common practices**
The provider ensures that the threshold standards for its qualifications are consistent with the relevant national qualifications frameworks. The provider ensures that students who are awarded qualifications have the opportunity to achieve standards beyond the threshold level that are reasonably comparable with those achieved in other UK providers. Where a provider works in partnership with other organisations, it has in place effective arrangements to ensure that the standards of its awards are credible and secure irrespective of where or how courses are delivered or who delivers them. The provider uses external expertise, assessment and classification processes that are reliable, fair and transparent.	The provider reviews its core practices for standards regularly and uses the outcomes to drive improvement and enhancement.	The provider has a reliable, fair and inclusive admissions system. The provider designs and/or delivers high-quality courses. The provider has sufficient appropriately qualified and skilled staff to deliver a high-quality academic experience. The provider has sufficient and appropriate facilities, learning resources and student support services to deliver a high-quality academic experience. The provider actively engages students, individually and collectively, in the quality of their educational experience. The provider has fair and transparent procedures for handling complaints and appeals which are accessible to all students. Where the provider offers research degrees, it delivers these in appropriate and supportive research environments. Where a provider works in partnership with other organisations, it has in place effective arrangements to ensure that the academic experience is high-quality irrespective of where or how courses are delivered and who delivers them. The provider supports all students to achieve successful academic and professional outcomes.	The provider reviews its core practices for quality regularly and uses the outcomes to drive improvement and enhancement. The provider's approach to managing quality takes account of external expertise. The provider engages students individually and collectively in the development, assurance and enhancement of the quality of their educational experience.

Figure 12.1.2 The UK Higher Education Quality Code (accessed September, 2019)

However, although hardly contentious, such system-wide codes are too general for the specifics of ensuring quality in a particular course. Many institutions as a result of pressure from external agencies have therefore put in place formal quality assurance processes over and beyond the normal academic approval processes (see Clarke-Okah and Daniel, 2010, for a typical, low-cost example).

12.1.3 Internal quality assurance

It can be seen then that the internal processes for ensuring quality programs within an institution are particularly important. Although again the process can vary considerably between institutions, at least in universities the process is fairly standard.

12.1.3.1 Assuring the quality of a program

A proposal for a new degree will usually originate from a group of faculty/instructors within a department. The proposal will be discussed and amended at departmental and/or Faculty meetings, then once approved will go to the university senate for final approval. The administration in the form of the Provost's Office will usually be involved, particularly where resources, such as new appointments, are required.

Although this is probably an over-generalisation, significantly the proposal will contain information about who will teach the course and their qualifications to teach it, the content to be covered within the program (often as a list of courses with short descriptions), a set of required readings, and usually something about how students will be assessed. Increasingly, such proposals may also include broad learning outcomes for the program.

If there is a proposal for courses within a program or the whole program to be delivered fully online, it is likely that the proposal will come under greater internal scrutiny. What is unlikely to be included in a proposal though is what *methods* of teaching will be used. This is usually considered the responsibility of individual faculty members or the individual teacher (unless you are an adjunct or contract instructor). It is this aspect of quality – the effectiveness of the teaching method or learning environment for developing the knowledge and skills in a digital age – with which this chapter is concerned.

12.1.3.2 Assuring the quality of classroom teaching

There are many guidelines for quality traditional classroom teaching. Perhaps the most well known are those of Chickering and Gamson (1987), based on an analysis of 50 years of research into best practices in teaching. They argue that good practice in undergraduate education:

1. Encourages contact between students and faculty.
2. Develops reciprocity and cooperation among students.
3. Encourages active learning.
4. Gives prompt feedback.
5. Emphasizes time on task.
6. Communicates high expectations.

7. Respects diverse talents and ways of learning.

However, these standards should apply equally to both face-to-face and online teaching.

12.1.3.3 Quality in online courses and programs

Because online learning was new and hence open to concern about its quality, there have also been many guidelines, best practices and quality assurance criteria created and applied to online programming. All these guidelines and procedures have been derived from the experience of previously successful online programs, best practices in teaching and learning, and research and evaluation of online teaching and learning. A comprehensive list of online quality assurance standards, organizations and research on online learning can be found in Appendix 2.

Jung and Latchem (2012), in a review of quality assessment processes in a large number of online and distance education institutions around the world, make the following important points about quality assurance processes for online and distance education within institutions:

- focus on outcomes as the leading measure of quality;
- take a systemic approach to quality assurance;
- see QA as a process of continuous improvement;
- move the institution from external controls to an internal culture of quality;
- poor quality has very high costs so investment in quality is worthwhile.

Ensuring quality in online learning is not rocket science. There is no need to build a bureaucracy around this, but there does need to be some mechanism, some way of monitoring instructors or institutions when they fail to meet these standards. However, we should also do the same for campus-based teaching. As more and more already accredited (and 'high quality') campus-based institutions start moving into hybrid learning, the establishment of quality in the online learning elements of programs will become even more important.

12.1.4 Consistency in applying quality standards

There are plenty of evidence-based guidelines for ensuring quality in teaching, both face-to-face and online. The main challenge then is to ensure that teachers and instructors are aware of these best practices and that institutions have processes in place to ensure that guidelines for quality teaching are implemented and followed.

Quality assurance methods are valuable for agencies concerned about rogue private providers, or institutions using online learning to cut corners or reduce costs without maintaining standards (for instance, by hiring untrained adjuncts, and giving them an unacceptably high teacher-student ratio to manage). QA methods can be useful for providing instructors new to teaching with technology, or struggling with its use, with models of best practice to follow. But for any reputable state university or college, the same quality assurance standards should apply equally to face-to-face and online teaching, even if slightly adjusted for the difference in delivery method.

12.1.5 Quality assurance, innovation and learning outcomes

Most QA processes are front-loaded, in that they focus on inputs – such as the academic qualifications of faculty, or the processes to be adopted for effective teaching, such as clear learning objectives, or systems-based course design methods, such as ADDIE – rather than outputs, such as what students have actually learned. QA processes also tend to be backward-looking, that is, they focus on *past* best practices.

This needs to be considered especially when evaluating new teaching approaches. Butcher and Hoosen (2014) state:

> *The quality assurance of post-traditional higher education is not straightforward, because openness and flexibility are primary characteristics of these new approaches, whereas traditional approaches to quality assurance were designed for teaching and learning within more tightly structured frameworks.*

However, Butcher and Hoosen (2014) go on to say that:

> *fundamental judgements about quality should not depend on whether education is provided in a traditional or post-traditional manner …the growth of openness is unlikely to demand major changes to quality assurance practices in institutions. The principles of good quality higher education have not changed…. Quality distance education is a sub-set of quality education…Distance education should be subject to the same quality assurance mechanisms as education generally.'*

Such arguments though offer a particular challenge for teaching in a digital age, where learning outcomes need to include the development of skills such as independent learning, facility in using social media for communication, and knowledge management, skills that have often not been explicitly identified in the past. Quality assurance processes are not usually tied to specific types of learning outcomes, but are more closely linked to general performance measures such as course completion rates, time to degree completion, or grades based on past learning goals.

Furthermore, we have already seen in Chapters 9, 10 and 11 that new media and new methods of teaching are emerging that have not been around long enough to be subject to analysis of best practices. A too rigid view of quality assessment based on past practices could have serious negative implications for innovation in teaching and for meeting newly emerging learning needs. 'Best practice' may need occasionally to be challenged, so new approaches can be experimented with and evaluated.

12.1.6 Getting to the essence of quality

Institutional accreditation, internal procedures for program approval and review, and formal quality assurance processes, while important, particularly for external accountability, do not really get to the heart of what quality is in teaching and learning. They are rather like the pomp and circumstance of state occasions. The changing of the guard in front of the palace is ceremonial, rather than a practical defence against revolution, invasion or a terrorist attack on the President or the monarchy. As important as ceremonies and rituals are to national identity, a strong state is bound by deeper ties. Similarly, an effective school, college or university is much more than the administrative processes that regulate teaching and learning.

At its worst, quality management can end up with many boxes on a questionnaire being ticked, in that the management processes are all in place, without in fact investigating whether students are really learning more or better as a result of using technology. In essence, teaching and learning are very human activities, often requiring for success a strong bond between teacher and learner. There is a powerful affective or motivational aspect of learning, which a 'good' teacher can tap into and steer.

One reason for the concern of many teachers and instructors about using technology for teaching is that it will be difficult or even impossible to develop that emotional bond that helps see a learner through difficulties or inspires someone to greater heights of understanding or passion for the subject. However, technology is now flexible and powerful enough, when properly managed, to enable such bonds to be developed, not only between teacher and learner, but also between learners themselves, even though they may never meet in person.

Thus any discussion of quality in education needs to recognise and accommodate these affective or emotional aspects of learning. This is a factor that is too often ignored in behaviourist approaches to the use of technology or to quality assurance. Consequently, in what follows in this chapter, as well as incorporating best practices in technical terms, the more human aspects of teaching and learning are considered, even or especially within technology-based learning environments.

12.1.7 Quality assurance: fit for purpose in a digital age

At the end of the day, the best guarantees of quality in teaching and learning fit for a digital age are:

- well-qualified subject experts also well trained in both teaching methods and the use of technology for teaching;
- highly qualified and professional learning technology support staff;
- adequate resources, including appropriate teacher/student ratios;
- appropriate methods of working (teamwork, project management);
- systematic evaluation leading to continuous improvement.

Much more attention needs to be directed at what campus-based institutions are doing when they move to hybrid or online learning. Are they following best practices, or even better, developing innovative, better teaching methods that exploit the strengths of both classroom and online learning? The design of xMOOCs and the high drop-out rates in the USA of many two year colleges new to online learning suggest they are not.

If the goal or purpose is to develop the knowledge and skills that learners will need in a digital age, then this is the 'standard' by which quality should be assessed, while at the same time taking into account what we already know about general best practices in teaching. The recommendations for quality teaching in a digital age that follow in this chapter are based on this key principle of 'fit for purpose'.

References and further reading

Butcher, N. and Hoosen, S. (2014) A Guide to Quality in Post-traditional Online Higher Education Dallas TX: Academic Partnerships

Chickering, A., and Gamson, Z. (1987) 'Seven Principles for Good Practice in Undergraduate Education' *Washington Center News* (originally published in *AAHE Bulletin*, March 1987)

Clarke-Okah, W. and Daniel, J. (2010) *The Commonwealth of Learning: Review and Improvement Model* Burnaby BC: Commonwealth of Learning

Jung, I. and Latchem, C. (2012) Quality Assurance and Accreditation in Distance Education and e-Learning New York/London: Routledge

Activity 12.1 Defining quality in teaching and learning

What do you think of the current system of

- institutional accreditation and
- internal quality assurance processes?

Do these current processes guarantee quality in teaching and learning for a digital age? If not, why not?

12.2 Nine steps to quality teaching in a digital age

Figure 12.2.1 Stepping stones, Dovedale, UK Image: Tony Bates

In the previous section, I pointed out that there are lots of excellent quality assurance standards, organizations and research available online, and I'm not going to duplicate these. Instead, I'm going to suggest a series of practical steps towards *implementing* such standards.

12.2.1 An alternative to using the ADDIE model to assure quality

I am assuming that all the standard institutional processes towards program approval have been taken,

although it is worth pointing out that it might be worth thinking through my nine steps outlined below before finally submitting a proposal for a new blended or online course or program. My nine steps approach would also work when considering the redesign of an existing course.

The 'standard' quality practice for developing a fully online course would be to develop a systems approach to design through something like the ADDIE model (see Chapter 4, Section 3). Puzziferro and Shelton (2008) provide an excellent example.

However, I have already pointed to some of the limitations of a systems approach in the volatile, uncertain, chaotic and ambiguous digital age (Chapter 4, Section 7), and in any case, I think we need a process that works not only for fully online courses but also for face-to-face, blended and hybrid courses and programs. So I am aiming for a more flexible but still systematic approach to quality course design, but broad enough to include a wide range of delivery methods. To get a sense of the difference in my approach to a 'standard' systems model, the ADDIE model wouldn't kick in until around Step 6 below.

Furthermore, it is not enough just to look at the actual teaching of the course, but also at building a complete learning environment in which the learning will take place (see Chapter 6). So to provide a quality framework, I will outline nine steps, although they are more likely to be developed in parallel than sequentially. Nevertheless there is a logic to the order.

1. Step 1: Decide how you want to teach
2. Step 2: Decide on mode of delivery
3. Step 3: Work in a Team
4. Step 4: Build on existing resources
5. Step 5: Master the technology
6. Step 6: Set appropriate learning goals
7. Step 7: Design course structure and learning activities
8. Step 8: Communicate, communicate, communicate
9. Step 9: Evaluate and innovate

These steps will draw on material from earlier in this book. Indeed, if you have been doing the activities thoroughly, you may already be able to answer the questions raised as you work through each of the nine steps.

Reference

Puzziferro, M., & Shelton, K. (2008). A model for developing high-quality online courses: Integrating a systems approach with learning theory *Journal of Asynchronous Learning Networks*, Vol. 12, Nos. 3-4

12.3 Step One: Decide how you want to teach

12.3.1 How do I want to teach?
Image: Remix © by Tony Bates, 2010: original photos: UBC Library

Of all the nine steps, this is the most important, and, for most instructors, the most challenging, as it may mean changing long established patterns of behaviour.

12.3.1 How would I really like to teach this course?

This question asks you to consider your basic teaching philosophy. What is my role as an instructor? Do I take an objectivist view, that knowledge is finite and defined, that I am an expert in the subject matter who knows more than the students, and thus my job is to ensure that I transfer as effectively as possible that information or knowledge to the student? Or do I see learning as individual development where my role is to help learners to acquire the ability to question, analyse and apply information or knowledge?

Do I see myself more as a guide or facilitator of learning for students? Or maybe you would like to teach in the latter way, but you are faced in classroom teaching with a class of 200 students which

forces you to fall back on a more didactic form of teaching. Or maybe you would like to combine both approaches but can't because of the restrictions of timetables and curriculum.

Chapters 2, 3 and 4 set out some of the choices available to you in deciding how you want to teach, in terms of overall philosophy.

12.3.2 What's wrong with the way I'm teaching at the moment?

Another place to start would be by thinking about what you don't like about the current course(s) you are teaching. Is there too much content to be covered? Could you deal with this in another way, perhaps by getting students to find, analyse and apply content to solve problems or do research? Could you focus more on skills in this context? If so, how could you provide appropriate activities to enable students to practice these skills? How much of this could they do on their own, so you can manage your workload better?

Are the students too diverse, in that some students really struggle while others are impatient to move ahead? How could I make the teaching more personalised, so that students at all levels of ability could succeed in this course? Could I organise my teaching so that students who struggle can spend more time on task, or those that are racing ahead have more advanced work to do?

Or perhaps you are not getting enough discussion or critical thinking because the class is too large. Could you use technology and re-organise the class differently to get students studying in small groups, but in such a way you can monitor and guide the discussions? Can you break the work up into chunks that the students should be able to do on their own, such as mastering the content, so you can focus on discussion and critical thinking with students when they come to class?

For instance, by moving a great deal of the content online, maybe you can free up more time for interaction with students, in large or smaller groups, either in class or online, and at the same time reduce the number of lectures to large classes. Some instructors have redesigned large lecture classes of 200 students, by breaking down the class into 10 groups, moving much of the lecture material online, and then the instructor spends at least one week with each of the 10 groups in online discussion, interaction and group activities, thus getting more interaction with all the students.

In another context, do you feel restricted by the limitations of what can be done in labs or workshops, because of the time it takes to set up experiments or equipment, or because students don't really have enough hands-on time? Could I re-organise the teaching so that students do a lot of preparation online, so they can concentrate in the lab or workshop on what they have to do by hand. Could they report on their lab or workshop experiences afterwards, online, through an e-portfolio, for instance? Can I find good open educational resources, such as video or simulations, that would reduce the need for lab time? Or could I create good quality demonstration videos, so I can spend more time talking with students about the implications?

Finally, are you just overloaded with work on this course, because there are too many student questions to be answered, or too many assignments to mark? How could you re-organise the course to manage your work-load more easily? Could students do more by working together and helping each other? if so, how would you create groups that might meet this goal? Could you change the nature of the assignments so that students do more project work, and slowly build e-portfolios of their work during the course so you can more easily monitor their progress, while at the same time building up an assessment of their learning?

12.3.3 Use technology to re-think your teaching

Considering using new technologies or an alternative delivery method will give you an opportunity to rethink your teaching, perhaps to be able to tackle some of the limitations of classroom teaching, and to renew your approach to teaching. One way to help you rethink how you want to teach is to think of how you could build a rich learning environment for the course (see Chapter 6).

Using technology or moving part or all of your course online opens up a range of possibilities for teaching that may not be possible in the confines of a scheduled three credit weekly semester of lectures (see Chapter 4). It may mean not doing everything online, but focusing the campus experience on what can only be done on campus. Alternatively, it may enable you to totally rethink the curriculum, to exploit some of the benefits of online learning, such as getting students to find, analyse and apply information for themselves.

Thus if you are thinking about a new course, or redesigning one that you are not too happy with, take the opportunity before you start teaching the course or program to think about how you'd really like to be teaching, and whether this can be accommodated in a different learning environment. It's not a decision you have to make immediately though. As you work through the nine steps, it will become easier to make this decision. The important point is to be open to doing things differently.

Chapter 4 and Chapters 10 and 11 suggest a variety of approaches to teaching that might fit with the answers to some of these questions.

12.3.4 What NOT to do

However, you can be sure of one thing. If you merely put your lecture notes up on the web, or record your 50 minute lectures for downloading, then you are almost certain to have lower student completion rates and poorer grades than for your face-to-face class. I make this point because it is tempting for face-to-face instructors merely to move their method of classroom teaching online, such as using lecture capture for students to download recorded classroom lectures at home, or using web conferencing to deliver live lectures over the internet. However there is much evidence to suggest that doing this does not lead to good results (see for instance, Figlio, Rush and Yin, 2010).

The problem with just moving lectures online is that it fails to take account of a key requirement for most online learners: flexibility. When students are studying online, their needs are different from when they are in class. Restricted 'office hours' when the instructor is available for students do not provide the flexibility of contact that students need when working online. Students tend to work in smaller chunks of time when studying online, in several short bursts, and rarely more than an hour without a break. Online work then needs to be broken up into manageable 'chunks.' A synchronous web cast may be scheduled at times when online students are working. More importantly, online learning allows us to deliver content or information in ways that lead to better learning than through a one hour lecture.

Thus it is important to *design* teaching in such a way that it best suits the different modes of learning that students will use. Fortunately, there has been a lot of experience and research that have identified the key design principles for both classroom and online teaching. This is what the next eight steps are about.

12.3.5 A chance to fly

Technologies and new modes of delivery open up wonderful opportunities to rethink completely the teaching process. Teachers and instructors with deep knowledge of their subject can now find many

unique and exciting ways to open up their teaching and to integrate their research into their teaching. The main restriction now is not time nor money, but lack of imagination. Those with the imagination will be able to fly into previously unthinkable ways of teaching their subject.

Reference

Figlio, D., Rush, N. and Yin, L. (2010) *Is it Live or is it Internet? Experimental Estimates of the Effects of Online Instruction on Student Learning* Cambridge MA: National Bureau of Economic Research

Activity 12.3 Re-thinking your teaching

1. Can you write down your philosophy of teaching – how you'd really like to teach your subject, if you weren't constrained?

2. What are the main problems you are facing at the moment with your classroom teaching?

3. Now think whether, by moving a course online, you could teach in new ways that better fit your philosophy of teaching, with the increased flexibility of access and the resources available through the Internet. What would your teaching approach now look like?

There is no feedback provided for this activity: it is for your reflection.

12.4 Step two: what kind of course or program?

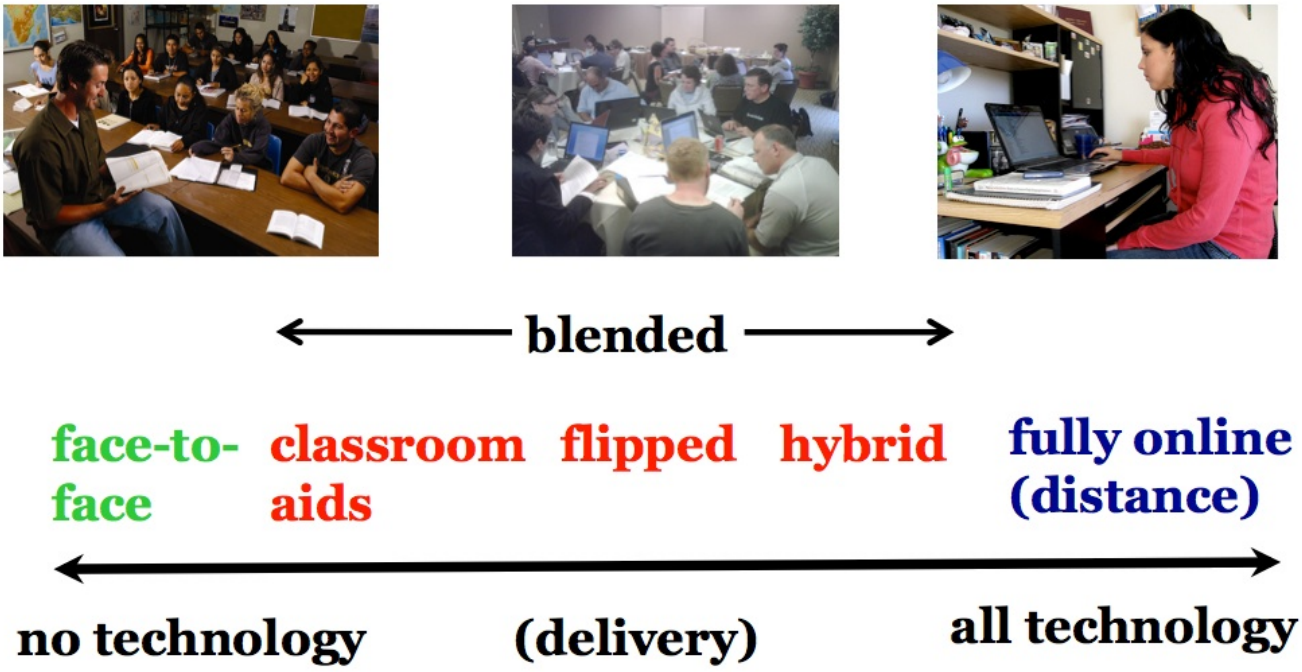

Figure 12.4.1 The continuum of technology-based teaching (from Chapter 10)

12.4.1 Choosing mode of delivery

Determining what kind of course in terms of the mix of face-to-face and online teaching is the natural next step after considering how you want to teach a course. This topic has been dealt with extensively in Chapter 10, so to summarise, there are four factors or variables to take into account when deciding what 'mix' of face-to-face and online learning will be best for your course:

- your preferred teaching philosophy – how you like to teach (see Step 1)
- the needs of the students (or potential students)
- the demands of the discipline
- the resources available to you.

Although an analysis of all the factors is an essential set of steps to take in making this decision, in the end it will come down to a mainly intuitive decision, taking into account all the factors. This becomes particularly important when looking at a program as a whole.

12.4.2 Who should make the decision?

While individual instructors should be heavily involved in deciding the best mix of online and face-to-face teaching in their specific course, it is worth thinking about this on a program rather than an individual course basis. For instance, if we see the development of independent learning skills as a key program outcome, then it might make sense to start in the first year with mainly face-to-face classes, but gradually over the length of the program introduce students to more and more online learning, so that the end of a four year degree they are able and willing to take some of their courses fully online.

Certainly every program should have a mechanism for deciding not only the content and skills or the curriculum to be covered in a program, but also how the program will be delivered, and hence the balance or mix of online and face-to-face teaching throughout the program. This should become integrated into an annual academic planning process that looks at both methods of teaching as well as content to be covered in the program (see Bates and Sangrà, 2011).

Reference

Bates, A. and Sangrà, A. (2011) *Managing Technology in Higher Education* San Francisco: Jossey–Bass/John Wiley and Co

Activity 12.3 Which mode of delivery?

If you did not do Activities 10.2, 10.3, 10.4, go back and do them now.

If you have done these activities, review your answers in terms of deciding on the best mix of face-to-face and online teaching for your course.

There is no feedback provided for this activity.

12.5 Step three: work in a team

Figure 12.5.1 Work in a team

One of the strongest means of ensuring quality is to work as a team. This is addressed at several points in the book, such as Chapter 9, Section 7, Chapter 10, Section 4, and Chapter 13, Sections 3 and 5.

12.5.1 Why work in a team?

For many teachers and instructors, classroom teaching is an individual, largely private activity between the instructor and students. Teaching is a very personal affair. However, blended and especially fully

online learning are different from classroom teaching. They require a range of skills that most teachers and instructors, and particularly those new to online teaching, are unlikely to have, at a least in a developed, ready-to-use form.

The way an instructor interacts online has to be organized differently from in class, and particular attention has to be paid to providing appropriate online activities for students, and to structuring content in ways that facilitate learning in an asynchronous online environment. Good course design is essential to achieve quality in terms of developing the knowledge and skills needed in a digital age. These are pedagogical issues, in which most post-secondary instructors have had little training. In addition, there are also technology issues. Novice teachers and instructors are likely to need help in developing graphics or video materials, for example.

Another reason to work in a team is to manage workload. There is a range of technological activities that are not normally required of classroom teachers and instructors. Just managing the technology will be extra work if instructors do it all themselves. Also, if the online component of a course is not well designed or integrated with the face-to-face component, if students are not clear what they should do, or if the material is presented in ways that are difficult to understand, the teacher or instructor will be overwhelmed with student e-mail. Instructional designers, who work across different courses, and who have training in both course design and technology, can be an invaluable resource for novices teaching online for the first time.

Thirdly working with colleagues in the same department who are more experienced in online learning can be a very good means to get quickly to a high quality online standard, and again can save time. For instance, in one university I worked in, three faculty members in the same department were developing different courses with online components. However, these courses often needed graphics of the same equipment discussed in all three courses. The three instructors got together, and worked with a graphic designer to create high quality graphics that were shared between all three instructors. This also resulted in discussions about overlap and how best to make sure there was better integration and consistency between the three courses. They could do this with their online courses more easily than with the classroom courses, because the online course materials can be more easily shared and observed.

Lastly, especially where large lecture classes are being re-designed, there may be a cohort of teaching assistants that may need to be trained, organised and managed. In some institutions, part-time adjunct faculty will also need to be involved. This means clarifying roles for the senior faculty member, the adjunct or contract faculty, the teaching assistants, and the learning technology support staff.

For many teachers and instructors, developing teaching in a team is a big cultural shift. However, the benefits of doing this for online or blended learning are well worth the effort. As teachers and instructors become more experienced in blended and online learning, there is less need for the help of an instructional designer, but many experienced instructors now prefer to continue working in a team, because it makes life so much easier for them.

12.5.2 Who is in the team?

This will depend to some extent on the size of the course. In most cases, for a blended or online course with one main faculty member or subject expert, and a manageable number of students, the instructor will normally work with an instructional designer, who in turn can call on more specialist staff, such as a web or graphic designer or a media producer, as needed.

If however it is a course with many students and several instructors, adjunct faculty and/or teaching assistants, then they should all work together as a team, with the instructional designer. Also in some institutions a librarian is an important member of the team, helping identify resources, dealing with

copyright issues and ensuring that the library is able to respond to learners' needs when the course is being offered.

12.5.3 What about academic freedom? Do I lose it working in a team?

No. The instructor(s) will always have final say over content and how it is to be taught. Instructional designers are advisers but responsibility for the content of the course, the way it is taught, and assessment methods always remains with the faculty member.

However, instructional and media producers should not be treated as servants, but as professionals with specialized skills. They should be respected and listened to. Often the instructional designer will have more experience of what will work and what will not in blended or online learning. Surgeons work with anaesthetists and nurses, and trust them to do their jobs properly. The working relationship between instructors and instructional designers and media producers should be similar.

12.5.4 Conclusion

Working in a team makes life a lot easier for instructors when teaching blended or online courses. Good course design, which is the area of expertise of the instructional designer, not only enables students to learn better but also controls faculty workload. Courses look better with good graphic and web design and professional video production. Specialist technical help frees up instructors to concentrate on teaching and learning. What's not to like?

This of course will depend heavily on the institution providing such support through a centre of teaching and learning. Nevertheless this is an important decision that needs to be implemented before course design begins.

Activity 12.5 Working in a team

There is no activity for this section.

12.6 Step four: build on existing resources

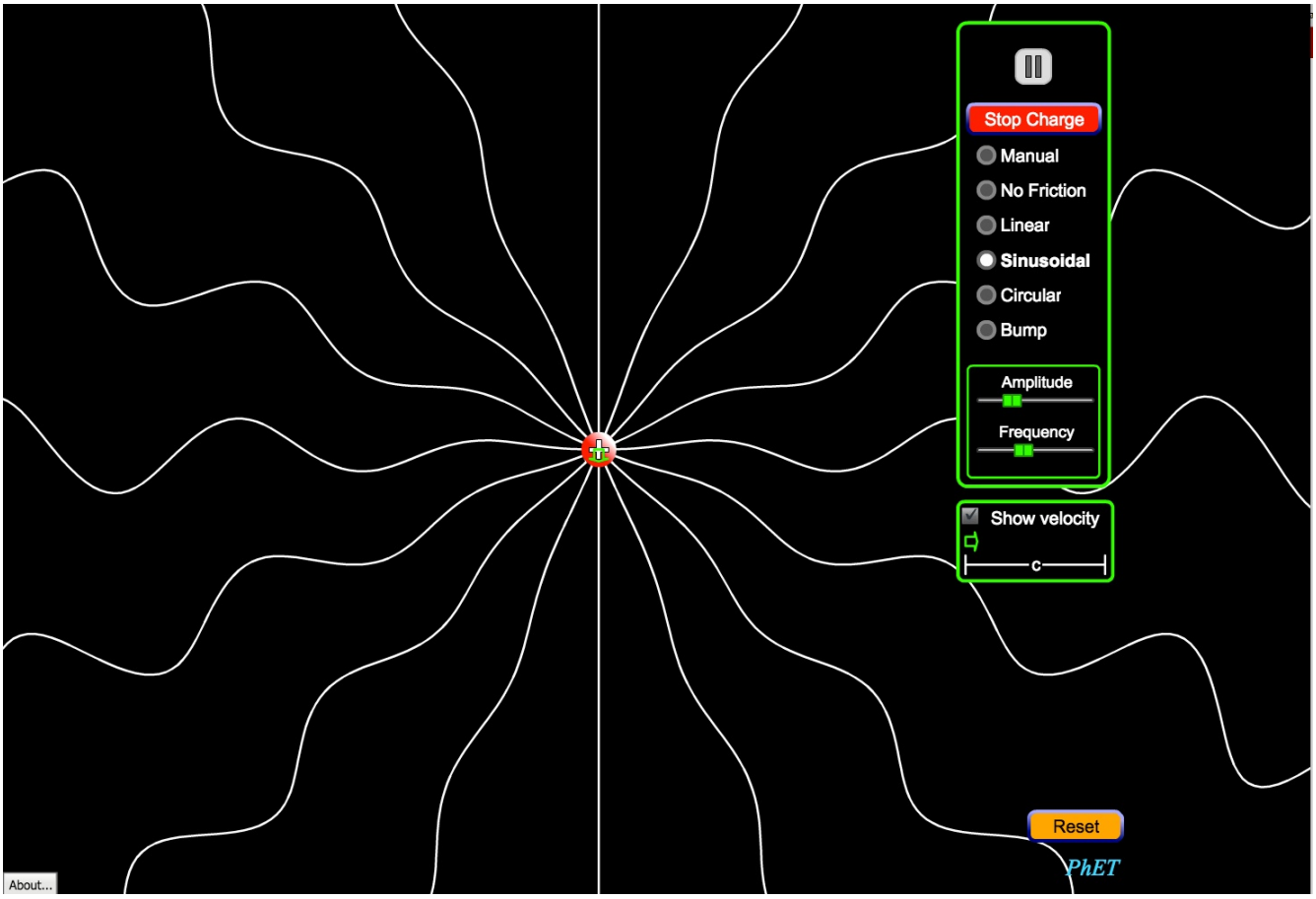

Figure 12.6.1 Radiating charge simulation, phET: click on image to run simulation
Image: © University of Colorado-Boulder

The importance of using existing resources has been stressed in several parts of the book, particularly Chapters 8 and 11.

12.6.1 Moving content online

Time management for teachers and instructors is critical. A great deal of time can be spent converting classroom material into a form that will work in an online environment, but this can really increase workload. For instance, PowerPoint slides without a commentary often either miss the critical content, or fail to cover nuances and emphasis. This may mean either using lecture capture to record the lecture,

or having to add a recorded commentary over the slides at a later date. Transferring lecture notes into pdf files and loading them up into a learning management system is also time consuming. However, this is not the best way to develop online materials, both for time management and pedagogical reasons.

In Step 1 I recommended rethinking teaching, not just moving recorded lectures or class PowerPoint slides online, but developing materials in ways that enable students to learn better. Now in Step 4 I appear to be contradicting that by suggesting that you should use existing resources. However, the distinction here is between using existing resources that do not transfer well to an online learning environment (such as a 50 minute recorded lecture), and using materials already specifically developed or suitable for learning in an online environment.

12.6.2 Use existing online content

The Internet, and in particular the World Wide Web, has an immense amount of content already available, and this was discussed extensively in Chapter 11. Much of it is freely available for educational use, under certain conditions (e.g. acknowledgement of the source – look for the Creative Commons license usually at the end of the web page). You will find such existing content varies enormously in quality and range. Top universities such as MIT, Stanford, Princeton and Yale have made available recordings of their classroom lectures , etc., while distance teaching organizations such as the UK Open University have made all their online teaching materials available for free use. Much of this can be found at these sites:

- OpenCourseWare (MIT)
- iTunesU
- OpenLearn (U.K. Open University)
- The Open Education Consortium (courses in STEM: science, technology, engineering, math)
- Open Learning Initiative (Carnegie Mellon)
- MERLOT

However, there are now many other sites from prestigious universities offering open course ware. (A Google search using ‘open educational resources’ or’ OER’ will identify most of them.)

In the case of the prestigious universities, you can be sure about the quality of the content – it’s usually what the on-campus students get – but it often lacks the quality needed in terms of instructional design or suitability for online learning (for more discussion on this see Hampson (2015); or OERs: The Good, the Bad and the Ugly). Open resources from institutions such as the UK Open University or Carnegie Mellon’s Open Learn Initiative usually combine quality content with good instructional design.

Where open educational resources are particularly valuable are in their use as interactive simulations, animations or videos that would be difficult or too expensive for an individual instructor to develop. Examples of simulations in science subjects such as biology and physics can be found here: PhET, or at the Khan Academy for mathematics, but there are many other sources as well.

But as well as open resources designated as ‘educational’, there is a great deal of ‘raw’ content on the Internet that can be invaluable for teaching. The main question is whether you as the instructor need to find such material, or whether it would be better to get students to search, find, select, analyze, evaluate and apply information. After all, these are key skills for a digital age that students need to have.

Certainly at k-12, two-year college or undergraduate level, most content is not unique or original.

Most of the time we are standing on the shoulders of giants, that is, organizing and managing knowledge already discovered. Only in the areas where you have unique, original research that is not yet published, or where you have your own 'spin' on content, is it really necessary to create 'content' from scratch. Unfortunately, though, it can still be difficult to find exactly the material you want, at least in a form that would be appropriate for your students. In such cases, then it will be necessary to develop your own materials, and this is discussed further in Step 7. However, building a course around already existing materials will make a lot of sense in many contexts.

12.6.3 Conclusion

You have a choice of focusing on content development or on facilitating learning. As time goes on, more and more of the content within your courses will be freely available from other sources over the Internet. This is an opportunity to focus on what students need to know, and on how they can find, evaluate and apply it. These are skills that will continue well beyond the memorisation of content that students gain from a particular course. So it is important to focus just as much on student activities, what they need to do, as on creating original content for our courses. This is discussed in more detail in Steps 6, 7 and 8.

So a critical step before even beginning to teach a course is look around and see what's available and how this could potentially be used in the course or program you are planning to teach.

References

Hampson, K. (2015) Masterclass & MOOCs: Notes on the Role of Production Value in Online Learning *The Synapse*, July 31

Activity 12.6 Building on existing resources

1. How original is the content you are teaching? Could students learn just as well from already existing content? If not, what is the 'extra' you are adding? How will you incorporate the added value of your own contribution in your course design?

2. Does the content you are already thinking of covering already exist on the web? Have you looked to see what's already there? What if any are the restrictions on its re-use for educational purposes?

3. What are your colleagues doing online – or indeed in the classroom, with respect to digital teaching? Could you work together to jointly develop and/or share materials?

If you feel that your course is currently too much work, then maybe the answers to these questions may indicate where the problem lies.

There is no feedback provided for this activity.

12.7 Step five: master the technology

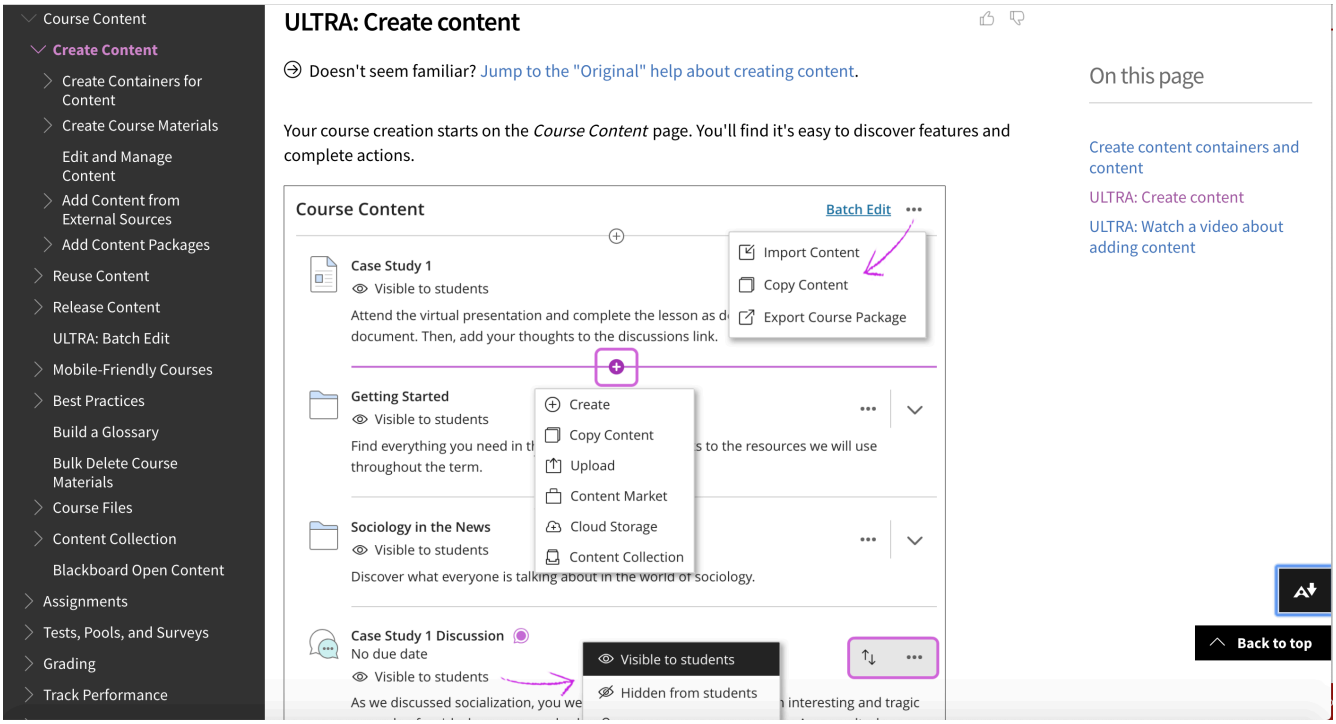

Figure 12.7.1 A 'help' page from Blackboard Learn

Taking the time to be properly trained in how to use standard learning technologies will in the long run save you a good deal of time and will enable you to achieve a much wider range of educational goals than you would otherwise have imagined.

12.7.1 The exponential growth in learning technologies

There are now many common technologies available for educational use:

- learning managements systems (such as Blackboard Learn, Moodle, D2L, Instructure/Canvas);
- synchronous technologies (such as Blackboard Collaborate, Adobe Connect, Big Blue Button, ZOOM, GoToMeeting, Microsoft Teams);
- lecture recording technologies (such as GarageBand or Audacity for podcasts and Echo360 for lecture capture);

- tablets and mobile devices, such as iPads, mobile phones, and the apps that run on them;
- MOOCs and their many variants (SPOCs, TOOCs, etc.);
- other social media, including blogging software such as WordPress, wikis such as MediaWiki, Google Hangouts, Google Docs, and Twitter;
- learner-generated tools, such as e-portfolios (for example, Mahara)
- search engines and translation tools, such as Google Search and Google Translate.

It is not necessary to use all or any of these tools, but if you do decide to use them, you need to know not only how to operate such such technologies well, but also their pedagogical strengths and weaknesses (see Chapter 7, Chapter 8 and Chapter 9). Although the technologies listed above will change over time, the general principles discussed in this section will continue to apply to other new technologies as they become available.

12.7.2 Use the existing institutional technology

If your institution already has a learning management system such as Blackboard Learn, Moodle, Instructure or D2L, use it. Don't get drawn into arguments about whether or not it is the best tool. Frankly, in functional terms, there are few important differences between the main LMSs. You may prefer the interface of one rather than another, but this will be more than overwhelmed by the amount of effort trying to use a system not supported by your institution. LMSs are not perfect but they have evolved over the last 20 years and in general are relatively easy to use, both by you and more importantly by the students. They provide a useful framework for organizing your online teaching, and if the LMS is properly supported you can get help when needed. There is enough flexibility in a learning management system to allow you to teach in a variety of different ways. In particular, take the time to be properly trained in how to use the LMS. A couple of hours of training can save you many hours in trying to get it to work the way you want.

A more important question to consider is whether you need to use an LMS at all – but that question should only be considered if the institution is willing to support alternatives, such as WordPress or Google Docs, otherwise you could end up spending too much time dealing with pure technology issues.

The same applies to synchronous web technologies such as Blackboard Collaborate, Adobe Connect, Big Blue Button or ZOOM. I have my preferences but they all do more or less the same thing. The differences in technology are nothing compared with the different ways in which you can use these tools. These are pedagogical or teaching decisions. Focus on these rather than finding the perfect technology.

Indeed, think carefully about when it would be best to use synchronous rather than asynchronous online tools. Synchronous tools are useful when you want to get a group of students together at one time, but such synchronous tools tend to be instructor-dominated (delivering lectures and controlling the discussion) and require students to be available at a set time. However, you could encourage students working in small teams on a project to use Collaborate or another synchronous tool such as ZOOM, which allows for setting up small sub-groups, to decide roles, discuss a topic and form a group view, or to finalize a project assignment, for instance. On the other hand, asynchronous tools such as an LMS provide learners with more flexibility than synchronous tools, and enable them to work more independently (an important skill for students to develop). And of course both synchronous and asynchronous tools can be used in conjunction, but that requires working out what each is best for.

12.7.3 Deceptively easy technology

Most of these technologies are deceptively easy to use, in the sense of getting started. They have been designed so that anyone without a computer science background can use them. However, over time they tend to become more sophisticated with a wide range of different functions. You won't need to use all the functions, but it will help if you are aware that they exist, and what they can and can't do. If you do want to use a particular feature, it is best to get training so that you can use it quickly and effectively.

12.7.4 Keep current, as far as possible

New technologies keep arriving all the time. It is best to focus on new tools that seem functionally different from existing tools, rather than trying to check every new synchronous meeting system, for instance. It is too difficult for any single teacher or instructor to keep up to date with newly emerging technologies and their possible relevance for teaching. This is really the job of any well-run learning technology support unit. So make the effort to attend a once-a-year briefing on new technologies, then follow-up with a further session on any tool that might be of interest.

This kind of briefing and training should be provided by the centre or unit that provides learning technology support. If your institution does not have such a unit, or such training, think very carefully about whether to use technology extensively in your teaching – even teachers and instructors with a lot of experience in using technology for teaching need such support.

Furthermore, new functions are constantly being added to existing tools. For instance, if you are using Moodle, there are 'plug-ins' (such as Mahara) that allow students to create and manage their own e-portfolios or electronic records of their work. Learning analytics software for LMSs, which allow you to analyze the way students are using the LMS and how this relates to their performance, is another recent wave of plug-ins.

Thus a session spent learning the various features of your learning management system and how best to use them will be well worthwhile, even if you have been using it for some time, but didn't have a full training on the system. Particularly important is knowing how to integrate different technologies, such as online videos within an LMS, so that the technology appears seamless to students.

Lastly, don't get locked into using only your favourite technology, and keeping a closed mind against anything else. It is is a natural tendency to try to protect the use of a technology that has taken a good deal of time and effort to master, especially if it has served you and your students well in the past, and new technology is not necessarily better for teaching than old technology. Nevertheless, game-changers do come along occasionally, and may well have educational benefits that were not previously considered. One tool is unlikely to do everything you need as a teacher; a well-chosen mix of tools is likely to be more effective. Keep an open mind and be prepared to make a shift if necessary.

12.7.5 Relate your technology training to how you want to teach

There are really two distinct but strongly related components of using technology:

- how the technology works; and
- what it should be used for.

12.7.5.1 Focus on the learning outcomes

These are tools built to assist you, so you have to be clear as to what you are trying to achieve with the tools. This is an instructional or pedagogical issue. Thus if you want to find ways to engage students, or to give them practice in developing skills, such as solving quadratic equations, learn what the strengths or weaknesses are of the various technologies for doing this (see Chapter 7 and Chapter 8 for more on this).

This is somewhat of an iterative process. When a new tool or a new feature is being described or demonstrated, think of how this might fit with or facilitate one of your teaching goals. But also be open to possibly changing your goals or methods to take advantage of a tool in enabling you to do something you had not thought of doing before. For example, an e-portfolio plug-in might lead you to change the way you assess students, so that learning outcomes are more 'authentic' and evidence-based than say with a written essay. (This will be discussed further in the next step 'Setting appropriate goals for learning.')

12.7.5.2 Avoid duplicating your classroom teaching

Podcasts and lecture capture enable lectures to be recorded, stored and downloaded by students. So why bother to learn how to use other online technologies such as an LMS? In Chapter 3, Section 3, evidence-based research on the limitations of lectures was discussed. In brief, students in general don't learn well online using recordings of 'transmissive' classroom lectures. Perhaps of equal importance, you are likely to end up doing more work because you are likely to be inundated with individual e-mails asking for clarification, or have a very high student failure rate, if you do not adapt the lecture to the online learning environment.

This is not to say that the occasional recording from you as the instructor would not be valuable. However, it is best to keep it to 10-15 minutes maximum, and it should add something unique to the course, such as being about your own research, or a guest professor being interviewed, or your relating a news item to issues or principles being studied in the course. It may even be better as an audio-only podcast, so students can concentrate on the words and possibly relate them to other learning materials, such as diagrams, graphics or animations on a web site.

If you must use lecture capture, think about structuring your in-class lecture so that it can be edited into separate sections of say 10-15 minutes. One way of doing this is pausing at an appropriate point to ask for questions from the classroom students, thus providing a clear 'editing' point for the video version. Then provide online work to follow up each of the recorded components, such as a topic for discussion on an online forum, some online student research or further reading on the topic.

However, in general, delivery of content is much better done through a learning management system, where it is permanent, organized and structured (see Step 7 later), available in discrete amounts, can be accessed at any time, and can be repeated as often as is needed by the learner. Or it may be even better to get students to find, analyse and organise content for themselves, in which case you may need tools other than an LMS, such as blog software such as WordPress, an e-portfolio or wiki. Again, the decision should be driven by pedagogical thinking, rather than trying to make one tool fit every circumstance.

12.7.6 Benefits of mastering the technology

Online learning technologies such as learning management systems have been designed to fit the online

learning environment. This requires some adjustment and learning on the part of teachers and instructors whose primary experience is in classroom teaching.

Like any tool, the more you know about it the better you are likely to use it. Thus formal training on the technology is necessary but need not be onerous. Usually a total of two hours specific and well organized instruction should be sufficient on how to use any particular tool, such as a learning management or lecture capture system, e-portfolio or synchronous webinar tool, with a one hour review session every year.

The harder part will be figuring out how best to use the tools educationally. This requires you to bring a clear conception of how students best learn (Chapter 2 and Chapter 6), what methods you need to match how students learn (Chapter 3 and Chapter 4), and how to design such teaching through the use of learning technologies (Chapter 7, Chapter 8 and Chapter 9). Whenever you receive training on a new tool, try to apply what you have learned in these chapters to how you may be able best to use that tool in the future.

Activity 12.7 Mastering the technology

1. How much formal training have you had on your institutional learning management, lecture capture systems or video conferencing/synchronous technologies? Is this enough or are you now fully confident that you know all the features and how best to use them?

2. When should you use a synchronous technology such as Blackboard Collaborate? What are the disadvantages of synchronous technologies for online students? (See Chapter 7.6 for more on this).

3. Should you rethink entirely your teaching when considering blended learning or could you use mainly your classroom material?

4. What would be the possible disadvantages of using recorded lectures online?

There is no feedback provided for this activity. The answers are in the chapters highlighted in this section.

12.8 Step six: set appropriate learning goals

Figure 12.8.1 Set appropriate learning goals
Image: © www.geograph.ie

12.8.1 Setting goals for learning in a digital age

In many school systems, curriculum and learning goals are already pre-determined by national, state or provincial curriculum committees and/or ministries of education. In many trades and vocational areas, industry training boards or employers' associations set learning goals or desired outcomes or competencies that need to be followed for qualifications to be accredited. Even in a university, an instructor (particularly a contract instructor or adjunct) may 'inherit' a course where the goals are already set, either by a previous instructor or by the academic department.

Nevertheless, there remain many contexts where teachers and instructors have a degree of control over the goals of a particular course or program. In particular, a new course or program – such as an online masters program aimed at working professionals – offers an opportunity to reconsider desired learning outcomes and goals. Especially where curriculum is framed mainly in terms of content to be covered rather than by skills to be developed, there may still be room for manoeuvre in setting learning goals that would also include, for instance, intellectual skills development. In other contexts, the development or focus may be on more affective skills, such as sympathy or empathy, or on the development of manual or operational skills.

12.8.2 Learning goals for a digital age

In Chapter 1, Section 2, I listed a number of skills that learners will need in a digital age, including:

- modern communication skills;
- independent learning;
- ethics and responsibility;
- teamwork and flexibility;
- thinking skills including:
    - critical thinking;
    - problem solving;
    - creative thinking;
    - strategising and planning;
- digital skills;
- knowledge management.

These are examples of the kinds of goal that need to be identified. More traditional goals might also be included, such as comprehension and application of specific areas of content. These goals or outcomes might be expressed in terms of Bloom's taxonomy (1956) or the Royal Bank of Canada's (2018) or in a variety of other ways. All these skills need to be embedded or built within the needs of a specific subject domain. In other words, they are skills that need to be specific to a subject area rather than general. At the same time, students who develop such skills within any particular subject area will be better prepared for a digital age.

Your list of goals for a course may – indeed, should be – different from mine, but it will be essential to do the kind of analysis recommended in Step 1 (deciding how you want to teach), and then to decide on what the learning goals should be, based on:

- your understanding of the needs of the students;
- the needs of the the subject domain;
- the demands of the external world.

I have placed a particular emphasis on the development of intellectual skills. As with all learning goals, the teaching needs to be designed in such a way that students have opportunities to learn and practice such skills, and in particular, such skills need to be evaluated as part of the formal assessment process. Perhaps more challenging is to identify what you will be adding to general skills development such as critical thinking. What is the level of critical thinking skills that students will come with, and how do I make sure they progress in their ability in this skill during the course? This emphasises the value of having learning outcomes clearly identified for a whole program, perhaps using a curriculum mapping tool such as Daedalus.

What this means in terms of course design is using the Internet increasingly as a major resource for learning, giving students more responsibility for finding and evaluating information themselves, and instructors providing criteria and guidelines for finding, evaluating, analysing and applying information

within a specific knowledge domain. This will require a critical approach to online searches, online data, news or knowledge generation in specific knowledge domains – in other words the development of critical thinking about the Internet and modern media – both their potential and limitations within a specific subject domain.

12.8.3 Bring in the outside world

One great characteristic of modern media is the opportunity to bring in the world to your teaching in many ways, for instance:

- by directing students to online sites, and encouraging them to identify and share relevant sites;
- students themselves can collect data or provide real world examples of concepts or issues covered in the course, through the use of cameras in mobile phones, or audio interviews of local experts, or identifying relevant open educational resources;
- setting up a course wiki that both you and the students contribute to, and make it open to other professors and students to contribute to, depending on the topic;
- if you are teaching professional masters or diploma programs, or MOOCs, the students themselves will have very relevant world experiences that can be drawn into the program. This is a great way to enable students to evaluate and apply knowledge within their subject domain.

There are many other possible goals that are either impossible to meet without using the Internet, or would be very difficult to do in a purely classroom environment. The art of the instructor is to decide which are relevant, and which in particular could be key learning goals for the course.

Figure 12.8.2 Using social media during the Arab Spring in Egypt, 2011

12.8.4 Learning goals: the same or different, depending on mode of delivery?

In many cases, it will be appropriate (indeed, essential) to keep the same teaching goals for an online course as in a similar face-to-face course. Many dual-mode institutions, campus-based institutions who also offer credit courses online, such as the University of British Columbia, Penn State, University of Nebraska, offer the same courses both face-to-face and online, particularly in the fourth year of an undergraduate program. Usually the transcript of the exam grade makes no distinction as to whether the course was done online or face-to-face, since the students take the same end of course exam, and the actual content covered is usually identical in each version.

Nevertheless, there may be occasions where some goals in the campus-based class may need to be sacrificed for different but equally valuable goals that can be achieved better online. It is also important to remember that although it may be possible to achieve the same goals online as in class, the design of the teaching will likely have to be different in the online environment. Thus often the goals remain the same, but the method changes. This will be discussed further in Steps 7 and 8. The important point is to be aware that some things can be more easily done in a campus environment, and others better done online, then to build your teaching around these somewhat different goals. Using a blended approach may enable you to widen the range of goals, but be careful not to overload students by doing this.

12.8.5 Assessment is the key

It is pointless to introduce new learning goals or outcomes then not assess how well students have achieved those goals. Assessment drives student behaviour. If they are not to be assessed on the skills outlined above, they won't make the effort to develop them. The main challenge may not be in setting appropriate goals for online learning, but ensuring that you have the tools and means to assess whether students have achieved those goals.

And even more importantly, it is necessary to communicate very clearly to students these new learning goals and how they will be assessed. This may come as a shock to many students who are used to being fed content then tested on their memory of it.

12.8.6 Conclusion

In some ways, with the Internet (as with other media), the medium is the message. Knowledge is not completely neutral. What we know and how we know it are affected by the medium through which we acquire knowledge. Each medium brings another way of knowing. We can either fight the medium, and try to force old content into new bottles, or we can shape the content to the form of the medium. Because the Internet is such a large force in our lives, we need to be sure that we are making the most of its potential in our teaching, even if that means changing somewhat what and how we teach. If we do that, our students are much more likely to be better prepared for a digital age.

Reference

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Royal Bank of Canada (2018) *Humans Wanted* Toronto ON: Royal Bank of Canada

Activity 12.8 Setting learning goals

1. Take a course you are teaching in class at the moment. Write down the learning goals. Given the need for developing the skills needed in a digital age, would you want to change the goals of this course? If so, would you have to change your teaching methods and/or use of technology?

2. If you could design this course from scratch, would the learning goals change or just the teaching methodology?

3. If you were to introduce some of the skills for a digital age listed in Chapter 1, Section 2, what activities would need to be built into the course to enable students to develop such skills? How would you assess these skills?

Again there is no feedback on this activity; other chapters in the book contain some guidelines or answers.

12.9 Step seven: design course structure and learning activities

Figure 12.9.1 A good structure is critical for a quality course or program
Image: © Arisean Reach, 2012

The importance of providing students with a structure for learning and setting appropriate learning activities is probably the most important of all the steps towards quality teaching and learning, and yet the least discussed in the literature on quality assurance.

12.9.1 Some general observations about structure in teaching

First a definition, since this is a topic that is rarely directly discussed in either face-to-face or online

teaching, despite structure being one of the main factors that influences learner success. Three dictionary definitions of structure are as follows:

1. Something made up of a number of parts that are held or put together in a particular way.
2. The way in which parts are arranged or put together to form a whole
3. The interrelation or arrangement of parts in a complex entity.

Teaching structure would include two critical and related elements:

- the choice, breakdown and sequencing of the curriculum (content);
- the deliberate organization of student activities by teacher or instructor (skills development; and assessment).

This means that in a strong teaching structure, students know exactly what they need to learn, what they are supposed to do to learn this, and when and where they are supposed to do it. In a loose structure, student activity is more open and less controlled by the teacher (although a student may independently decide to impose his or her own 'strong' structure on their learning). The choice of teaching structure of course has implications for the work of teachers and instructors as well as students.

In terms of the definition, 'strong' teaching structure is not inherently better than a 'loose' structure, nor inherently associated with either face-to-face or online teaching. The choice (as so often in teaching) will depend on the specific circumstances. However, choosing the optimum or most appropriate teaching structure is critical for quality teaching and learning, and while the optimum structures for online teaching share many common features with face-to-face teaching, in other ways they differ considerably.

The three main determinants of teaching structure are:

(a) the organizational requirements of the institution;
(b) the preferred philosophy of teaching of the instructor;
(c) the instructor's perception of the needs of the students.

12.9.2 Institutional organizational requirements of face-to-face teaching

Although the institutional structure in face-to-face teaching is so familiar that it is often unnoticed or taken for granted, institutional requirements are in fact a major determinant of the way teaching is structured, as well as influencing both the work of teachers and the life of students. I list below some of the institutional requirements that influence the structure of face-to-face teaching in post-secondary education:

- the minimum number of years of study required for a degree;
- the program approval and review process;
- the number of credits required for a degree;
- the relationship between credits and contact time in the class;
- the length of a semester and its relationship to credit hours;
- instructor:student ratios;
- the availability of classroom or laboratory spaces;
- time and location of examinations.

There are probably many more. There are similar institutional organizational requirements in the school system, including the length of the school day, the timing of holidays, and so on. (To understand the somewhat bizarre reasons why the Carnegie Unit based on a Student Study Hour came to be adopted in the USA, see Wikipedia.)

As our campus-based institutions have increased in size, so have the institutional organizational requirements 'solidified'. Without this structure it would become even more difficult to deliver consistent teaching services across the institution. Also such organizational consistency across institutions is necessary for purposes of accountability, accreditation, government funding, credit transfer, admission to graduate school, and a host of other reasons. Thus there are strong systemic reasons why these organizational requirements of face-to-face teaching are difficult if not impossible to change, at least at the institutional level.

Thus any teacher is faced by a number of massive constraints. In particular, the curriculum needs to fit within the time 'units' available, such as the length of the semester and the number of credits and contact hours for a particular course. The teaching has to take into account class size and classroom availability. Students (and teachers and instructors) have to be at specific places (classrooms, examination rooms, laboratories) at specific times.

Thus despite the concept of academic freedom, the structure of face-to-face teaching is to a large extent almost predetermined by institutional and organizational requirements. I am tempted to digress to question the suitability of such structural limitations for the needs of learners in a digital age, or to wonder whether faculty unions would accept such restrictions on academic freedom if they did not already exist, but the aim here is to identify which of these organizational constraints apply also to online learning, and which do not, because this will influence how we can structure teaching activities.

12.9.3 Institutional organizational requirements of online teaching

One obvious challenge for online learning, at least in its earliest days, was acceptance. There was (and still is) a lot of skepticism about the quality and effectiveness of online learning, especially from those that have never studied or taught online. So initially a lot of effort went into designing online learning with the same goals and structures as face-to-face teaching, to demonstrate that online teaching was 'as good as' face-to-face teaching (which, research suggests, it is).

However, this meant accepting the same course, credit and semester assumptions of face-to-face teaching. It should be noted though that as far back as 1971, the UK Open University opted for a degree program structure that was roughly equivalent in total study time to a regular, campus-based degree program, but which was nevertheless structured very differently, for instance, with full credit courses of 32 weeks' study and half credit courses of 16 weeks' study. One reason was to enable integrated, multi-disciplinary foundation courses. The Western Governors' University, with its emphasis on competency-based learning, and Empire State College in New York State, with its emphasis on learning contracts for adult learners, are other examples of institutions that have different structures for teaching from the norm.

If online learning programs aim to be at least equivalent to face-to-face programs, then they are likely to adopt at least the minimum length of study for a program (e.g. four years for a bachelor's degree in North America), the same number of total credits for a degree, and hence implicit in this is the same amount of study time as for face-to-face programs. Where the same structure begins to break down though is in calculating 'contact time', which by definition is usually the number of hours of classroom instruction. Thus a 13 week, 3 credit course is roughly equal to three hours a week of classroom time over one semester of 13 weeks.

There are lots of problems with this concept of ‘contact hours’, which nevertheless is the standard measuring unit for face-to-face teaching. Study at a post-secondary level, and particularly in universities, requires much more than just turning up to lectures. A common estimate is that for every hour of classroom time, students spend a minimum of another two hours on readings, assignments, etc. Contact hours vary enormously between disciplines, with usually arts/humanities having far less contact hours than engineering or science students, who spend a much larger proportion of time in labs. Another limitation of ‘contact hours’ is that it measures input, not output.

When we move to blended or hybrid learning, we may retain the same semester structure, but the ‘contact hour’ model starts to break down. Students may spend the equivalent of only one hour a week in class, and the rest online – or maybe 15 hours in labs one week, and none the rest of the semester.

A better principle would be to ensure that the students in blended, hybrid or fully online courses or programs work to the same academic standards as the face-to-face students, or rather, spend the equivalent ‘notional’ time on doing a course or getting a degree. This means structuring the courses or programs in such a way that students have the equivalent amount of work to do, whether it is online, blended or face-to-face. However, the way that work will be distributed can very considerably, depending on the mode of delivery.

12.9.4 How much work is an online course?

Before decisions can be made about the best way to structure a blended or an online course, some assumption needs to be made about how much time students should expect to study on the course. We have seen that this really needs to be equivalent to what a full-time student would study. However, just taking the equivalent number of contact hours for the face-to-face version doesn’t allow for all the other time face-to-face students spend studying.

A reasonable estimate is that a three credit undergraduate course is roughly equivalent to about 8-9 hours study a week, or a total of roughly 100 hours over 13 weeks. (A full-time student then taking 10 x 3 credits a year, with five 3 credit courses per semester, would be studying between 40-45 hours a week during the two semesters, or slightly less if the studying continued over the inter-semester period.).

Now this is my guideline. You don’t have to agree with it. You may think this is too much or too little for your subject. That doesn’t matter. You decide the time. The important point though is that you have a fairly specific target of total time that should be spent on a course or program by an average student, knowing that some will reach the same standard more quickly and others more slowly. This total student study time for a particular chunk of study such as a course or program provides a limit or constraint within which you must structure the learning. It is also a good idea to make it clear to students from the start how much time each week you are expecting them to work on the course.

Since there is far more content that could be put in a course than students will have time to study, this usually means choosing the minimum amount of content for the course for it to be academically sound, while still allowing students time for activities such as individual research, assignments or project work. In general, because instructors are experts in a subject and students are not, there is a tendency for instructors to underestimate the amount of work required by a student to cover a topic. Again, an instructional designer can be useful here, providing a second opinion on student workload.

12.9.5 Strong or loose structure?

Another critical decision is just how much you should structure the course for the students. This will depend partly on your preferred teaching philosophy and partly on the needs of the students.

If you have a strong view of the content that must be covered in a particular course, and the sequence in which it must be presented (or if you are given a mandated curriculum by an accrediting body), then you are likely to want to provide a very strong structure, with specific topics assigned for study at particular points in the course, with student work or activities tightly linked.

If on the other hand you believe it is part of the student's responsibility to manage and organize their study, or if you want to give students some choice about what they study and the order in which they do it, so long as they meet the learning goals for the course, then you are likely to opt for a loose structure.

This decision should also be influenced by the type of students you are teaching. If students come without independent learning skills, or know nothing about the subject area, they will need a strong structure to guide their studies, at least initially. If on the other hand they are fourth year undergraduates or graduate students with a high degree of self-management, then a looser structure may be more suitable to their needs. Another determining factor will be the number of students in your class. With large numbers of students, a strong, well defined structure will be necessary to control your workload, as loose structures require more negotiation and support for individual students.

My preference is for a strong structure for fully online teaching, so students are clear about what they are expected to do, and when it has to be done by, even at graduate level. The difference is that with post-graduates, I will give them more choices of what to study, and longer periods to complete more complex assignments, but I will still define clearly the desired learning outcomes in terms of skill development in particular, such as research skills or analytical thinking, and provide clear deadlines for student work, otherwise I find my workload increases dramatically.

ETEC 522 at the University of British Columbia is a loosely structured graduate course, in that students organize their own work around the course themes. The course design changes every year because the course deals with a fast-changing study domain (the potential of new technologies for education), an example of agile design.

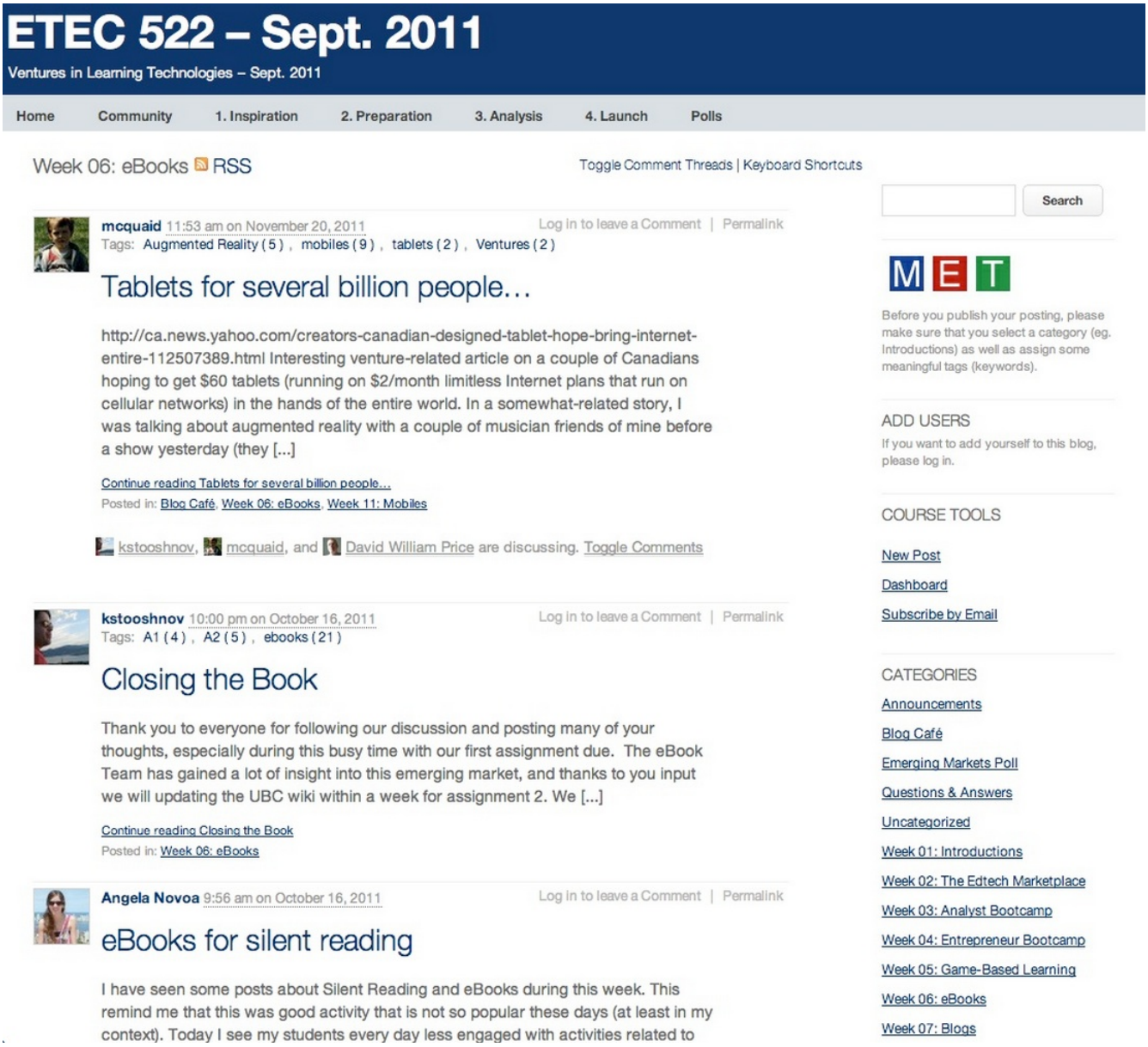

Figure 12.9.2 The University of British Columbia's ETEC 522

The web page illustrated in Figure 12.9.2 though from the 2011 version of the course demonstrates clearly a relatively loose structure. The weekly topic structure is on the right, covering seven weeks of the course, the remaining six being time for students to work on their projects. The outcomes of student activities are in the main body, posted by students through their blogs. Note this is not using a learning management system, but WordPress, a content management system, which allows students more easily to post and organize their activities.

Blended learning provides an opportunity to enable students to gradually take more responsibility for their learning, but within a 'safe' structure of a regularly scheduled classroom event, where they have to report on any work they have been required to do on their own or in small groups. This means thinking not just at a course level but at a program level, especially for undergraduate programs. A good strategy would be to put a heavy emphasis on face-to-face teaching in the first year, and gradually

introduce online learning through blended or hybrid classes in second and third year, with some fully online courses in the fourth year, thus preparing students better for lifelong learning.

12.9.6 Moving a face-to-face course online

This is the easiest way to determine the structure for an online course. The structure of the course will have already been decided to a large extent, in that the content of each week's work is clearly defined by lecture topics. The main challenge will not be structuring the content but ensuring that students have adequate online activities (see later). Most learning management systems enable the course to be structured in units of one week, following the classroom topics. This provides a clear timetable for the students. This applies also to alternative approaches such as problem-based learning, where student activities may be broken down almost on a daily basis.

However, it is important to ensure that the face-to-face content is moved in a way that is suitable for online learning. For instance, Powerpoint slides may not fully represent what is covered in the verbal part of a lecture. This often means reorganizing or redesigning the content so that it is complete in an online version (your instructional designer should be able to help with this). At this point, you should look at the amount of work the online students will need to do in the set time period to make sure that with all the readings and activities it does not exceed the rough average weekly load you have set. It is at this point you may have to make some choices about either removing some content or activities, or making the work 'optional.' However, if optional it should not be assessed, and if it's not assessed, students will quickly learn to avoid it. Doing this time analysis incidentally sometimes indicates that you've overloaded the face-to-face component as well.

It needs to be constantly in your mind that students studying online will almost certainly study in a more random manner than students attending classes on a regular basis. Instead of the discipline of being at a certain place at a certain time, online students still need clarity about what they are supposed to do each week or maybe over a longer time period as they move into later levels of study. What is essential is that students do not procrastinate online and hope to catch up towards the end of the course, which is often the main cause of failure in online courses (as in face-to-face classes).

We will see that defining clear activities for students is critical for success in online learning. We shall see when we discuss student activities below that there is often a trade-off to be made between content and activities if the student workload is to be kept to manageable proportions.

12.9.7 Structuring a blended learning course

Many blended learning courses are designed almost by accident, rather than deliberately. Online components, such as a learning management system to contain online learning materials, lecture notes or online readings, are gradually added to regular classroom teaching. There are obvious dangers in doing this if the face-to-face component is not adjusted at the same time. After a number of years, more and more materials, activities and work for students is added online, often optional but sometimes essential for assignments. Student workloads can increase dramatically as a result – and so too can the instructor's, with more and more material to manage.

Rethinking a course for blended learning means thinking carefully about the structure and student workload. Means et al. (2010) hypothesised that one reason for better results from blended learning was due to students spending more time on task; in other words, they worked harder. This is good, but not if *all* their courses are adding more work. It is essential therefore when moving to a blended model to make sure that extra work online is compensated by less time in class (including travel time).

12.9.8 Designing a new online course or program

If you are offering a course or program that has not to date been offered on campus (for instance a professional or applied masters program) then you have much more scope for developing a unique structure that best fits the online environment and also the type of students that may take this kind of course (for example, working adults).

The important point here is that the way this time is divided up does not have to be the same as for a face-to-face class, because there is no organizational need for the student to be at a particular time or place in order to get the instruction. Usually an online course will be 'ready' and available for release to the students before the course officially begins. Students could in theory do the course more quickly or more slowly, if they wished. Thus the instructor has more options or choices about how to structure the course and in particular about how to control the student work flow.

This is particularly important if the course is being taken mainly by lifelong learners or part-time students, for instance. Indeed, it may be possible to structure a course in such a way that different students could work at different speeds. Competency-based learning means that students can work through the same course or program at very different speeds. Some open universities even have continuous enrolment, so they can start and finish at different times. Most students opting for an online course are likely to be working, so you may need to allow them longer to complete a course than full-time students. For instance, if on-campus masters programs need to be completed in one or two years, students may need up to five years to complete an online professional masters program.

12.9.9 Key principles in structuring a course

Now there may be good reasons for not doing some of these things, but this will be because of pedagogical rather than institutional organizational reasons. For instance, I'm not keen on continuous enrollment, or self-paced instruction, because especially at graduate level I make heavy use of online discussion forums and online group work. I like students to work through a course at roughly the same pace, because it leads to more focused discussions, and organizing group work when students are at different points in the course is difficult if not impossible. However, in other courses, for instance a math course, self-paced instruction may make a lot of sense.

I will discuss other non-traditional course structures when we discuss student activities below. However you structure the course, though, two basic principles remain:

- there must be some notional idea of how much time students should spend each week on the course;
- students should be clear each week about what they have to do and when it needs to be done.

12.9.10 Designing student activities

This is the most critical part of the design process, especially for fully online students, who have neither the regular classroom structure or campus environment for contact with the instructor and other students nor the opportunity for spontaneous questions and discussions in a face-to-face class. Regular student activities though are critical for keeping all students engaged and on task, irrespective of mode of delivery. These can include:

- assigned readings, with some activity that enables students to demonstrate their understanding;
- simple multiple choice self-assessment tests of understanding with automated feedback, using the computer-based testing facility within a learning management system;
- questions requiring short paragraph answers which may be shared with other students for comparison or discussion;
- formally marked and assessed monthly assignments in the form of short essays or reports;
- individual or group project work spaced over several weeks;
- an individual student blog or e-portfolio that enables the student to reflect on their recent learning, and which may be shared with the instructor or other students;
- online discussion forums, which the instructor will need to organize and monitor.

There are many other activities that instructors can devise to keep students engaged. However, all such activities need to be clearly linked to the stated learning outcomes for the course and can be seen by students as helping them prepare for any formal assessment. If learning outcomes are focused on skills development, then the activities should be designed to give students opportunities to develop or practice such skills.

These activities also need to be regularly spaced and an estimate made of the time students will need to complete the activities. In step eight, we shall see that student engagement in such activities will need to be monitored by the instructor.

It is at this point where some hard decisions may need to be made about the balance between 'content' and 'activities'. Students must have enough time to do regular activities (other than just reading) once each week at least, or their risk of dropping out or failing the course will increase dramatically. In particular they will need some way of getting feedback or comments on their activities, either from the instructor or from other students, so the design of the course will have to take account of the instructors' workload as well as the students'.

In my view, most university and college courses are overstuffed with content and not enough consideration is given to what students need to do to absorb, apply and evaluate such content. I have a very rough rule of thumb that students should spend no more than half their time reading content and attending lectures, the rest being spent on interpreting, analyzing, or applying that content through the kinds of activities listed above. As students become more mature and more self-managed the proportion of time spent on activities can increase, with the students themselves being responsible for identifying appropriate content that will enable them to meet the goals and criteria laid down by the instructor. However, that is my personal view. Whatever your teaching philosophy though, there must be plenty of activities with some form of feedback for online students, or they will drop like flies on a cold winter's day.

12.9.11 Many structures, one high standard

There are many other ways to ensure an appropriate structure for an online course. For instance, the Carnegie Mellon Open Learning Initiative provides a complete course 'in a box' for standard first and second year courses in two year colleges. These include a learning management system site with content, objectives and activities pre-loaded, with an accompanying textbook. The content is carefully structured, with in-built student activities. The instructors' role is mainly delivery, providing student

feedback and marking where needed. These courses have proved to be very effective, in that most students successfully complete such programs.

The History instructor in Scenario D kept a normal three lectures a week structure for the first three weeks, then students worked entirely online in small groups on a major project for five weeks, then returned to class for one three-hour session a week for five weeks for students to report back on and discuss their projects as a whole class group.

We saw that in competency-based learning, students can work at their own speed through highly structured courses academically, in terms of topic sequences and learner activities, that nevertheless have flexibility in the time students can take to successfully complete a competency.

The Integrated Science Program at McMaster University is built around 6-10 week undergraduate research projects.

cMOOC's such as Stephen Downes, George Siemen's, and Dave Cormier's #Change 11 (Milligan, 2012) have a loose structure, with different topics with different contributors each week, but student activities, such as blog posts or comments, are not organized by the course designers but left to the students. However, these are not credit courses, and few students work all the way through the whole MOOC, and that is not their intent. The Stanford and MIT xMOOC's on the other hand are highly structured, with student activities, and the feedback is fully automated. Less than 10 per cent of students who start these MOOCs successfully complete them, but they too are non-credit courses. Increasingly MOOCs are becoming shorter, some of as little as three or four weeks in length.

Online learning enables teachers and instructors to break away from a rigid three semester, 13 week, three lectures a week structure, and build courses around structures that best meet the needs of learners and the preferred teaching method of the teacher or instructor. My aim in a credit course or program is to ensure high academic quality *and* high completion rates. For me that means developing an appropriate structure and related learning activities as a key step in achieving quality in credit online courses.

References

Means, B. et al. (2010) *Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies* Washington, DC: US Department of Education

Milligan, C. (2012) Change 11 SRL-MOOC study: initial findings *Learning in the Workplace*, December 19

Activity 12.9 Structuring your course or program

1. How many hours a week should a typical student spend studying a three credit course? If your answer differs from mine (8-9 hours), why?

2. If you were designing an online credit program from scratch, would you need to follow a 'traditional' structure of three credits over 13 weeks? If not, how would you structure such a program, and why?

3. Do you think most credit courses are 'overstuffed' with content and do not have enough learning activities? Do we focus too much on content and not enough on skills development in higher education? How does that affect the structure of courses? How much does it affect the quality of the learning?

Again, no feedback provided on this activity.

12.10 Step eight: communicate, communicate, communicate

Figure 12.10.1 Communicate!
Image: Care2, 2012

Some methods of teaching, such as online collaborative learning (Chapter 4, Section 4), depend on high quality discussion between instructor and students. However, there is substantial research evidence to suggest that ongoing, continuing communication between teacher/instructor and students is essential in *all* online learning. At the same time it needs to be carefully managed in order to control the teacher/instructor's workload.

12.10.1 The concept of 'instructor presence'

In a classroom environment, the presence of the teacher or instructor is taken for granted. Usually, the

teacher is at the front of the class and at the centre of attention. Students may want to ignore a teacher but that is not always easy to do, even in a very large lecture theatre. The instructor just being there in the room is often considered to be enough. We can learn a lot though about the important pedagogical aspects of teacher presence from the research into online learning, where instructor presence has to be worked at.

12.10.2 Instructor presence and the loneliness of the long distance learner

Research has clearly indicated that 'perceived instructor presence' is a critical factor for online student success and satisfaction (Jonassen et al., 1995; Anderson et al., 2001; Garrison and Cleveland-Innes, 2005; Baker, 2010; Sheridan and Kelly, 2010). Students need to know that the instructor is following the online activities of students and that the instructor is actively participating during the delivery of the course.

The reasons for this are obvious. Online students often study from home, and if they are fully online may never meet another student on the same course. They do not get the important non-verbal cues from the instructor or other students, such as the stare at a stupid question, the intensity in presentation that shows the passion of the instructor for the topic, the 'throwaway' comment that indicates the instructor doesn't have much time for a particular idea, or the nodding of other students' heads when another student makes a good point or asks a pertinent question. An online student does not have the opportunity for a spontaneous discussion by bumping into the instructor in the corridor.

However, a skilled instructor can create just as compelling a learning environment online, but it needs to be deliberately planned and designed, and be done in such a way that the instructor's workload can be controlled.

12.10.3 Setting students' expectations

It is essential right at the start of a course for the instructor to make it clear to students what is expected of them when they are studying online, whether in a blended or fully online course. On reflection, why would we not do the same for face-to-face teaching?

Most institutions have a code of behaviour for the use of computers and the Internet, but these are often lengthy documents written in a bureaucratic language, and are more concerned with spam, general online behaviour such as 'flaming' or bullying, or hacking. Although necessary, this is not sufficient for teaching purposes. Thus instructors are advised to develop a set of specific requirements for student behaviour that is related to the needs of the particular course, and deals with the academic requirements of studying online. Some guidelines or principles for developing meaningful online discussion can found in Chapter 4, Section 4.4.4. However, there are some other specific actions that teachers and instructors can take to ensure instructor presence.

A small task can be set in the first week of a course that sets up student expectations for the rest of the course. For instance students can be asked to post their bio and respond to other students bio posts, or can be asked to comment on a topic related to the course and their views on this before the course really begins, using the discussion forum facility in the learning management system. It is important to pay particular attention to this activity, because research indicates that students who do not respond to set activities in the first week are at high risk of non-completion. Instructors should follow up with a phone call or e-mail to non-respondents at the end of the first week, and ensure that each student is following the guidelines or doing the task set, even if students are experienced in studying online. Students know that the instructor is then following what they do (or more importantly don't do) from the outset.

Different courses may require different guidelines. For instance a math or science course may not put so much emphasis on discussion forums, but more on self-assessed computer-marked multiple choice questions. It should be made clear whether students must do these or if they are optional, or how much time should be spent as a minimum on doing such non-graded activities, and their relationship to activities that are graded or assessed. They should get such an activity within the first week of a course, and the instructor should follow up with those that avoid the activity or have difficulties with it.

Lastly, instructors should follow their own guidelines. Your comments should be helpful and constructive, rather than negative. You should actively encourage discussion by being 'present' and stepping in on a discussion where necessary – for instance if the comments are getting off topic or too personal.

12.10.4 Teaching philosophy and online communication

Instructors who have a more objectivist approach to teaching are more likely to focus on whether students are not only covering the necessary content but are also understanding it. This often requires students going back over content, providing misunderstood or difficult content in an alternative manner (e.g. a video as well as text), and instructor or automated (computer-based) feedback. Most LMSs will provide summaries of student activities, and it is important to track each individual student's progress. Instructors with a more constructivist approach are more likely to emphasize online discussion and argument.

Whatever your approach, students want to know where you stand on some of the topics. Thus while it is necessary often to present content objectively with an 'on the one hand… on the other…' approach, students usually feel more committed to a course where the instructor's own views or approach to a topic are made clear. This can be done in a variety of ways, such as a podcast on a topic, or an intervention in a discussion, or a short video of how you would go about solving an equation. These personal interventions have to be carefully judged, but can make a big difference to student commitment and participation.

12.10.5 Choice of medium for instructor communication

There is now a wide variety of media by which instructors can communicate with students, or students can communicate with each other. Basically, though, they fall into four categories:

- face-to-face, such as set office hours, scheduled classes or serendipity (bumping into each other in the corridor);
- synchronous communication media, including voice phone calls, text and audio conferencing over the web (for example, Blackboard Collaborate), or even video-conferencing (for example, ZOOM);
- asynchronous communication media, including e-mail, podcasts or recorded video clips, and online discussion forums within an LMS;
- social media, such as blogs, wikis, text or voice messages on mobile phones, Facebook and Twitter.

In general, I much prefer asynchronous communication for two reasons. Students are often working and have busy lives; asynchronous discussion, questions and answers are more convenient for them.

Asynchronous communications can be accessed at any time. Also, they are much more convenient for me as an instructor. For instance I can go to a conference even in another country yet still log on to my course when I have some free time. I also have a record of what I have said to students. If using an LMS, it is password protected and communications can be kept within the class group.

However, asynchronous communication can be frustrating for students when complex decisions need to be made within a tight timescale, such as deciding the roles and responsibilities for group work, the final draft of a group assignment, or a student's lack of understanding that is blocking any further progress on the topic. Then face-to-face or technology-based synchronous communication is better, depending on whether it is a blended or fully online course.

In a fully online course, I also sometimes use a conferencing system such as Blackboard Collaborate or ZOOM to bring all the students together once or twice during a semester, to get a feeling of community at the start of a course, to establish my 'presence' as a real person with a face or voice at the start of a course, or to wrap up a course at the end, and I try to provide plenty of opportunity for questions and discussion by the students themselves. However, these synchronous 'lectures' are always optional as there will always be some students who cannot be present (although they can be made available in recorded format).

For a blended course, though, I would organise a series of relatively small face-to-face group sessions in the first or second week of a course, so students can get to know each other as well as me, then keep them in the same groups for any group work or discussions.

Blogs or e-portfolios can be used by students to record their learning or to reflect on what they have learned, and blogs can be a useful way for the instructor to comment on news or events relevant to a course, but care is needed to keep a clear separation between students' private lives and conversations, and the more formal in-class communications.

12.10.6 Managing online discussion

Whole books have been written on this topic (see Salmon, 2000, Paloff and Pratt, 2007; Harasim, 2017) and this is discussed in detail in Chapter 4, Section 4.4.4. However, there are some basic guidelines to follow.

12.10.6.1 Threaded discussion

Use the *threaded discussion* forum facility in the LMS (in some LMSs the instructor has to choose to switch this on).

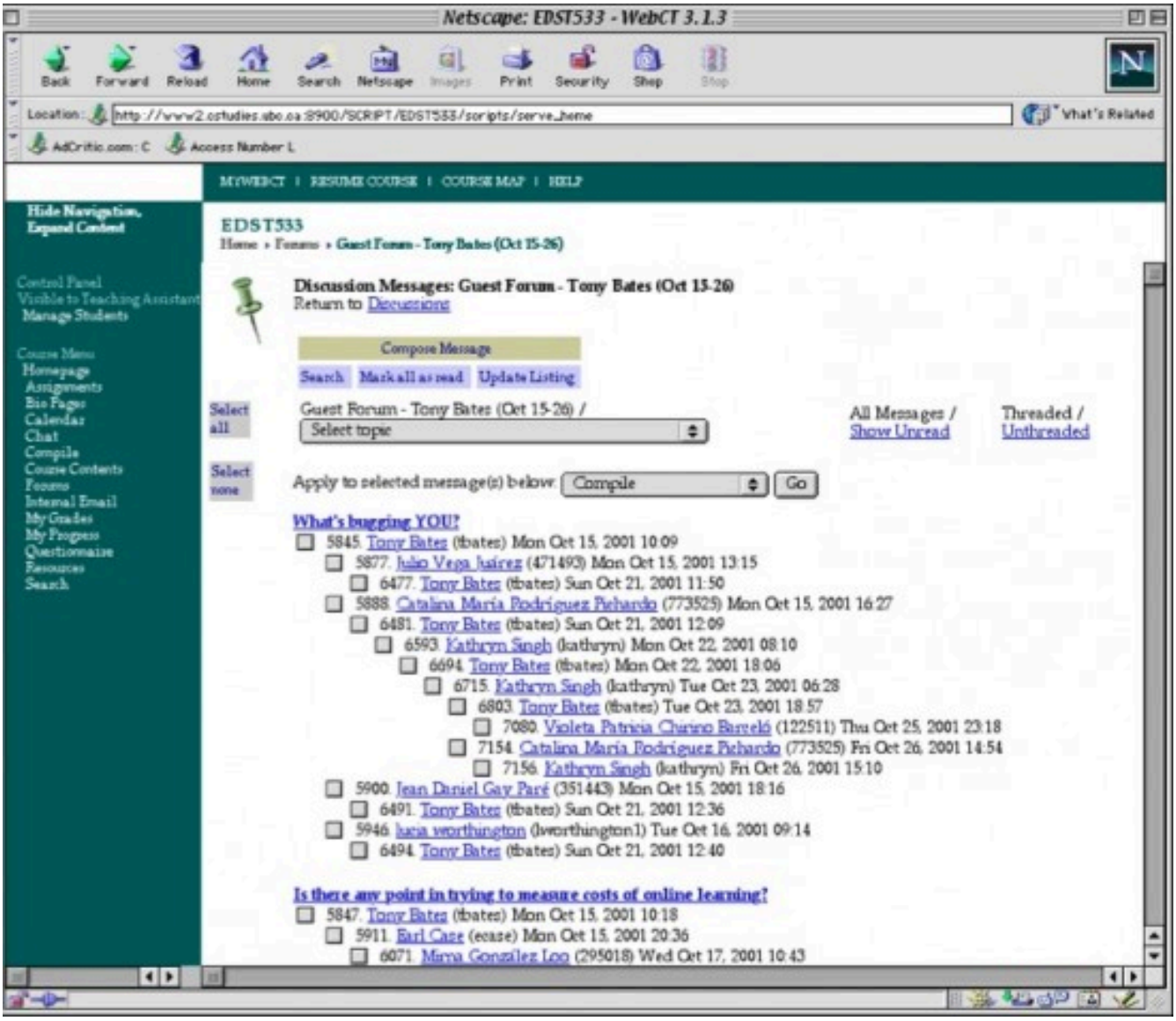

Figure 12.10.2 Example of a threaded discussion topic. This is an old LMS (WebCT) but illustrates clearly the value of a threaded discussion.

Although LMSs are losing some of their original appeal, with more and more instructors using WordPress or other content management systems, I like to use the LMS forum discussion tool because I can organize the discussion by separate topics (a forum for each topic).

In a threaded discussion, a student comment on someone else's post on a topic is posted next to the post, allowing either the student making the original post or other students to respond to the comment. This way a 'thread' of comments linked to a specific topic can be followed. A well chosen topic or sub-topic will often have ten or more threaded comments, and the instructor can tell at a glance which topics have gained 'traction'.

The alternative, comments posted in time order, as in comments on a blog, for instance, make it difficult to follow a thread of an argument. Also I like to keep a least some of the discussion 'private',

just between me and the students on the course, as I am using the discussion forum to identify areas of misunderstanding and to develop skills such as critical thinking and clear communication.

12.10.6.2 Be there!

By that I mean ensure that students are aware of your regular *online presence*. This means monitoring the discussions on a regular basis, and occasionally intervening when appropriate, without hogging the discussion.

For more guidance on handling online communication with students, take a look particularly at the books by Gilly Salmon, Rena Paloff and Keith Pratt, and Linda Harasim in the references below.

12.10.7 Cultural and other student differences

The most interesting and exciting courses that I have taught have included a wide range of international students from different countries. However, even if all the students are within one hour's commute of the institution, they will have different learning styles and approaches to studying online. This is why it is important to be clear about the desired learning outcomes, and the goals for discussion forums.

Students learn in different ways. If one of the desired learning outcomes is critical thinking, students can achieve that in different ways. Some may prefer to discuss course issues with other students over a coffee. Some may do a lot of reading, seeking out different viewpoints. Others may prefer to work mainly in the online discussion forums. Some students learn a lot by lurking online but never contribute directly. Now if you are trying to improve international students' language skills, then you may require them to participate in the online discussions, and will assess them on their contributions. However, I try not force students to participate. I see it as my challenge to make the topic interesting enough to draw them in. I don't really care how they achieve the learning outcomes so long as they do.

Having said that, much can be done to facilitate or encourage students to participate. I taught one graduate course where I had about 20 of the 30 students in my class with Chinese surnames. From the student records and the short bios they posted I noted that a few students were from the Chinese mainland, several more were living in Hong Kong, and the rest had Canadian addresses. However even the latter consisted of two quite different groups: recent immigrants to Canada, and at least one student whose great grandfather had been one of the first immigrants to Canada in the 19th century.

Although it is dangerous to rely on stereotypes, I noticed that the further away 'psychologically' or geographically the student was, the less they were initially inclined to participate online. This was partly a language issue but also a cultural issue. The mainland Chinese in particular were very reluctant to post comments. Fortunately we had a visiting Chinese scholar with us and she advised us to get the three mainland Chinese women on the course to develop a collective contribution to the discussion and then ask them to send it to me to check that it was 'appropriate' before they posted. I made a few comments then sent it back and they then posted it. Gradually by the end of the course they each had the confidence to post individually their own comments. But it was a difficult process for them. (On the other hand, I had Mexican students who commented on everything, whether it was about the course or not, and especially about the World Cup soccer tournament that was on at the time).

Students differences (and possibly stereotypes) also change over time. I am not sure whether 20 years later the differences would apply to students with Chinese names today. The important point is that different students respond differently to online discussion and the instructor needs sensitivity to these differences, and strategies to ensure participation from everyone.

12.10.8 Conclusion

This is a big topic and difficult to cover adequately in one section. However, the importance of instructor presence cannot be overemphasized for getting students successfully to complete any course with an online component. The lack of instructor online presence in xMOOCs is one reason so few students complete the courses.

There is an unlimited number of ways in which you, as an instructor, can communicate now with students, but it is also essential at the same time to control your workload. You cannot be available 24×7, and this means designing the online delivery in such a way that your 'presence' is used to best effect. At the same time, communication with online students can end up being the most interesting and satisfying part of teaching.

Activity 12.10 Communicating with your students

1. How could you apply some of the principles of instructor presence in an online course to a large lecture class?

2. In a blended class where students have at least one classroom session once a week, how would you decide what interactions with students should be done on campus, and what online? What are the reasons for your decision? Does it matter?

3. How important is student discussion in your subject area? What learning goals does it support? How can you help students to achieve these goals through discussion?

4. Interaction/communication between students and teachers/instructors is one of the main cost drivers of education. Could the goals that justify the use of discussion or other forms of communication between learners and teachers or instructors be achieved in other, less costly, ways? Could this be replaced by computers, for instance? If not, why not?

For feedback on this activity, click on the podcast below:

An audio element has been excluded from this version of the text. You can listen to it online here:
https://pressbooks.bccampus.ca/teachinginadigitalagev2/?p=323

References and further reading

(This is just a small sample of many publications on this topic,)

Anderson, T., Rourke, L., Garrison, R., & Archer, W. (2001). Assessing teaching presence in a computer conferencing context *Journal of Asynchronous Learning Networks*, Vol. 5, No.2.

Baker, C. (2010) The Impact of Instructor Immediacy and Presence for Online Student Affective Learning, Cognition, and Motivation *The Journal of Educators Online* Vol. 7, No. 1

Garrison, D. R. & Cleveland-Innes, M. (2005). Facilitating cognitive presence in online learning: Interaction is not enough *American Journal of Distance Education*, Vol. 19, No. 3

Harasim, L. (2017) *Learning Theory and Online Technologies 2nd edition* New York/London: Taylor and Francis

Jonassen, D., Davidson, M., Collins, M., Campbell, J. and Haag, B. (1995) 'Constructivism and Computer-mediated Communication in Distance Education', *American Journal of Distance Education*, Vol. 9, No. 2, pp 7-26.

Paloff, R. and Pratt, K. (2007) *Building Online Learning Communities* San Francisco: John Wiley and Co.

Salmon, G. (2000) *E-moderating* London/New York: Taylor and Francis

Sheridan, K. and Kelly, M. (2010) The Indicators of Instructor Presence that are Important to Students in Online Courses *MERLOT Journal of Online Learning and Teaching*, Vol. 6, No. 4

12.11 Step nine: evaluate and innovate

Figure 12.11.1 Evaluate and innovate Image: Hilary Page-Bucci, 2002

The last key 'fundamental' of quality teaching and learning in a digital age is evaluation and innovation: assessing what has been done, and then looking at ways to improve on it (for a more in-depth discussion of the issues involved in evaluating online learning, see Gunawardena et al., 2000)

12.11.1 Why evaluation is important

For tenure and promotion, it is important if you are teaching to be able to provide evidence that the teaching has been successful. New tools and new approaches to teaching are constantly coming available. They provide the opportunity to experiment a little to see if the results are better, and if we do that, we need to evaluate the impact of using a new tool or course design. It's what professionals do. But the main reason is that teaching is like golf: we strive for perfection but can never achieve it. It's always possible to improve, and one of the best ways of doing that is through a systematic analysis of past experience.

12.11.2 What to evaluate: summative

In Step 1, I defined quality very narrowly:

> *teaching methods that successfully help learners develop the knowledge and skills they will require in a digital age.*

It will be clear from reading this book that I believe that to achieve these goals, it will be necessary to re-design most courses and programs. So it will be important to know whether these redesigned courses are more effective than the 'old' courses. One way of evaluating these new courses is to see how they compared with the older courses, for instance:

- *completion rates will be at least as good if not better for the new version of the course(s)*
- *grades or measures of learning will be at least as good if not better for the new version.*

The first two criteria are relatively easily measured in quantitative terms. We should be aiming for completion rates of at least 85 per cent, which means of 100 students starting the course, 85 complete by passing the end of course assessment (unfortunately, many current courses fail to achieve this rate, but if we value good teaching, we should be trying to bring as many students as possible to the set standard).

The second criterion is to compare the grades. We would expect at least as many As and Bs in our new version as in the old classroom version, while maintaining the same (hopefully high) standards or higher.

However, to be valid the evaluation will also would need to define the knowledge and skills within a course that meet the needs of a digital age, then measuring how effective the teaching was in doing this. Thus a third criterion would be:

- *the new design(s) will lead to new and different learning outcomes that are more relevant to the needs of a digital age.*

This third criterion is more difficult, because it suggests a change in the intended learning goals for courses or programs. This might include assessing students' communication skills with new media, or

their ability to find, evaluate, analyze and apply information appropriately within the subject domain (knowledge management), which have not previously been (adequately) assessed in the classroom version. This requires a qualitative judgement as to which learning goals are most important, and this may require endorsement or support from a departmental curriculum committee or even an external accreditation body.

With a new design, and new learning outcomes, it may be difficult to reach these standards immediately, but over two or three years it should be possible.

12.11.3 What to evaluate: formative

However, even if we measure the course by these three criteria, we will not necessarily know what worked and what didn't in the course. We need to look more closely at factors that may have influenced students' ability to learn. We have laid out in steps 1-8 some of these factors. Some of the questions for which you may want answers are as follows:

- Were the learning outcomes or goals clear to students?
- What learning outcomes did most students struggle with?
- Was the teaching material clear and well structured?
- Were the learning materials and tools students needed easily accessible and available 24 x 7?
- What topics generated good discussion and what didn't?
- Did students draw appropriately on the course materials in their discussion forums or assignments?
- Did students find their own appropriate sources and use them well in discussions, assignments and other student activities?
- Which student activities worked well, and which badly? Why?
- What of the supplied learning materials did students make most and least use of?
- Did the assignments adequately assess the knowledge and skills the course was aiming to teach?
- Were the students overloaded with work?
- Was it too much work for me as an instructor?
- If so, what could I do to better manage my workload (or the students') without losing quality?
- How satisfied were the students with the course?
- How satisfied am I with the course?

I will now suggest some ways that these questions can be answered without again causing a huge amount of work.

12.11.4 How to evaluate factors contributing to or inhibiting learning

There is a range of resources you can draw on to do this, much more in fact than for evaluating traditional face-to-face courses, because online learning leaves a traceable digital trail of evidence:

- student grades;
- individual student participation rates in online activities, such as self-assessment questions, discussion forums, podcasts;
- qualitative analysis of the discussion forums, for instance the quality and range of comments, indicating the level or depth of engagement or thinking;
- student e-portfolios, assignments and exam answers;
- student questionnaires;
- focus groups.

However, before starting, it is useful to draw up a list of questions as in the previous section, and then look at which sources are most likely to provide answers to those questions.

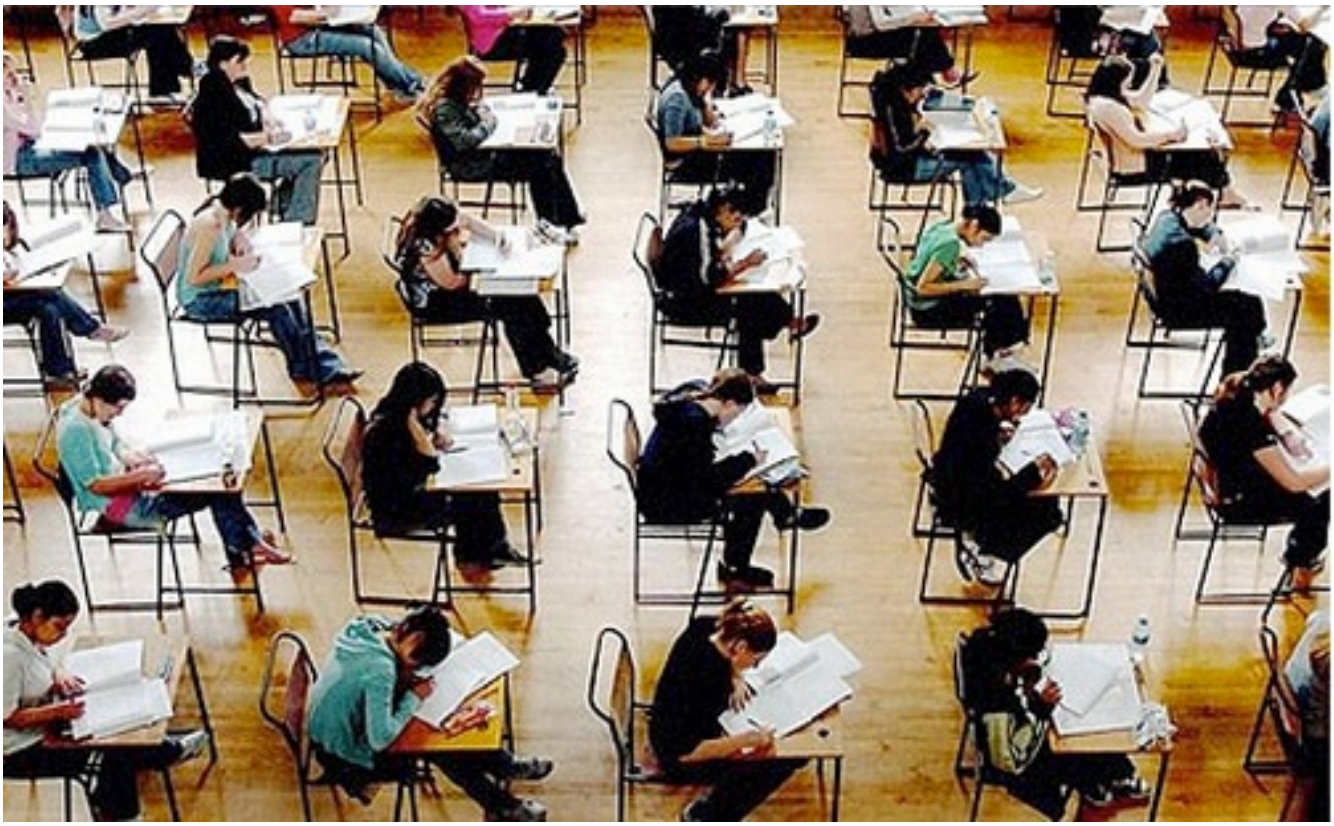

Figure 12.11.2 Analysis of a sample of exam answers will often provide information about course structure and the presentation of materials

At the end of a course, I tend to look at the student grades, and identify which students did well and which struggled. This depends of course on the number of students in a class. In a large class I might sample by grades. I then go back to the beginning of the course and track their online participation as far as possible (learning analytics make this much easier, although it can also be done manually if a learning management system is used). I find that some factors are student specific (e.g. a gregarious student who communicates with everyone) and some are course factor specific, for example, related to learning goals or the way I have explained or presented content. This qualitative approach will often suggest changes to the content or the way I interacted with students for the next version of the course. I may for instance determine next time to manage more carefully students who 'hog' the conversation.

Many institutions have a 'standard' student reporting system at the end of each course. These are often useless for the purposes of evaluating courses with an online component. The questions asked need to be adapted to the mode of delivery. However, because such questionnaires are used for cross course comparisons, the people who manage such evaluation forms are often reluctant to have a different version for online teaching. Secondly, because these questionnaires are usually voluntarily completed by students after the course has ended, completion rates are often notoriously low (less than 20 per cent). Low response rates are usually worthless or at best highly misleading. Students who have dropped out of the course won't even get the questionnaire in most cases. Low response rates tend to be heavily biased towards successful students. It is the students who struggled or dropped out that you need to hear from.

I find small focus groups work better than student questionnaires, and for this I prefer either face-to-face or synchronous tools such as Blackboard Collaborate. I will deliberately approach 7-8 specific students covering the full range of achievement, from drop-out to A, and conduct a one hour discussion around specific questions about the course. If one selected student does not want to participate, I try to find another in the same category. If you can find the time, two or three such focus groups will provide more reliable feedback than just one.

12.11.5 Innovate

Usually I spend quite a bit of time at the end of the first presentation of a redesigned course evaluating it and making changes in the next version, usually working with a trusted instructional designer. After that I concentrate mainly on ensuring completion rates and grades are at the standard I have aimed for.

What I am more likely to do in the third or subsequent offerings is to look at ways to improve the course that are the result of new external factors, such as new software (for instance. an e-portfolio package), or new processes (for instance, student-generated content, using mobile phones or cameras, collecting project-related data). This keeps the course 'fresh' and interesting. However, I usually limit myself to one substantive change, partly for workload reasons but also because this way it is easier to measure the impact of the change.

It is indeed an exciting time to be an instructor. In particular, the new generation of web 2.0 tools, including WordPress, new, instructor-focused 'lightweight' LMSs such as Instructure/Canvas, open educational resources, mobile learning, tablets and iPads, MOOCs, and emerging technologies such as serious games, virtual and augmented reality and artificial intelligence, all offer a wide variety of opportunities for innovation and experiment. These can be either be integrated within the existing LMS and existing course structure, or designs can be more radical. Chapters 3 to 5 discuss a wide range of possible designs.

However, it is important to remember that the aim is to enable students to learn effectively. We do

have enough knowledge and experience to be able to design ‘safe’, effective learning around standard LMSs. New is not always better. Thus for instructors starting in online learning, I would urge caution. Follow the experienced route, then gradually add and evaluate new tools and new approaches to learning as you become more experienced.

Lastly, if you do make an interesting innovation in your course, make sure you properly evaluate it as suggested above, then share these findings with colleagues and help them either include the innovation within their own course, or help them make the innovation even better through their own modifications. That way we can all learn from each other.

Reference/further reading

Gunawardena, C., Lowe, C. & Carabajal, K. (2000) Evaluating Online Learning: models and methods in D. Willis et al. (eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2000* San Diego CA

Activity 12.11 Evaluating your course or program

1. Design and conduct an evaluation of your course using the questions in Section 12.11.3 and the data and methods suggested in Section 12.11.4. What changes, if any, will you make as a result?

Ther eis no feedback provided for this activity.

12.12 Building a strong foundation of course design

Figure 12.12 Building a strong foundation for quality teaching
Image: © Wikipedia Commons

The emphasis in this series of steps is on getting the fundamentals of teaching right. The nine steps are based on two foundations:

- effective strategies resulting from learning theories tested in both classroom and online environments;
- experience of successfully teaching both in classrooms and online (best practices).

The discerning reader will have noted that there isn't much in this chapter about exciting new tools, MOOCs, the Khan Academy, MIT's edX, mobile learning, artificial intelligence, and many other new developments. These tools and new programs offer great potential and these have been discussed extensively in other chapters. However, it doesn't matter what revolutionary tools or teaching approaches are being used, what we know of how people learn does not change a great deal over time,

and we do know that learning is a process, and you ignore the factors that influence that process at your peril.

A subsidiary aim is to encourage you to work with other professionals, such as instructional and web designers and media producers, and preferably in a team with other online instructors.

I have focused mainly on using learning management systems, because that is what most institutions currently have, and LMSs provide an adequate 'framework' within which the key processes of teaching and learning can be managed, whatever the mode of delivery. I have more difficulty with integrating lecture capture or web conferencing within the nine steps, because the pedagogy they require is not suitable for developing the skills needed in a digital age.

But if you get the fundamentals of the nine steps right, they will transfer well to the use of new tools, and the design of new courses and new programs; if they don't transfer well, such tools are likely to be a passing fad and will eventually fade away in education, because they don't enable the key processes that support learning for a digital age. For example, MOOCs may reach hundreds of thousands of students, but if there is no suitable communication with or 'online presence' from an instructor, then most students will fail or lose interest (as is the case at the moment), unless there is significant support from other, more experienced, co-learners, as in cMOOCs. However, this support needs to be structured and organised for effective learning to take place.

The approach I have suggested is quite conservative, and some may wish to jump straight into what I would call second generation flexible learning, based on social media such as mobile learning, blogs and wikis, and so on. These do offer intriguing new possibilities and are worth exploring. Nevertheless, whether or not an LMS is used, for learning leading to qualifications, it is important to remember that most students need:

- well-defined learning goals;
- a clear timetable of work, based on a well-structured organization of the curriculum;
- manageable study workloads appropriate for their conditions of learning;
- regular instructor communication and presence;
- a social environment that draws on, and contributes to, the knowledge and experience of other students;
- a skilled teacher or instructor;
- other motivated learners to provide mutual support and encouragement.

There are many different ways these criteria can be met, with many different tools.

Key Takeaways

1. For the purposes of this book, quality is defined as: *teaching methods that successfully help learners develop the knowledge and skills they will require in a digital age.*

2. Formal national and institutional quality assurance processes do not guarantee quality teaching and learning. In particular, they focus on past 'best' practices, processes to be done before actual teaching, and often ignore the affective, emotional or personal aspects of learning. Nor do they focus particularly on the needs of learners in a digital age.

3. New technologies and the needs of learners in a digital age require a re-thinking of traditional campus-based teaching, especially where it is has been based mainly on the transmission of knowledge. This means re-assessing the way you teach and determining how you would really like to teach in a digital age. This requires imagination and vision rather than technical expertise.

4. It is important to determine the most appropriate mode of delivery, based on teaching philosophy, the needs of students, the demands of the discipline, and the resources available.

5. It is best to work in a team. Blended and especially fully online learning require a range of skills that most instructors are unlikely to have. Good course design not only enables students to learn better but also controls faculty workload. Courses look better with good graphic and web design and professional video production. Specialist technical help frees up instructors to concentrate on the knowledge and skills that students need to develop.

6. Full use should be made of existing resources, including institutionally-supported learning technologies, open educational resources, learning technology staff, and the experience of your colleagues.

7. The main technologies you will be using should be mastered, so you are professional and knowledgeable about their strengths and weaknesses for teaching.

8. Learning goals that are appropriate for learners in a digital age need to be set. The skills students need should be embedded within their subject domain, and these skills should be formally assessed.

9. A coherent and clearly communicable structure and learning activities for a course should be developed that are manageable in terms of workload for both students and instructor.

10. Regular and on-going instructor/teacher presence, especially when students are studying partly or wholly online, is essential for student success. This means effective communication between teacher/instructor and students. It is particularly important to encourage inter-student communication, either face-to-face or online.

11. The extent to which the new learning goals of re-designed courses aimed at developing the knowledge and skills needed in a digital age have been achieved should be carefully evaluated and ways in which the course could be improved should be identified.

Chapter 13: Supporting teachers and instructors in a digital age

The purpose of the chapter

When you have read this chapter, you should be able to:

- recognise the need for professional development and training in teaching and define your own needs;
- recognise the role and importance of learning technology support systems;
- be able to design a team approach to teaching large classes;
- understand the need for an institutional strategy to support teaching and learning in a digital age;
- press for changes within your organisation to ensure that quality teaching is properly supported.

What is covered in this chapter

Also in this chapter you will find the following activities

- Activity 13.6 Developing an institutional strategy for supporting teaching and learning
- Activity 13.7 Develop a future scenario for your teaching

Key Takeaways (from the book as a whole)

1. There is increasing pressure from employers, the business community, learners themselves, and also from a significant number of educators, for learners to develop the type of knowledge and the kinds of skills that they will need in a digital age.

2. The knowledge and skills needed in a digital age, where all 'content' will be increasingly and freely available over the Internet, requires graduates with expertise in:

- knowledge management (the ability to find, evaluate and appropriately apply knowledge);
- IT knowledge and skills;
- inter-personal communication skills, including the appropriate use of social media;
- independent and lifelong learning skills;
- a range of intellectual skills, including:
    - knowledge construction;
    - reasoning;
    - critical analysis;
    - problem-solving;
    - creativity;
- collaborative learning and teamwork;
- multi-tasking and flexibility.

These are all skills that are relevant to any subject domain, and need to be embedded within that domain. With such skills, graduates will be better prepared for a volatile, uncertain, complex and ambiguous world.

3. To develop such knowledge and skills, teachers and instructors need to set clear learning outcomes and select teaching methods that will support the development of such knowledge and skills, and, since all skills require practice and feedback to develop, learners must be given ample opportunity to practice such skills. This requires moving away from a model of information transmission to greater student engagement, more learner-centred teaching, and new methods of assessment that measure skills as well as mastery of content.

4. Because of the increased diversity of students, from full-time campus-based learners to lifelong learners already with high levels of post-secondary education to learners who have slipped through the formal school system and need second-chance opportunities, and because of the capacity of new information technologies to provide learning at any time and any place, a much wider range of modes of delivery are needed, such as campus-based teaching, blended or hybrid learning and fully online courses and programs, both in formal and in non-formal settings.

5. The move to blended, hybrid and online learning and a greater use of learning technologies offers more options and choices for teachers and instructors. In order to use these technologies well, teachers and instructors require not only to know the strengths and weaknesses of different kinds of technology, but also need to have a good grasp of how students learn best. This requires knowing about:

- the research into teaching and learning;
- different theories of learning related to different concepts of knowledge (epistemology);
- different methods of teaching and their strengths and weaknesses.

Without this basic foundation, it is difficult for teachers and instructors to move away from the only model that many are familiar with, namely the lecture and discussion model, which is limited in terms of developing the knowledge and skills required in a digital age.

6. The challenge is particularly acute in universities. There is no requirement to have any training or qualification in teaching to work in a university in most Western countries. Nevertheless teaching will take up a minimum of 40 per cent of a faculty member's time, and much more for many adjunct or contract faculty or full time college instructors. However, the same challenge remains, to a lesser degree, for school teachers and college instructors: how to ensure that already experienced professionals have the knowledge and skills required to teach well in a digital age.

7. Institutions can do much to facilitate or impede the development of the knowledge and skills required in a digital age. They need to:

- ensure that all levels of teaching and instructional staff have adequate training in the new technologies and methods of teaching necessary for the development of the knowledge and skills required in a digital age;
- ensure that there is adequate learning technology support for teachers and instructors;
- ensure that conditions of employment and in particular class size enable teaching and instructional staff to teach in the ways that will develop the knowledge and skills needed in a digital age;
- develop a practical and coherent institutional strategy to support the kind of teaching needed in a digital age.

8. Although governments, institutions and learners themselves can do a great deal to ensure success in teaching and learning, in the end the responsibility and to some extent the power to change lies within teachers and instructors themselves.

9. It will be the imagination of teachers inventing new ways of teaching that will eventually result in the kinds of graduates the world will need in the future.

13.1 Are you a super-hero?

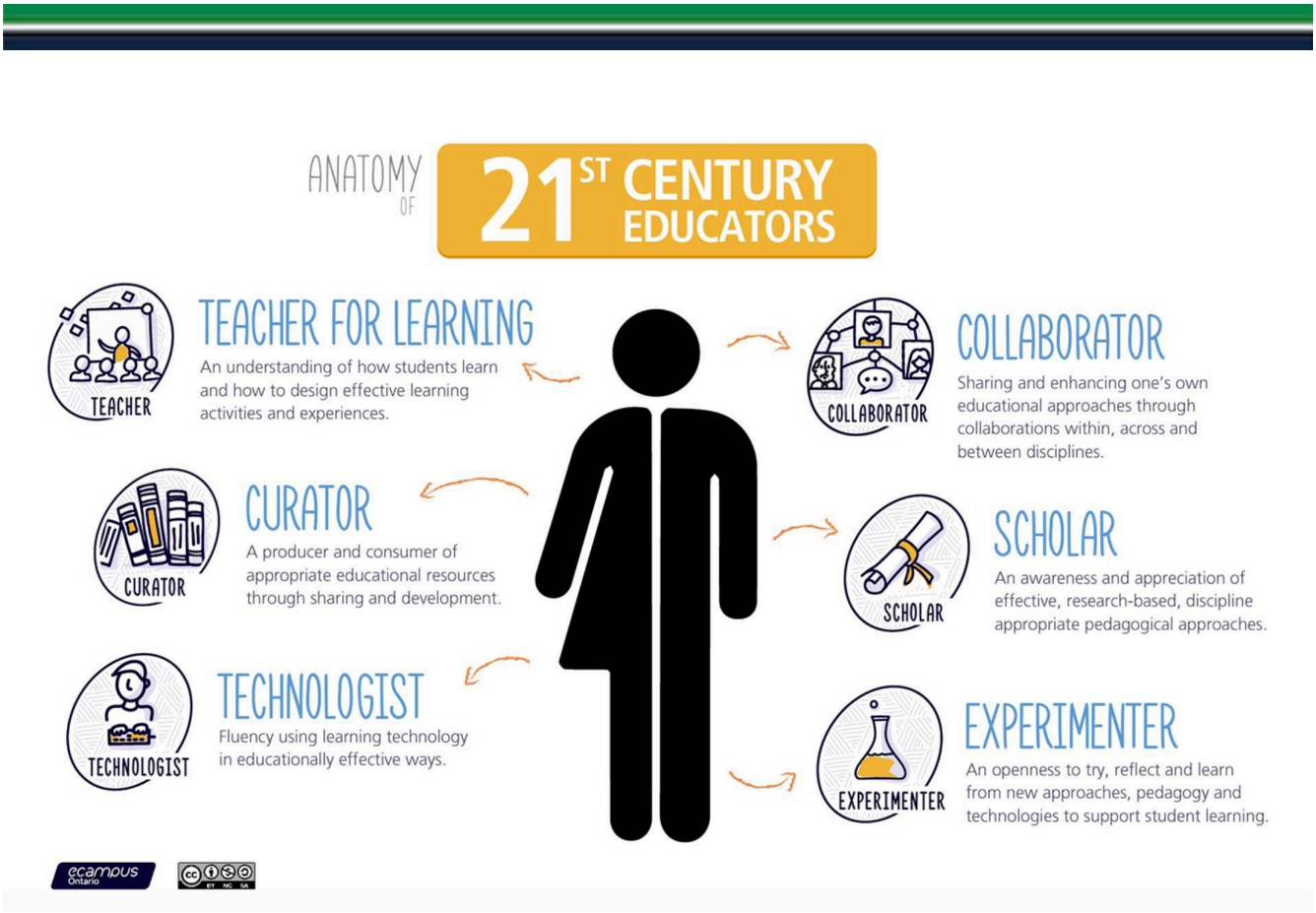

Figure 13.1.1 Image: © Simon Bates/eCampus Ontario

Figure 13.1.1, developed by Simon Bates, Associate Provost, Teaching and Learning at UBC (2016), encapsulates well the role of a teacher or instructor in a digital age. At this point in the book, you might be forgiven for thinking that this is all too much, especially if you are a university professor whose passion is the discipline in which you are an expert, and whose priority is to extend the boundaries of knowledge in that subject through research or other scholarly work. Where an earth will you find the time to become expert in teaching if this means completely changing the teaching model you have become comfortable with? You are not alone in thinking this. Martha Cleveland-Innes (2013) writes:

> *It is unrealistic to expect higher education faculty to have sound, current, content expertise, a productive research program, an active service commitment AND be expert online teachers. The biggest lie in the academy is that the role of faculty, and its rewards and responsibilities, is made up of a seemingly balanced set of activities around teaching, research and service (Atkinson, 2001). With some variation across type of institution, research is the most valued work and most notably*

rewarded. While this reality has not changed "…classroom teaching and course materials (have become) more sophisticated and complex in ways that translate into new forms of faculty work. ….. such new forms are not replacing old ones, but instead are layered on top of them, making for more work." (Rhoades, 2000, p, 38). It is time to clarify this reality and consider how, if at all, changes in teaching are, or may be, integrated into the role of faculty member.

How changes may be integrated into the role of faculty member, instructor or classroom teacher in a digital age is what this chapter is about. It is *not* realistic to expect all teachers to be super-heroes (even if you are the exception), but it *is* realistic to expect all teachers to be competent and professional in a digital age.

The good news though is that if you have read your way through all the chapters in this book, you will have done what you need to do to be competent and professional for teaching in a digital age, and will certainly be ahead of 99 per cent of your colleagues on this (at least until they have also read this book). At the same time, there is much your employing organisation and senior administrators can do to help you in this, which is the focus of the rest of this chapter.

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13.2 The development and training of teachers and instructors in a digital age

Figure 13.2.1 A faculty development workshop

13.2.1 The need

By mid-August in most countries in the northern hemisphere, teachers' pro-d and faculty development workshops and conferences have ended, and everyone has headed off for a well earned vacation. Many thousands will have learned how to use a learning management or lecture capture system for the first time, and hundreds of others will have been introduced to new technologies such as e-portfolios, mobile learning, and open educational resources. A smaller but significant number will have been introduced to new methods of teaching built around the potential of new technologies. All good stuff – and all totally inadequate for the needs facing teachers and instructors in a digital age.

13.2.2 A broken professional development model

In universities, faculty are trained, through the doctoral route, to do research, but there is no requirement to be trained in teaching methods. At best faculty development is voluntary for faculty once appointed, and although post-doctoral students may be offered short courses or in some instances even a certificate in preparation for classroom teaching, this is usually voluntary and minimal. Indeed, post-graduate students interested in experimenting with learning technologies or taking professional courses or programs in teaching are often deliberately discouraged by their supervisors from doing so, as it would

detract from their research. Increased use of adjunct/contract faculty exacerbates the problem (see Chapter 13.4). Being on contract, they require payment for any training, but institutions are often reluctant to train contract workers who may then leave at the end of the contract and take their training and skills to a competitor.

The situation is somewhat different in two year colleges. Many jurisdictions (but by no means all) have a regional, state or provincial Instructor Diploma Program that some colleges require instructors to take on appointment or shortly afterwards. However, many of these programs have not been adapted to take account of online learning, and probably none are yet up to date on blended learning. I was an external reviewer for one such program a while ago, and there was almost no mention of online or blended learning. Most of the technologies discussed in this program were at least 20 years old.

The lack of comprehensive and systematic training at a pre-service level places a disproportionate burden on ongoing professional development, which is at best ad hoc and variable in both quantity and quality. Above all, it is an entirely voluntary system – in other words, teachers or instructors can choose not to take any in-service workshops or courses on teaching, if they decide – as most do – that their professional development time will be better spent focusing on research rather than teaching. Christensen Hughes and Mighty (2010) argue that less than 10 per cent of all university instructors take professional development activities focused on improving their teaching, and the faculty that do opt in are often those in least need of training as they are often already excellent teachers.

Lastly, most faculty and instructors do not base their teaching practice on empirically-based evidence or research on the effectiveness of different approaches. Christensen Hughes and Mighty (2010) have edited a collection of studies on research on teaching and learning in higher education. In the opening chapter the editors state:

> *…researchers have discovered much about teaching and learning in higher education, but that dissemination and uptake of this information have been limited. As such, the impact of educational research on faculty-teaching practice and student-learning experience has been negligible.*

In the same book, Christopher Knapper (also of Queens University) states (p. 229-230):

> *There is increasing empirical evidence from a variety of international settings that prevailing teaching practices in higher education do not encourage the sort of learning that contemporary society demands.…Teaching remains largely didactic, assessment of student work is often trivial, and curricula are more likely to emphasize content coverage than acquisition of lifelong and life-wide skills.…*
>
> *[However] there is an impressive body of evidence on how teaching methods and curriculum design affect deep, autonomous and reflective learning. Yet most faculty are largely ignorant of this scholarship, and instructional practices are dominated by tradition rather than research evidence.*

This book has shown that we do not have to invent or discover what's needed to teach well in a digital age. There is a well-established literature and generally agreed best practices, yet, as Christensen Hughes and Mighty have pointed out, many if not a majority of teachers and instructors are unaware or continue to ignore these standards.

13.2.3 Why the system needs to change

When university education was limited to an elite few students, where faculty had a close, one-on-

one relationship with students, it was possible to manage quite effectively without formal training in teaching. That is not the case today. Faculty are challenged by large classes, and heterogeneous students who learn in a variety of ways, with different learning skills and abilities. The emphasis is changing from knowledge as content to knowledge as process. Teaching methods need to be chosen that will develop the skills and competencies needed in a knowledge-based society, and on top of all this, constantly changing technology requires instructors to have analytical frameworks to help choose and use technologies appropriately for teaching.

In particular, the profound effect of the Internet on scholarship, research, work and leisure requires major reconsideration of our teaching methods, if we are to develop the skills and knowledge our students will need in a knowledge-based society. This requires comprehensive and systematic training of our instructors, not a system that depends heavily on opting-in, and that fails to reward adequately excellence in teaching as measured by the standards required in today's context.

Moving to blended, hybrid and online learning requires a much higher standard of training for faculty and instructors. It is not just a question of learning how to use a learning management system or an iPad. The use of technology needs to be combined with an understanding of how students learn, how skills are developed, how knowledge is represented through different media and then processed, and how learners use different senses for learning. It means examining different approaches to learning, such as the construction of knowledge compared with a transmission model of teaching, and how technology best works with either approach. Above all, it means linking the use of technology to the specific requirements of a particular knowledge domain or subject area.

The expansion into blended and online learning has been facilitated mainly by the establishment of separate learning technology support units to support faculty and instructors who do not have the experience or skills to teach online. Although this is essential, it will be prohibitively expensive to continue to expand such units as blended and online learning continues to grow (Bates and Sangrà, 2011). It is much more cost-effective to provide adequate initial pre-service training so that learning technology units can concentrate on training, professional development and R&D into new methods of teaching and learning as new technologies develop.

13.2.4 What needs to be done

Identifying the problem is much easier than fixing it. In particular, the culture especially of universities protects the existing system. Academic freedom is often used as an argument for the status quo, and unions in the college system insist on payment for instructors for any time spent on training over and above their normal teaching load. As Bates and Sangrà (2011) have pointed out, this is a systemic problem. It is difficult for a university, for example, to change for fear that their best young researchers will move to another institution where training in teaching is not demanded.

There are many different ways to address this challenge. I set out one possible strategy below.

13.2.4.1 Recognize that there's a problem

First, it has to be recognized and accepted by institutional leaders, teachers, instructors and faculty, the relevant unions, quality assurance boards and state funding agencies that there is a major problem here. Donovan et al. (2019) in a national survey of post-secondary institutions in Canada, found that while 71 per cent of all institutions rated online learning as very or extremely important for their long-term future, 79 per cent reported that the main barrier to greater adoption of online learning was inadequate training, and in only 29 per cent of institutions was it required in order to teach online.

Developing skilled teachers (and that's what we need in schools, colleges and universities) is as much an economic development as an educational issue. If we want people with the knowledge and skills needed in a digital age, then teachers must get the knowledge themselves about how to develop such skills, and in particular recognize that learning technologies and online learning are critical components in the development of such skills.

13.2.4.2 Start in graduate school

It is much more economical and effective to prepare instructors properly at the start of their careers than to try to get large chunks of their time for training while in their mid or late careers. Although technology will change over time, the basic essentials of teaching and learning are relatively stable. Thus the problem needs to be tackled at the pre-service level. For those wishing to work as faculty in universities, we need to examine the post-graduate degree and in particular the Ph.D., to ensure that there is adequate time for courses on and practice in post-secondary teaching, or develop a parallel route for developing teaching and research skills.

13.2.4.3 Adopt a system-wide approach

Ideally the state or provincial Council of Universities or Colleges, or school boards, should get together and develop a comprehensive system of training for all teachers and ensure that such programs are continually updated. Similarly, a common plan and set of standards needs to be established across a jurisdiction for hiring and promotion linked to proper training in teaching and learning, through the establishment of appropriate working groups that would include professionals from learning technology units and professional development offices.

13.2.4.4 Self-help

We need to walk the talk, and use technology to support professional development. Increasingly, centres for teaching and learning are creating web sites with 'on-demand' resources for faculty and instructors, such as best practices in using video, podcast production, or designing a course with technology. Too often, though, other faculty development support sites focus on the technical operation of technology or just provide a schedule of faculty development workshops, rather than providing pragmatic advice on best educational practice in the use of a particular technology or medium. Also, teachers and instructors need to know about such sites – and use them.

13.2.4.5 Set standards

The system-wide working groups should agree on a 'core' curriculum, minimum standards, and measures of performance for pre-service training in teaching for each sector. These standards should include knowledge and skills needed by learners in a digital age. No person should be hired to new positions that have a major teaching component without recognized training in teaching, once the training system is in place.

ALT (Association of Learning Technologists), UK, provides professional accreditation of learning technologists, operating at three levels (novice, career, advanced) through certified membership of ALT (Association of Learning Technologists). It uses a combination of personal portfolios of work and peer assessment. A similar program could be extended to teachers and instructors, enabling a form of accreditation based on practice as well as taking courses.

For in-service professional development, one strategy would be to require an individual professional development plan for every teacher or instructor annually negotiated between the teacher and their head of department. This plan would include regular up-dating in new teaching methods and technologies, similar to the compulsory professional development programs for medical practitioners. Different individual professional development plans will be needed for different subject areas.

13.2.4.6 Government as watch dog and enforcer

Governments should exert pressure on school boards, colleges and universities to ensure that an adequate pre-service and in-service training system is in place, as a condition of future funding. Governments should refuse to fund any public institution that does not follow the standards for training in teaching set and endorsed by the relevant system-wide authorities.

13.2.4.7 Integrate internally

Blended and fully online teaching and learning technologies should be seen as integral components of professional development, not as separate activities. Therefore faculty development offices should be integrated with learning technology support units into Centres for Teaching and Learning (either centrally or divisionally, depending on the size of the institution), where this has not already occurred.

Figure 13.2.2 Teachers brainstorming about using technology for teaching

13.2.5 Conclusion

We would not dream of allowing doctors or pilots do their work without formal training related to their main work activities, yet this is exactly the situation regarding teaching in post-secondary education. We have to move from a system of voluntary amateurism to a professional, comprehensive system of training for teaching in post-secondary education, and a modern, up-to-date curriculum for pre-service and in-service training of school teachers. This book attempts to provide at least a basic curriculum for this kind of training.

I have suggested some solutions to the systemic problem. Others support the professional communities of practice route (see for instance Carvalho-Fino et al., 2019), which is more culturally acceptable to university faculty, but does not meet the test of being comprehensive and systematic.

Online learning and new learning technologies are not the cause of the problem nor the solution, but they do provide a necessary catalyst for change. Our students deserve no less than properly trained teachers. The current situation, at least in post-secondary education, is increasingly unacceptable, a truth no-one dares to speak. It's about time we dealt with it.

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Activity 13.2 Identifying your professional training needs

1. Do you believe the professional development system is 'broken'? Is this as true for school teacher education as it is for post-secondary education? Or does the training system in your organisation work reasonably well for teaching in a digital age?

2. Would it be better not to train faculty in universities to teach, but just put them in working groups with instructional designers and media producers?

3. Having read this book (or parts of it) can you now define your own professional training needs? Can you get support for this where you work?

4. In universities, faculty themselves control appointment, tenure and promotion committees. What could be done to make teaching count for more in appointments, tenure and promotion without weakening the academic status or standing of a university?

There is no feedback for this activity; my views on this should be clear from this section!

13.3 Learning technology support

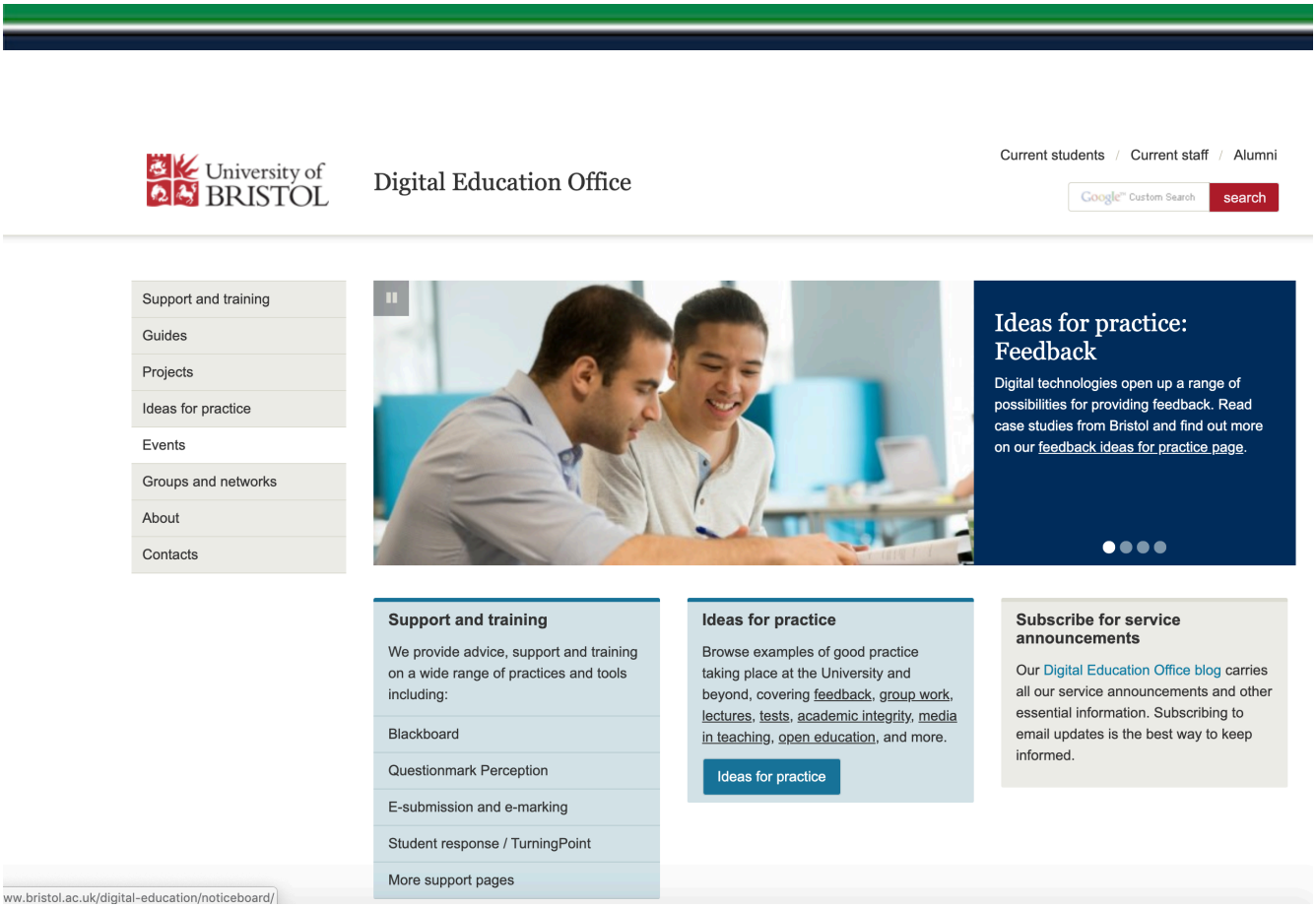

Figure 13.3.1 The University of Bristol Digital Education support site. Click on image to go to web site.

13.3.1 The need for learning technology support systems

There have been many references in this book to the need for teachers and instructors to work, wherever possible, with instructional designers and media producers when teaching in a digital age. The reasons for this are fairly obvious:

- no teacher can be an expert on everything; working in a team covers a wider a range of skills and knowledge;
- technology should be used to decrease instructor and faculty workload, not to increase it, as at present; instructional designers in particular should be able to help teachers and faculty to manage their workload while still producing high quality teaching; media producers enable

subject experts to focus on content and skills development;

- team teaching, with different skills within the team (two or more subject experts, instructional designer, media producer) will lead to higher quality teaching.

As a result, over the last ten to twenty years, there has been a rapid expansion in the number of learning technology support systems, both centrally, and in larger institutions, within different academic departments. Over time, separate units focusing on faculty development, learning technology support, and distance education have become merged or integrated into multi-functional units, under a variety of names, although legacy systems can sometimes take a long while to make this shift.

13.3.2 The scaling problem

As the move to blended, hybrid and online learning increases, so does the demand for these support units, to such an extent that one university I know well now has over 60 support staff and a budget of over $12 million a year for its central Centre for Teaching, Learning and Technology, plus several 'satellite' units in the larger faculties. At the other end a small elementary school will be lucky to have one teacher with some training in maintaining the computers and the Internet added to their responsibilities. However, many school systems also have a central educational technology unit that can provide support to individual teachers and schools within the system.

Institutions are already spending a good deal to support just the fully online courses or programs. We have good models here based on instructional designers and media specialists working in a team with instructors in developing fully online courses. This way, the special design requirements for students studying off campus can be met.

However, at the moment, fully online courses constitute somewhere around 10-15 per cent of all the credit-based teaching in North American universities. What happens when we go to 85 per cent or more of the teaching being blended? The current learning technology support model just won't be able to handle this expansion, certainly not at the rate that it is being predicted. However, without a design strategy for blended learning, and adequate support for faculty and instructors, it is almost certain that the quality will be poor, and it is certain that all the potential benefits of blended learning for transforming the quality of teaching will not be achieved.

Trying to extend the support system from fully online to blended courses and programs will ultimately be unsustainable. Although support units will be essential to get blended learning successfully started, teaching activities must be economically sustainable, which means faculty and instructors will eventually need to become able to design and manage blended learning effectively without continuous and ongoing support from instructional designers and media producers. This will require a huge training and retraining effort for instructors.

13.3.3 Faculty training or support units? The need for balance

I am a strong supporter of such specialised units to work with teachers and instructors. However, this has to be balanced against the costs. Funding from these units usually comes from within the overall budget for teaching and learning which in the end results in larger classes. These support units grow in inverse proportion to the lack of pre-service and in-service training.

However, these learning technology support units are essential for the effective development of teaching in a digital age. Thus a balance needs to be found between the provision of training in the

use of learning technologies and the need for learning technology support units, which is why faculty development and learning technology units have tended to become integrated, and why institutions need a defined strategy for supporting teaching and learning. Thus although it is possible for a particularly dedicated teacher to teach successfully without such support, learning technology support units are becoming an essential service for most teachers and instructors.

Activity 13.3 Learning technology support

1. What kind of learning technology support can you readily access? Is there enough? Can it provide the help you need? Have you tried? Is it close at hand or distant?
2. What kind of support would you like that isn't being provided at the moment? Have you talked to your learning technology support unit about what kind of help you would like?
3. Does the unit combine faculty development, learning technology support, and distance education, or are they all in separate units? Does this matter to you?

There is no feedback on this activity.

13.4 Conditions of employment

Figure 13.4.1 Class size affects the capacity to develop the skills and knowledge needed in a digital age

There are currently some major changes in conditions of employment that will influence the ability of individual teachers and instructors to deliver the kind of teaching needed in a digital age.

13.4.1 Class size

The most obvious is class size. Although some economies of scale are definitely achievable through the use of technology for teaching (see for instance, Bates, 2013), and there is no magic number as to how many students there should be per teacher, we have seen in earlier chapters that instructor presence and the interaction between subject experts and students are critical factors in developing the knowledge and skills needed in a digital age.

Although technology can replace the need for instructors for the transmission of content, the need for

ongoing communication between teacher and students for deep understanding and the development of skills, means that there soon becomes a limit, in terms of the number of students per instructor, beyond which the teaching rapidly starts to become ineffective, at least in terms of the knowledge and skills that matter most (Carey and Trick, 2013).

Thus the major challenge is in universities and some large two-year colleges, where first and second year classes can number in the thousands, and even in third or fourth year classes, in the hundreds. What can be done to ensure that teacher student ratios are kept to a manageable size? Institutions have taken a number of different approaches to this challenge.

13.4.2 The increased use of contract instructors and teaching assistants

One of the biggest changes to universities in North America over the last twenty years has been the growth of non-tenured teaching faculty in universities. An explosion in undergraduate enrolments across Canada – 400,000 more students from 2002 to 2012 – has come without a corresponding increase in tenure-track faculty. While the number of instructors doubled between the 1980s and 2006, there was a decline of 10 per cent in tenure and tenure-track faculty (Chiose, 2015). The position is, if anything, even more dramatic in the USA, where universities and colleges were much harder hit by the economic crisis in 2008 than their Canadian counterparts.

In an article in Canada's leading newspaper, the Globe and Mail, Simona Chiose wrote (2018):

> *Canadian universities say they can no longer afford to deliver higher education through tenured academics who may spend more than a third of their time engaged in research. Instead, most universities have decided that, to staff their classrooms at reasonable cost, they must turn, in varying degrees, to contract instructors and teaching-track faculty.*

Contract staff such as adjuncts or sessionals usually have either a doctoral degree in the subject area, or strongly related work experience for more vocational subjects. In Canada, the union representing contract instructors (CUPE) is fighting to get multiyear contracts for sessional instructors who now have to reapply each year for their jobs. Ideally, the union would like universities to give sessional instructors priority for teaching-track jobs, which do not have tenure, but have more job security than contract positions. With job security can come opportunities for training in teaching.

However, an even more alarming development in recent years has been an increasing tendency to use post-graduate students as teaching assistants, often responsible for delivering lectures to 200 students or more in first and second year courses. This model is also being increasingly used where institutions are moving to a hybrid model, combining both online and face-to-face components, especially where a former very large lecture-based course is being redesigned for hybrid learning. Even including the TAs, the instructor/student ratio is often 1:100 or higher for these large enrollment courses. There is usually no additional training for TAs about how to teach online, although in many – but by no means all – cases, they do get some kind of training in teaching face-to-face.

With fully online courses, though, a different model has often been used where the instructor:student ratio has been deliberately targeted at under 40 for undergraduate courses, and under 30 for graduate courses. Scaling up has been handled by hiring additional part-time adjunct or associate professors on contract. The adjuncts would be paid to take a short online briefing course on teaching online which sets out the expectations for online teaching. This was an affordable model because the additional student tuition fees would more than cover the cost of hiring additional contract instructors, once the course was developed (Bates and Poole, 2003).

However, this has been possible because most of such online courses have been aimed mainly at higher level undergraduate students or graduate students. With both blended and online courses now being targeted at large first and second year classes, new models are being developed that may not have the same level of quality as the 'best practice' online courses. This is a particularly difficult issue for several reasons:

- practices both for dealing with large face-to-face classes and with online classes vary considerably within each form of delivery, and from one institution to another, so making generalizations is fraught with danger;
- decisions about whether to use teaching assistants or part-time, contract instructors, are driven more by financial considerations than by best pedagogical practice;
- there are other factors at work besides money and pedagogy in the use of teaching assistants and adjunct faculty, such as the desire to provide financial support to international and graduate students, the idea of apprenticeship in teaching, and the supply and demand effects on the employment of doctoral graduates seeking a career in university teaching and research;
- there is no golden mean for instructor/student ratios in either blended or online learning. In the mainly quantitative/STEM subjects, much higher ratios are sustainable without the loss of quality, through the use of automated marking and feedback, for the theory component, while the practical component requires much lower ratios due to the need to share equipment and monitor students;
- MOOCs are (wrongly) giving the impression that it is possible to scale up even credit-based online learning at lower cost, by eliminating learning support provided by tenured faculty.

Despite these caveats, there is a genuine concern that the over-reliance on teaching assistants for online and blended courses will have three negative consequences for both students and online learning in general:

- as with the large face-to-face classes, the pedagogy for online or blended courses will resort more to information transmission, due to the TAs' lack of training and experience in teaching online;
- for the online or hybrid courses, student drop-out and dissatisfaction will increase because, especially in first and second year teaching, they will not get the learning support they need when studying online. As a result, faculty and students will claim that hybrid or fully online learning is inferior to classroom-based instruction;
- faculty and especially faculty unions will see online learning and blended learning being used by administrations to cut costs and over time to reduce the employment of tenured faculty, and will therefore try to block its implementation.

Why can't TAs provide the support needed online if they can do this for face-to-face classes? First, it is arguable whether they do provide adequate support for students in large first year classes, but in online courses in subject domains where discussion is important, where qualitative judgements and decisions have to be made by students and instructors, where knowledge needs to be developed and structured, in other words in any field where the learning requires more than the transmission and repetition of information, then students need to be able to interact with an instructor that has a deep understanding of

the subject area. Thus there are good reasons to hire adjunct faculty (as usually they already have post-graduate qualifications) to teach online or in blended formats, but not TAs in general (although there will always be exceptions).

13.4.3 The elephant in the room

However, the discussion about the use of adjuncts and TAs masks a more significant issue. There are two factors that lead to the very large class sizes in first and second year that faculty and their unions really don't want to talk about:

- the starvation of first and second year students of teaching resources; senior faculty concentrate more on upper level courses, and want to keep these class sizes smaller. As a consequence first and second year students suffer;
- teaching subsidizes research: too often tuition revenues get filtered off into supporting research activities. The most obvious case is that if teachers spent more time teaching and less doing research, there would be more faculty available for teaching. Teaching loads for experienced, tenured faculty are often quite light and as stated above, focused on small upper level classes. A report from the Higher Education Quality Council of Ontario (Jonker and Hicks, 2014) suggested that if professors whom it has classified as laggards in research doubled their teaching time, it would be the equivalent of adding 1,500 faculty members across the province, enough to staff an additional mid-sized university.

13.4.4 The increasing diversity of teachers

Much has been said in this book about the increasing diversity of students, and the implications for teaching. We should add to that the increasing diversity of teachers:

- fully tenured, research-focused faculty, with very high academic qualifications but relatively little or no training in teaching;
- contract adjunct or sessional instructors, highly qualified academically, but with little or no chance of professional development in the teaching area;
- teaching assistants, with mid-level academic qualifications and little or no training in teaching;
- work-experienced vocational and technical instructors, with a small amount of training in teaching;
- school teachers, well trained in general teaching methods, but few with training specifically for teaching in a digital age.

The reasons for and the significance of this increasing diversity of teachers and instructors is beyond the scope of this book. Nevertheless, without some kind of job security there is little opportunity or incentive for training in new technologies and teaching methods.

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Activity 13.4 Conditions of employment

1. Why does class size matter particularly for developing the knowledge and skills needed in a digital age?
2. Some governments think online learning will enable larger classes. Do you agree? What are your reasons?
3. What are the advantages and disadvantages of having just teaching staff in universities, such as tenure track teaching professors and/or adjuncts/sessionals/contract instructors, in terms of the development of the knowledge and skills required in a digital age?

Click on the podcast below for my views on the above:

An audio element has been excluded from this version of the text. You can listen to it online here: https://pressbooks.bccampus.ca/teachinginadigitalagev2/?p=343

13.5 Team teaching

Figure 15.5.1 Breaking down a large lecture class into smaller groups Image: © University of Texas at San Antonio

There is no easy solution to the problem of reducing class size to numbers that will ensure all students can be helped to develop the knowledge and skills needed in a digital age. Alex Usher in his blog One Thought to Start Your Day examines different ways to allocate teaching loads to instructors, resulting in classes of different sizes. However, teaching load is usually organised at a departmental level. Too often, an individual instructor has little choice over the size of class to which they are allocated.

Whatever the course design, face-to-face, blended or fully online, large numbers of students per instructor limits what is possible pedagogically. It is extremely difficult to teach the higher level skills of critical thinking, problem-solving and collaborative working in very large classes. Nevertheless, there are several successful approaches to re-designing these large introductory courses of 1,000 students or more, involving the use of blended learning. See for instance:

- the National Center for Academic Transformation's course redesign process,
- a large first year psychology course at McMaster University,
- an online large enrolment course in anatomy at Dalhousie University

The following design attempts to build in at least some opportunities for the development of high level skills in a very large class:

- create a team to design, develop and deliver the course; the team will include a senior tenured professor, four TAs, plus an instructional designer and web/multimedia designer allocated to help with the initial design;
- the senior professor acts as a teaching consultant, responsible for the overall design of the course, hiring and supervising the work of the TAs, and designing the assessment strategy/questions and rubrics, in consultation with the rest of the team;
- nearly all content is provided online through a combination of short videos and textual material designed and loaded on the LMS; this is largely the work of the senior professor working with the instructional designer, assisted by the TAs, before the course begins;
- computer-marked assignments are used to mark student comprehension and understanding, and to provide automated feedback/guidance; there is an end-of semester computer-marked assignment that provides an individual mark for each student;
- students are allocated to groups of 33, and each of the TAs is responsible for eight student groups, or 250 per TA;
- each TA acts as the day-to-day link for each of the 33 students in each of the eight groups they are responsible for;
- each class of 33 is divided into five sub-groups of six to seven students, who work on two projects a semester; the first project is not assessed, but is subject to student peer review, using guidelines/rubrics established by the senior professor; the second project is assessed by the TAs (roughly 40 assignments per TA), again using rubrics designed by the senior professor. The projects aim to develop specific, pre-identified skills, such as critical thinking, problem solving, and collaborative working.
- students in each group of six or seven work through online discussion forums or face-to-face on each project, depending on convenience to the students. The discussion forums are lightly moderated by the TAs, mainly to ensure that students are on topic and respectful to each other; if serious issues arise, these are referred to the senior professor;
- TAs mark the group assignments, following rubrics decided earlier, and the senior professor monitors and calibrates the marking between instructors; for each student their group mark (50%) is added to their individual mark (50%) from the end-of-semester computer-marked assignment;
- the senior professor meets for one hour a week with a different group of 33 students three times a week either face-to-face or synchronously online; this means that every student gets at least one hour of personal interaction with the senior professor during the semester. The sessions are used to discuss key issues in the course and focus on the pre-determined skills development.

Whatever detailed design is done, these large courses should have a clear business model to work with, which basically provides an overall budget for the course, that includes the cost of the TAs, and takes account of the students numbers (more students, more budgeted money), but allowing the senior professor to build the team as best as possible within that budget. TAs would receive a briefing on responsibilities, online mentoring, assessment marking, for which they would be paid in addition to or as part of their teaching contract.

Ideally though the organization of teaching should not result in such very large classes, if at all

possible. However, the principle of team teaching should be considered for all classes with more than 30 or so students.

Reference

Sana, F. et al. (2011) A Case Study of the Introductory Psychology Blended Learning Model at McMaster University *The Canadian Journal for the Scholarship of Teaching and Learning*, Vol. 2, No.1

Usher, A. (2019) Managing Class Size *One Thought to Start Your Day*, Higher Education Strategy Associates, September 18

Activity 13.5 Designing a team approach

1. Assume you have a class of 1,600 students for which you are responsible. You have the resources to hire two adjunct faculty and six TAs. How would you design the class?

There is no feedback for this activity.

13.6 An institutional strategy for teaching in a digital age

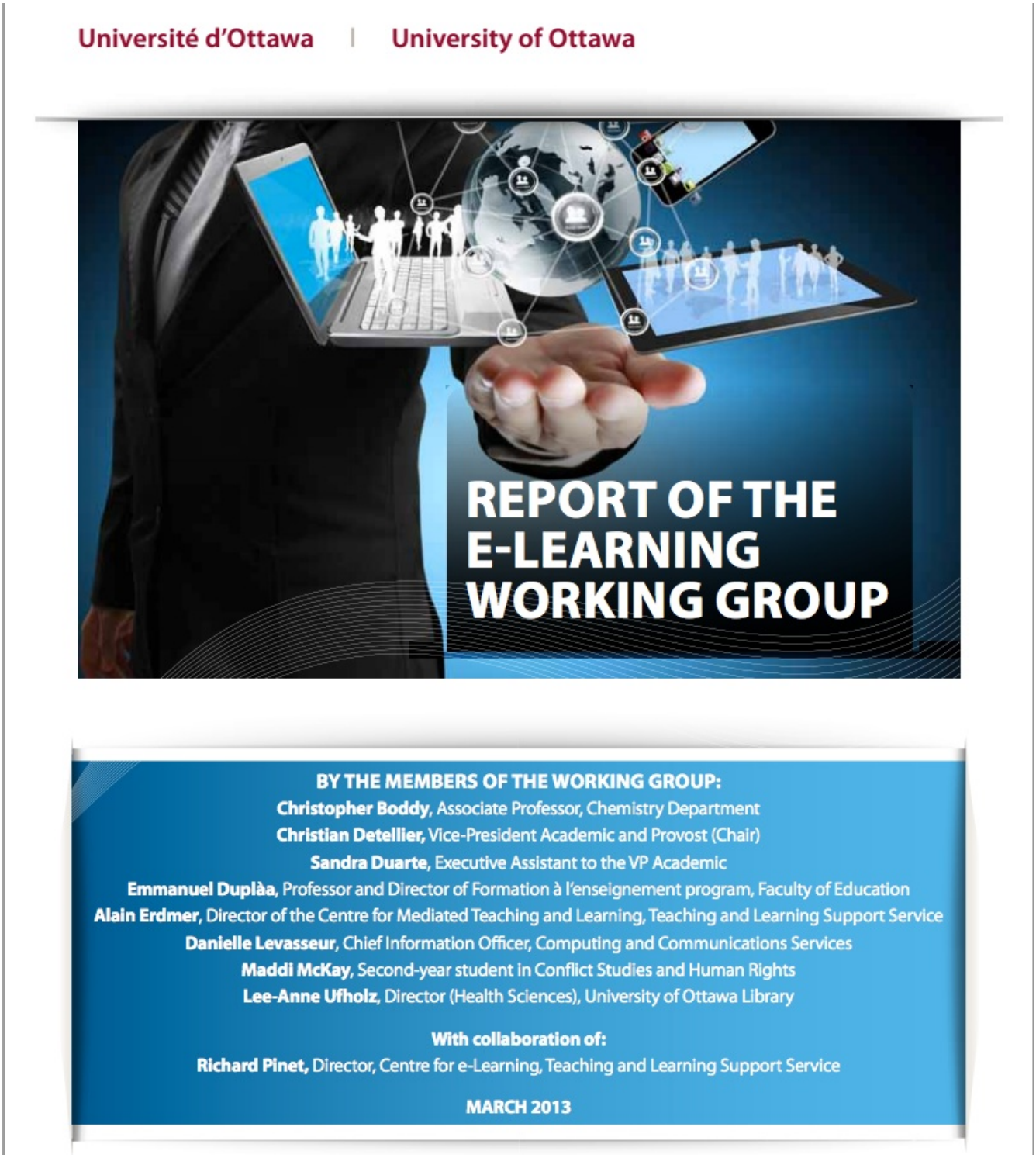

Figure 13.6.1 The University of Ottawa's e-learning plan. Click on the graphic to access the plan.

It can be seen that issues around faculty development and training, class size, hiring of contract instructors and teaching assistants, and team work will influence the organisation's capacity to do the kind of teaching that will develop the knowledge and skills needed in a digital age (or any other age, for that matter). It may be possible for you, particularly if you are tenured faculty working in a university,

individually to make the necessary changes to your teaching to fit the needs of a digital age, but for the majority of teachers and instructors, the institution as a whole needs to support the necessary changes to teaching. It can do this best by having a formal plan or strategy that sets out:

- the rationale for changes;
- the goals or outcomes that such changes will lead to (for example, learners with specified skills and competencies);
- actions that will support the changes (for example, funding for new course design, re-organisation of services);
- a financial strategy to support the intended changes, such as funding for innovation in teaching;
- a way of measuring successful implementation of the strategy.

There are various ways in which such a strategy may be developed (see Bates and Sangrà, 2011), including top-down and bottom-up processes for setting overall goals, but in a university it may be through an annual academic planning process where departments/faculties must submit their plans for the next three years, including resources needed, based on meeting the overall academic goals set by the university. In such a planning cycle, it is important to include the goals for meeting the needs of learners in a digital age as 'targets' for departments when drawing up their plans. These plans should indicate not only content to be covered but also delivery and teaching methods to be used, with a rationale for them.

Many universities and colleges are in the process of developing or implementing such plans, such as the University of British Columbia's Flexible Learning Initiative and the University of Ottawa's e-learning plan. Indeed, at least in Canada, most institutions have recognised the need for a strategic plan for 'e-learning'. Donovan et al. (2019) found that 71 per cent of responding post-secondary institutions reported that online learning is very or extremely important for the institution's long-term strategic or academic plan. However, only 42 per cent actually had implemented or were implementing a strategic plan for e-learning, and it is not know how closely these plans are tied to the development of the knowledge and skills needed in a digital age, or whether they focus mainly on resources or organizational issues. Nevertheless, a good plan, preferably dynamic and continually reviewed, is essential for such developments.

Lastly, it is of course important for anyone who has read this book to make sure they are actively engaged in such processes, to help shape policy and direction. Without institutional support, it will be difficult to make significant changes.

References

Bates, A. and Sangrà, A. (2011) *Managing Technology in Higher Education: Strategies for Transforming Teaching and Learning* San Francisco: Jossey-Bass/John Wiley & Co.

Donovan, T. et al. (2019) *Tracking Online and Distance Education in Canadian Universities and Colleges: 2019 Canadian National Survey of Online and Distance* Education Halifax NS: Canadian Digital Learning Research Association

University of British Columbia (2014) Flexible Learning – Charting a strategic vision for UBC (Vancouver Campus) Vancouver BC: Flexible Learning Implementation Team

University of Ottawa (2013) *Report of the e-Learning Working Group* Ottawa ON: The University of Ottawa

Activity 13.6 Developing an institutional strategy for supporting teaching and learning

1. Does your organisation have a strategy for teaching and learning? Is it any good? Does it deal with the needs of learners in a digital age?

2. If you could design or change your organisation's strategy for teaching and learning, what would you include?

There is no feedback provided on this activity.

13.7 Building the future

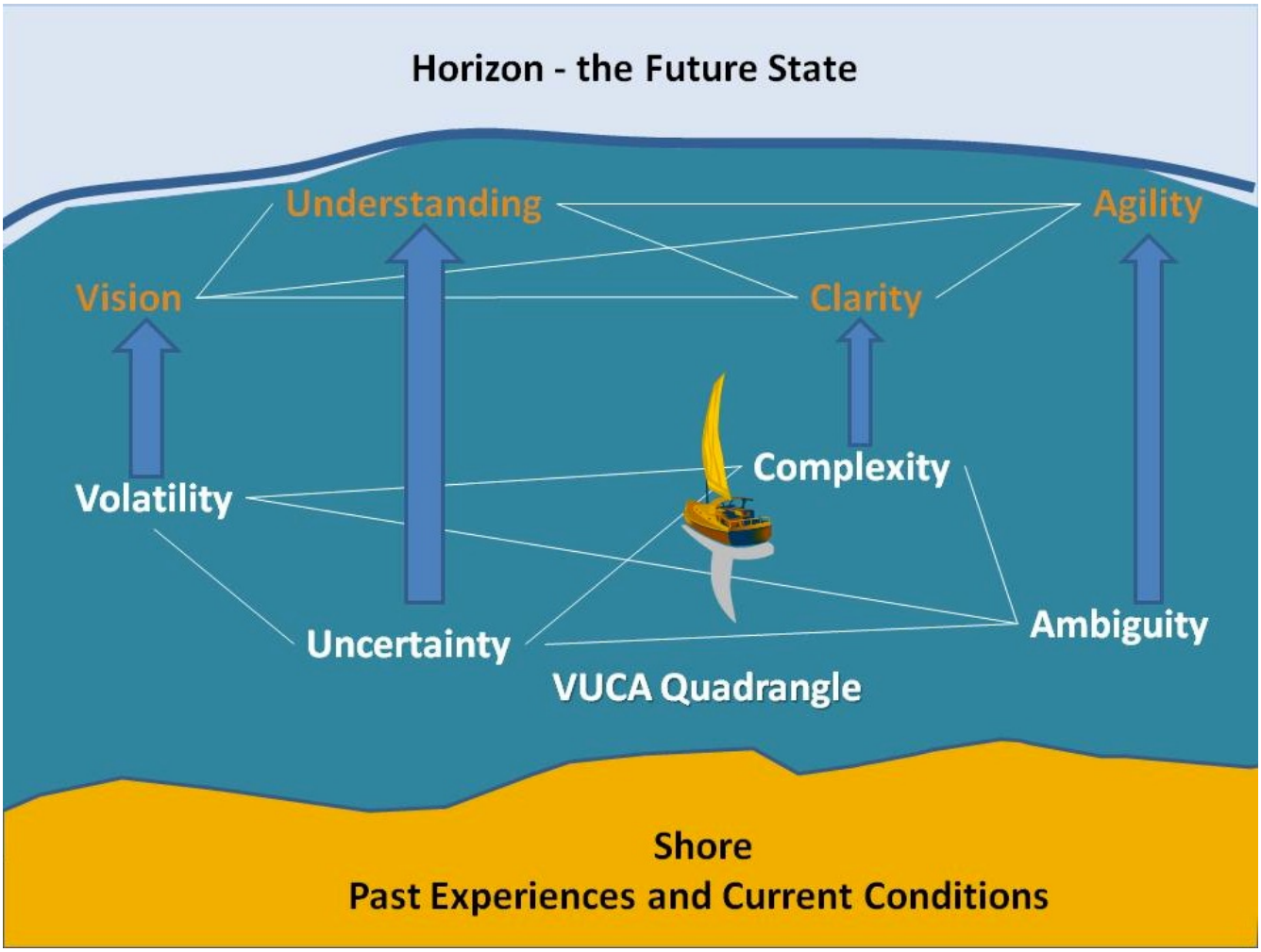

Figure 13.7.1 Navigating a volatile, uncertain, complex and ambiguous world
Image: © Carol Mase, Free Management Library, 2011, used with permission

13.7.1 The rationale for change

This book really sets out the case for increased training in teaching methods, or more accurately a different approach to training, for teachers, instructors and faculty, if students are to be fully prepared for life in a digital age. The argument goes like this:

1. There is increasing pressure from employers, the business community, learners themselves, and also

from a significant number of educators, for learners to develop the type of knowledge and the kinds of skills that they will need in a digital age.

2. The knowledge and skills needed in a digital age, where all ‘content’ will be increasingly and freely available over the Internet, requires graduates with expertise in:

- knowledge management (the ability to find, evaluate and appropriately apply knowledge);
- IT knowledge and skill;
- inter-personal communication skills, including the appropriate use of social media;
- independent and lifelong learning skills;
- a range of intellectual skills, including:
    - knowledge construction;
    - reasoning;
    - critical analysis;
    - problem-solving;
    - creativity;
- collaborative learning and teamwork;
- multi-tasking and flexibility.

These are all skills that are relevant to any subject domain, and need to be embedded within that domain. With such skills, graduates will be better prepared for a volatile, uncertain, complex and ambiguous world.

3. To develop such knowledge and skills, teachers and instructors need to set clear learning outcomes and select teaching methods that will support the development of such knowledge and skills, and, since all skills require practice and feedback to develop, learners must be given ample opportunity to practice such skills. This requires moving away from a model of information transmission to greater student engagement, more learner-centred teaching, and new methods of assessment that measure skills as well as mastery of content.

4. Because of the increased diversity of students, from full-time campus-based learners to lifelong learners already with high levels of post-secondary education to learners who have slipped through the formal school system and need second-chance opportunities, and because of the capacity of new information technologies to provide learning at any time and any place, a much wider range of modes of delivery are needed, such as campus-based teaching, blended or hybrid learning and fully online courses and programs, both in formal and in non-formal settings.

5. The move to blended, hybrid and online learning and a greater use of learning technologies offers more options and choices for teachers and instructors. In order to use these technologies well, teachers and instructors require not only to know the strengths and weaknesses of different kinds of technology, but also need to have a good grasp of how students learn best. This requires knowing about:

- the research into teaching and learning;

- different theories of learning related to different concepts of knowledge (epistemology);
- different methods of teaching and their strengths and weaknesses.

Without this basic foundation, it is difficult for teachers and instructors to move away from the only model that many are familiar with, namely the lecture and discussion model, which is limited in terms of developing the knowledge and skills required in a digital age.

6. The challenge is particularly acute in universities. There is no requirement to have any training or qualification in teaching to work in a university in most Western countries. Nevertheless teaching will take up a minimum of 40 per cent of a faculty member's time, and much more for many adjunct or contract faculty or full time college instructors. However, the same challenge remains, to a lesser degree, for school teachers and college instructors: how to ensure that already experienced professionals have the knowledge and skills required to teach well in a digital age.

7. Institutions can do much to facilitate or impede the development of the knowledge and skills required in a digital age. They need to:

- ensure that all levels of teaching and instructional staff have adequate training in the new technologies and methods of teaching necessary for the development of the knowledge and skills required in a digital age;
- ensure that there is adequate learning technology support for teachers and instructors;
- ensure that conditions of employment and in particular class size enable teaching and instructional staff to teach in the ways that will develop the knowledge and skills needed in a digital age;
- develop a practical and coherent institutional strategy to support the kind of teaching needed in a digital age.

13.7.2 Building your own future

Although governments, institutions and learners themselves can do a great deal to ensure success in teaching and learning, in the end the responsibility and to some extent the power to change lies within teachers and instructors themselves. In probably no other profession is there such an opportunity to work in the way that you choose.

To help you create the kind of teaching needed in a digital age, Chapter 6, Section 10 provides an exercise for building a rich learning environment for your students, applying the guidelines outlined in this book.

Although a sound basis of knowledge and experience is important, no other quality in teachers is more important than vision and imagination. This book attempts to provide a glimpse into the possibilities of teaching in the future, but that future still needs to be invented. The demands of the market, the ethical and moral challenges of society, changing technologies, and the diversity of learning needs are all components in a complex mix of factors that require an appropriate response from teachers and instructors.

This book attempts to provide some foundations for decision-making in this volatile, uncertain, complex and ambiguous world, and I end with Scenario I that aims to suggest one possibility for the

future, but it will be the imagination of you and other teachers inventing new ways of teaching that will eventually result in the kind of graduates the world will need in the future. I hope this book in some small way will help you along this road.

Activity 13.7 Develop a future scenario for your teaching

1. Read Scenario I and/or the other scenarios in this book. Now write your own scenario for your own teaching. Do NOT take into account current resources or institutional policies.

2. What would have to change in your organisation to make your scenario possible?

There is no feedback provided for this activity.

Key Takeaways

1. There is increasing pressure from employers, the business community, learners themselves, and also from a significant number of educators, for learners to develop the type of knowledge and the kinds of skills that they will need in a digital age.

2. The knowledge and skills needed in a digital age, where all 'content' will be increasingly and freely available over the Internet, requires graduates with expertise in:

- knowledge management (the ability to find, evaluate and appropriately apply knowledge);
- IT knowledge and skills;
- inter-personal communication skills, including the appropriate use of social media;
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    - knowledge construction;
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These are all skills that are relevant to any subject domain, and need to be embedded within that domain. With such skills, graduates will be better prepared for a volatile, uncertain, complex and ambiguous world.

3. To develop such knowledge and skills, teachers and instructors need to set clear learning outcomes and select teaching methods that will support the development of such knowledge and skills, and, since all skills require practice and feedback to develop, learners must be given ample opportunity to practice such skills. This requires moving away from a model of information transmission to greater student engagement, more learner-centred teaching, and new methods of assessment that measure skills as well as mastery of content.

4. Because of the increased diversity of students, from full-time campus-based learners to lifelong learners

already with high levels of post-secondary education to learners who have slipped through the formal school system and need second-chance opportunities, and because of the capacity of new information technologies to provide learning at any time and any place, a much wider range of modes of delivery are needed, such as campus-based teaching, blended or hybrid learning and fully online courses and programs, both in formal and in non-formal settings.

5. The move to blended, hybrid and online learning and a greater use of learning technologies offers more options and choices for teachers and instructors. In order to use these technologies well, teachers and instructors require not only to know the strengths and weaknesses of different kinds of technology, but also need to have a good grasp of how students learn best. This requires knowing about:

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- ensure that conditions of employment and in particular class size enable teaching and instructional staff to teach in the ways that will develop the knowledge and skills needed in a digital age;
- develop a practical and coherent institutional strategy to support he kind of teaching needed in a digital age.

8. Although governments, institutions and learners themselves can do a great deal to ensure success in teaching and learning, in the end the responsibility and to some extent the power to change lies within teachers and instructors themselves.

9. It will be the imagination of teachers inventing new ways of teaching that will eventually result in the kinds of graduates the world will need in the future.

Scenario I: Stopping the flu

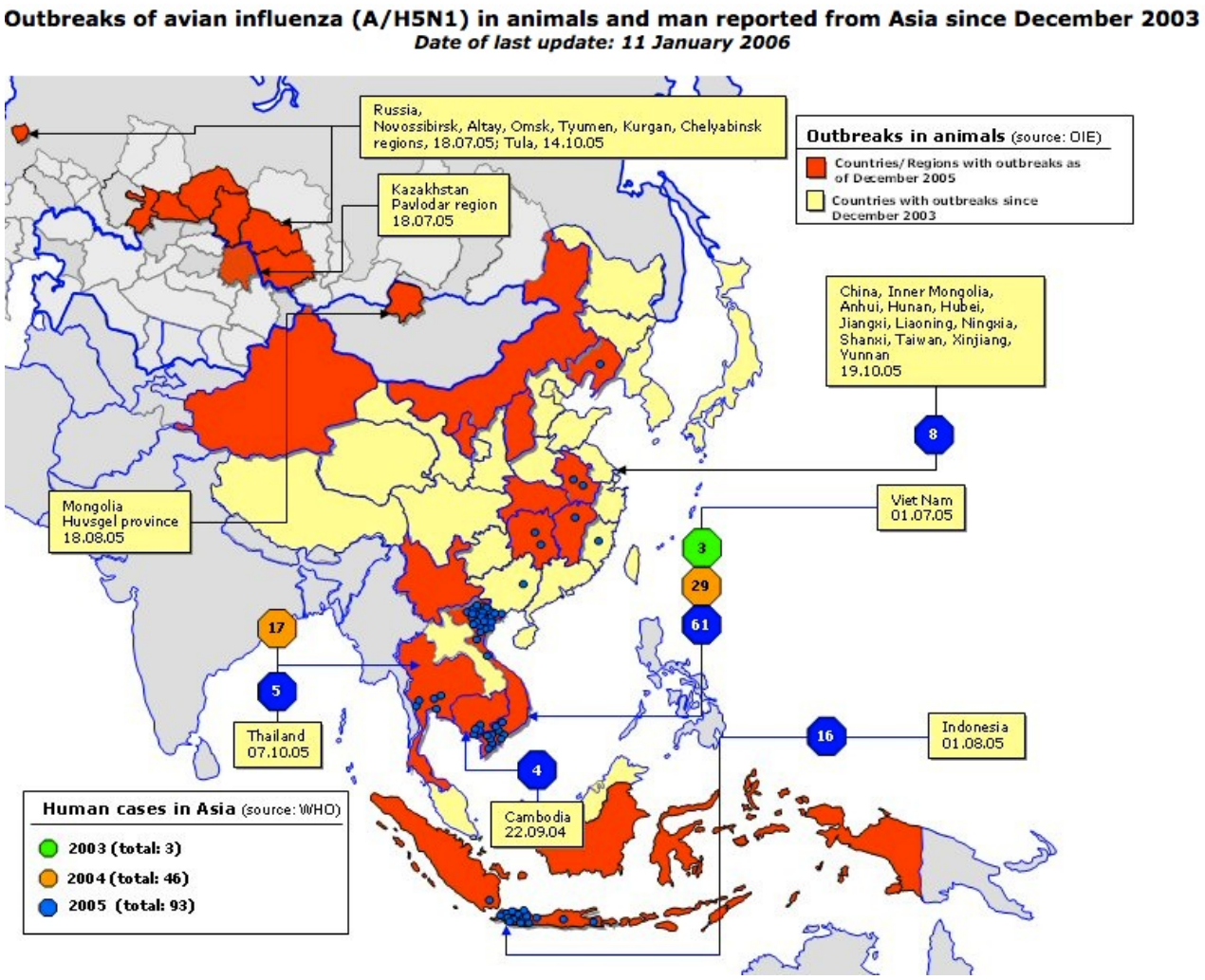


Figure 13.I Stopping the flu
Image: © European Commission, 2015

Hi, Chris, you asked for an update on what I'm studying at the University of Central Canada. Well, I'm about half-way through a really neat program called Global Science. We get to choose from about five or six problems to research. At the moment, the problem I've chosen is called 'Stopping the flu.' Basically, we're looking at the influenza virus, and how to prevent pandemics. I thought when I started it would be all medicine, but I'm having to do math, geography, agriculture, even management and communications, as well as other types of science because they are all related in

some way to the problem we are looking at. We work as a group on defining the problem, collecting data, and interpreting the results.

I'm in a group of 25 students, and they are from all over the world. Altogether there are over 2,000 students taking the program. My main instructor, Dr. Madelaine McVicar, who is responsible for my group of 25, is based the other side of the country in a hospital in Halifax, but really she's more like a conductor of an orchestra, because the course uses experts from all over the world, some of whom come in with just short podcasts or YouTube videos, while others run webinar sessions that deal with specific questions as they come up in our research. Dr. McVicar is great at finding resources to help us, and we also occasionally get sessions online with some of the professors at UCC who helped design the program.

What threw me at the beginning was the lack of lectures or pre-determined weekly study topics. Although we all had to do a set of modules on basic research methods, and we have a sort of program guide on the web designed by the UCC profs, we choose study topics and are provided with a guide to a wide range of resources, mainly free stuff available all over the Internet, such as published papers in open access journals or stuff in MOOCs that will directly help us with the research problem we are tackling. The course web site gave us some leads as to where to look, and we had to provide an interim report early on to Dr. McVicar that listed the resources we were accessing or looking for. Some of these topics, such as the molecular structure of the flu virus, are pretty obvious, but other topics we had to identify ourselves. I was particularly interested in the link between international travel and the spread of flu. One of the things we have to do always is to provide an evaluation of the sources we use and their reliability.

Each month the group has to create our own online reports – called e-portfolios – which shows the progress we've made on the research question each month. In the end, we get 50 per cent of our marks from the monthly group e-portfolios and the other 50 per cent from an individual e-portfolio we each create summarizing the whole project and our individual contribution to the project. Dr. McVicar does the marking and grading.

There's about 20 other student groups from UCC researching the same question, and we are sharing data across the groups, so we get great help and feedback from the other groups as well, through a discussion forum and a shared web site for the monthly e-portfolios. Because of my job, I'm particularly interested in mortality rates from different kinds of flus and I was able to hook up with another student in another group who turns out to be a specialist in that subject, working for a Swiss insurance company – it might even lead to a job for me!

Because of the agreements UCC has made with many hospitals and health authorities around the world, we're getting access to some great data. We often have to go and find local data ourselves, such as the number of local hospital admissions for flu in a particular week. For instance, we were able to track the spread of a particular strain from the first week of our course, when it was identified in China, across the world over the following five months. UCC also has an agreement with IBM to load the data and use some of their analytics as well. Apparently UCC got money from one of the research councils to support some of the research on this program because of the ability to draw on so many sources of relatively raw data from around the world, which means my group sometimes get Skyped by one of the UCC profs who wants access to our data! Another group even got asked by the WHO (the World Health Organization, not the rock group) for their data.

Many of the international students are in other universities, and will transfer the credits into their own program, although a lot of the students are also sponsored by employers, such as hospitals or government agencies. You can in fact get a badge for successfully completing just one of the research problems, and a diploma for doing all three. However, the final 60 credits of the degree program requires me to do my own, individual research project, and I think I'll try and do that, because I need that to go on to grad school, although everyone says that doing the individual research project is pretty tough, as the standard is very high.

But what I really like about this program is that I'm learning so much, so quickly. We're dealing with a real problem, and you know, having so many people from such different backgrounds all working on the same problem means that I feel we are actually making a difference, as well as studying.

Acknowledgement: This scenario was originally developed for the U.K. Open University and is used with their permission. The scenario was influenced by McMaster University's integrated science program. However, the McMaster program is an on-campus program limited to a highly selected group of 50 students.

Appendix 1: Questions to guide media selection and use

The questions on the following pages should be used in conjunction with Chapter 8, and address a real context that you may be facing, such as designing a new course.

It is recommended you work through each question one by one, possibly making notes of your answers. It is also recommended that you do this in a fairly systematic manner the first two or three times when faced with a possible choice of media for a whole course or program. This could take a few days, allowing time for thinking. Some questions may need to wait until other questions have been answered. It will likely to be an iterative process.

After you have worked through the questions, give yourself a day or two if possible before thinking about what media or technology will best fit with your course or program. Discuss your thoughts about media use with other instructors and with any professionals such as an instructional designer or media designer before the design of the course. Leave yourself open to making more final decisions as you start designing/developing and delivering the course, with the option of checking back with your notes and more details in Chapter 8.

After the first two or three times of working through the questions, you will be able to be less systematic and quicker in making decisions, but the questions and answers to the questions should always be in your head when making decisions about media for teaching.

S: Who are your students?

1. What is the mandate or policy of your institution, department or program with respect to access? How will students who do not have access to a chosen technology be supported?

2. What are the likely demographics of the students you will be teaching? How appropriate is the technology you are thinking of using for these students?

3. If your students are to be taught at least partly off campus, to which technologies are they likely to have convenient and regular access at home or work?

4. If they are to be taught at least partly on campus, what is – or should be – your or your department's policy with regard to students' access to learning technologies in class?

5. What digital skills do you expect your students to have before they start the program?

6. If students are expected to provide their own access to technology, will you be able to provide unique teaching experiences that will justify the purchase or use of such technology?

7. What prior approaches to learning are the students likely to bring to your program? How suitable are such prior approaches to learning likely to be to the way you need to teach the course? How could technology be used to cater for student differences in learning?

E: Ease of use

8. How intuitively easy to use is the technology you are considering, both by students and by yourself?

9. How reliable is the technology?

10. How easy is it to maintain and up-grade the technology?

11. The company that is providing the critical hardware or software you are using: is it a stable company that is not likely to go out of business in the next year or two, or is it a new start-up? What strategies are in place to secure any digital teaching materials you create should the organisation providing the software or service cease to exist?

12. Do you have adequate technical and professional support, both in terms of the technology and with respect to the design of materials?

13. How fast developing is this subject area? How important is it to regularly change the teaching materials? Which technology will best support this?

14. To what extent can the changes be handed over to someone else to do, and/or how essential is it for me to do them myself?

15. What rewards am I likely to get for using new technology in my teaching? Will use of a new technology be the only innovation, or can I also change my way of teaching with this technology to get better results

16. What are the risks in using this technology?

C: What is the cost in money and time?

17. Which media are likely to take a lot of your time to develop? Which could you do quickly and easily?

18. How much time do you spend preparing lectures? Could that time be better spent preparing learning materials, then using the time saved from delivering lectures on interaction with students (online and/or face-to-face)?

19. Is there a possibility of extra funding for innovative teaching or technology applications? How could you best use that funding?

20. What kind of help can you get in your institution from instructional designers and media professionals for media design and development?

21. What open educational resources could be used for this course? Could you use an open textbook, thereby saving students the cost of buying textbooks? Can the library or your learning technology support group help identify potential OERs for your course?

T: Teaching and other pedagogical factors

22. What are the desired learning outcomes from the teaching in terms of content and skills?

23. What instructional strategies will be employed to facilitate the learning outcomes?

24. What unique pedagogical characteristics of text will be appropriate for this course, in terms of content presentation and skills development?

25. What unique pedagogical characteristics of audio will be appropriate for this course, in terms of content presentation and skills development?

26. What unique pedagogical characteristics of video will be appropriate for this course, in terms of content presentation and skills development?

27. What unique pedagogical characteristics of computing will be appropriate for this course, in terms of content presentation and skills development?

28. What unique pedagogical characteristics of social media will be appropriate for this course, in terms of content presentation and skills development?

29. What really must be done face-to-face on this course?

I: Interaction

30. In terms of the skills I am trying to develop, what kinds of interaction will be most useful? What media or technology could I use to facilitate that kind of interaction?

31. In terms of the effective use of my time, what kinds of interaction will produce a good balance between student comprehension and student skills development, and the amount of time I will be interacting personally or online with students?

O: Organisational issues

32. How much and what kind of help can I get from the institution in choosing and using media for teaching? Is help easily accessible? How good is the help? Do they have the media professionalism I will need? Are they up to date in the use of new technologies for teaching?

33. Is there possible funding available to ‘buy me out’ for a semester and/or to fund a teaching assistant so I can concentrate on designing a new course or revising an existing course? Is there funding for media production?

34. To what extent will I have to follow ‘standard’ technologies, practices and procedures, such as using a learning management system, or lecture capture system, or will I be encouraged and supported to try something new?

N: Networking

35. How important is it to enable learners to network beyond a course, with others such as subject specialists, professionals in the field, and relevant people in the community? Can the course, or student learning, benefit from such external connections?

36. If this is important, what's the best way to do this? Use social media exclusively? Integrate it with other standard course technology? Delegate responsibility for its design and/or administration to students or learners?

S: Security and privacy

37. What student information am I obliged to keep private and secure? What are my institution's policies on this?

38. What is the risk that by using a particular technology my institution's policies concerning privacy could easily be breached? Who in my institution could advise me on this?

39. What areas of teaching and learning, if any, need I keep behind closed doors, available only to students registered in my course? Which technologies will best allow me to do this?

These 39 questions are just suggestions. You may wish to add other questions (or ignore some of mine) depending on the context in which you will be working.

Appendix 2 Online learning quality standards, organisations and research

All sites accessible 2 October, 2019. Please report any dead or new links to tony.bates@ubc.ca

Canada

Barker, K. (2001) Creating quality guidelines for online education and training: consultation workbook Vancouver BC: Canadian Association for Community Education

BC Ministry of Education (2010) Standards for K-12 Distributed Learning in British Columbia v3.0 Victoria BC: BC Ministry of Education (still current in 2019). More about quality can be found on the BC Ministry of Education Distributed Learning web site

USA

Quality Matters http://www.qmprogram.org/rubric

Europe

European Association for Quality Assurance in Higher Education

New Zealand

Marshall, S. (2006). E-Learning Maturity Model Version Two: New Zealand Tertiary Institution E-

Learning Capability: Informing and Guiding E-Learning Architectural Change and Development Project Report. Wellington NZ: New Zealand Ministry of Education

Australia

Vocational Education and Training E-standards for Training

South Africa

Quality Assurance Toolkit: Distance Higher Education Institutions and Programmes

Quality Assurance Toolkit for Open Schools

Commonwealth of Learning

Quality Assurance Microsite
Quality Assurance Toolkit: Teacher Education

Online education services for students

There are also other conditions beyond management and teaching that contribute toward high quality e-learning and online learning systems. Flexible transfer of credits that recognise qualifications taken online as well as face-to-face, and government web sites that provide accurate and reliable information about the quality of online programs available within their jurisdiction, are also essential components of a high quality digital learning system. For examples, see:

BC Transfer Guide

Education Planner

BCCampus

Contact North

Research on quality assurance

Probably the best coverage of quality issues in both formal (for-credit) and 'post-traditional' (open, non-credit) online learning are the two papers published by Academic Partnerships:

Butcher, N. and Wilson-Strydom, M. (2013) A Guide to Quality in Online Learning Dallas TX: Academic Partnerships

Butcher, N. and Hoosen, S. (2014) A Guide to Quality in Post-traditional Online Higher Education Dallas TX: Academic Partnerships

If you use the category search on "quality" or "quality assurance" on my personal web site, tonybates.ca, you will find almost 60 articles or postings about this topic on this site.

Appendix 3: Independent reviews

The independent review process

Commercial versus open publishing

Usually, before publishing an academic book or a textbook, commercial publishers will seek independent reviews at two stages of the process: when an author submits a proposal for a book, and then when the first complete draft is sent to the publisher. As well as external reviewers, the publishing company will have an in-house specialist editor who will be the main person in the decision-making process, and but even then an editor will usually take the final proposal to an internal committee or even a board meeting for final approval. Each of these stages can take up to three months, sometimes longer for the second stage, much longer if the author is required to make substantial changes before publication. Lastly, after the book is published, it may be reviewed, again independently, in academic journals specializing in the field.

Although this lengthy approval and review process can be very frustrating for an author, the process does ensure that the author gets a lot of feedback, and above all it is part of the quality control process, which is one reason why books count so much in the academic tenure and promotion process.

Self-published books need not follow any of this process, although open textbooks, such as those from OpenStax or the BCcampus open textbook project, are nearly always independently reviewed by faculty in the jurisdiction where these books may be adopted.

However, this book is somewhat different. It was written from scratch for a different market, faculty and instructors, rather than students, and it is not part of the BC government's open textbook project that BCcampus manages. Although BCcampus offered essential technical services, they were not responsible for editing or reviewing the book.

I decided therefore to obtain three independent reviews, and, as with the BCcampus textbooks, these reviews would be published without changes as part of the book.

Criteria for selecting reviewers

In approaching potential reviewers, the following criteria were used:

Independence

Obviously, for an independent review it is necessary to find reviewers who will be as objective as possible. I needed to find professionals in the subject area who had not been closely associated with me during my 40 years working in the field and who would be seen as being objective and sufficiently 'distant' from me and my career.

Qualified or experienced in the subject domain

In terms of qualification, I needed reviewers who were also experts in the field of digital teaching and learning, instructional design, online learning or open education area. Although there are many who meet this criteria, they must also be seen to be independent.

Also, because the book is also targeted at faculty and instructors, it was important to find at least one reviewer who is a mainline faculty member interested in teaching and learning but who did not know or was not involved with my previous work, and who would judge it strictly from a faculty or instructor perspective.

Willingness and availability

The amount of work involved in reviewing a 500 page textbook is quite significant. Usually publishers pay a small fee for external reviewers, which no way compensates for the work involved, but at least it helps sweeten the pot. However, if I paid the reviewers as an author, that may have been seen as unduly influencing the independence of the reviewer.

I approached a total of four reviewers who met one or both of the two criteria above, and three immediately agreed to review the book. None of the reviewers I approached requested or even mentioned a fee. Each of the three who agreed to do a review submitted their review within one month of being asked. Brief descriptions of each reviewer is given as an introduction to the following reviews.

Guidelines for the review

Commercial publishers, when commissioning reviewers, usually send a letter or a standard document that sets out guidelines for reviewing a book in its first, full draft before printing and distribution, to ensure both consistency between reviewers, and to identify to reviewers what the publisher is looking for. Although sometimes the publishing editor will require responses to elements that are specific to a particular book, there are also a number of guidelines that are generic.

The situation is somewhat different for a self-published textbook, where it is the responsibility of the author to decide whether to get independent reviews and if so, to provide appropriate guidelines to the reviewers. Although I encouraged reviewers to use their own criteria, I sent them some suggested guidelines, set out below, adapted from the guidelines used by BCcampus for external reviewers of open textbooks:

1. To what extent is the book successful in meeting the needs of its primary market (faculty and instructors)?
2. Does the book meet the requirements of a scholarly work? Is it research and evidence-based, and does it provide a critical analysis of the key issues in the field?
3. Does it provide evidence-based, practical guidelines for faculty and instructors that will help them improve their teaching?
4. Does it cover adequately the main contemporary issues in teaching in a digital age?
5. Is the book well written? Does it read well? Is it well organized and structured? Are there errors of grammar or serious typographical errors? Are the graphics and cases appropriately chosen?

6. What major changes, if any, are needed before you can recommend this book? What minor changes would you like to see?
7. If this book were to be offered to a commercial publisher, would you recommend it for publication?

Each of the book reviews is published separately, as received, in the following sections.

A review from a faculty perspective: Professor James Mitchell

James Mitchell, *Professor and Director of the Architectural & Environmental Engineering Program, Drexel University, Pennsylvania, USA.*

Many of us recognize that much has changed, is changing, and will continue to change in our professional environment. Even those who are not so old depend on tools that didn't exist when we were children: Google searches; shared documents, analytic tools, simulations, videos and the not-so-lowly cell phone. We suspect those changes should be reflected in who, what, and how we teach. *Teaching in a Digital Age* is Dr. Tony Bates' field guide for those wishing to explore this new continent. Perhaps in a hundred years there will be the same retrospective guffaws that we experience when reading of early European opinions of the Americas they'd never visited or perhaps trod lightly on a sliver of the eastern shore. It's hard, however, to imagine a better guide than Dr. Bates.

Is author credible? Can you check what he asserts? Does he present it in an organized manner? Does he have relevant experience? Has he practiced what he preached? Does this "book" exemplify the changed approach for which he argues? The answer to all of these questions is "yes." There are some splendid "no" opinions as well. Technology will not solve all problems. Critical thinking shouldn't be abandoned.

First, is Dr. Bates credible? It's difficult to imagine someone with better, experience. In a career of fifty years he's taught in elementary school, helped start the UK's Open University, developed and taught online and blended courses, consulted worldwide. He's written multiple academic papers and books. He's paid his dues.

Can you check what he asserts? Yes. Wherever possible this book cites sources with active links to make checking the source easy. He's consistent and thorough throughout.

Is the material presented in an organized manner? Yes. A review of the Table of Contents shows that he proceeds from addressing the question of change, through an examination of the nature of knowledge, on to the ways that teaching can occur both face-to-face and online, to detailed considerations of the differences between media, and finally to the methods for choosing, assessing and supporting the varied approaches. He has covered the range in a manner that allows the reader to move progressively and also to jump rapidly to an area of particular interest.

Does this document progress beyond the traditional book? Does Dr. Bates practice what he preaches? Yes. The Table of Contents (TOC) reads much like a traditional book, but he has taken advantage of the online experience. The TOC is always present in a sidebar with active links. Tony has inserted his voice in audio clips. Videos illustrate his point where appropriate. The references are links wherever possible. More subtly, but equally important, the book is a live document. It was drafted online via a blog, with readers invited to enhance the book by responding (that's how this reviewer became involved, an engineer no less). It is presented under a Creative Commons license so that anyone may use pieces of it with appropriate attribution. Further, the online version is structured so it can evolve.

Does technology answer all questions? Where Dr. Bates long experience and strong British fundamentals enhance his approach shows most beneficially in his recognition of the importance of the teacher's epistemological approach as well as the tradition of education. He values, as the book shows, the second order thinking represented by the abstractions of academic discourse. He understands that a belief in a behaviorist's tabula rasa is going to produce a very different understanding of what's important in education from that of a constructivist or connectivist. He addresses those differences

and attempts valiantly to include them in the many detailed discussions of the many media now available. Although Bates doesn't mention him I suspect he'd be very sympathetic to this reviewer's favorite teaching reference, *The Art of Teaching* by Gilbert Highet (1950), written well before computer technology complicated matters.

Are There Important Topics Not Included? Yes, not surprisingly. First, there is comparatively little attention paid to what we know from good research about how the individual student learns, what motivates them, what impedes them, how to determine when they're ready for a particular approach, and the many ways to approach the same goals. Certainly the many media he presents are vehicles to address the requirements of each student, but Bates' focus is more on the delivery tools than on understanding the students' needs. Is that bad? No. Had he attempted that as well, this already ample document would have been far, far longer. *How Learning Works* (Ambrose, Bridges, DiPietro, Lovett, Norman 2010) would be a splendid companion to *Teaching in a Digital Age.*

Similarly, how to change existing institutions so that they truly embrace and act on these new modes of education is minimally addressed. The explicit audience of this document is the individual instructor or graduate student, not the person with budget power. Undoubtedly this was a conscious decision since Dr. Bates has spent many years working with academic decision makers. Here he's attempting to empower the individual, quite possibly hoping they'll become the decision maker of the next generation.

Should you read it, and will you enjoy it? Emphatically yes if you share an unease about making elegant barouches while Mr. Ford is introducing the Model-T. Most importantly, Dr. Bates' thinking is grounded, organized and inclusive. His writing is clear, the references abundant, the variety of examples edifying. Your efforts will be well rewarded.

Received: 7 June 2015

A review from an open and distance education perspective: Sir John Daniel

By Sir John Daniel, *former President of the Commonwealth of Learning, former Vice Chancellor of the UK Open University, and former Assistant Director-General, Education at UNESCO, currently Senior Advisor to Academic Partnerships International and Education Master in the Beijing DeTao Masters Academy, China.*

Tony Bates, one of the world's most knowledgeable and thoughtful commentators on educational technology, has distilled the wisdom acquired over 50 years of work into this magisterial book. Although once a sceptic about Open Education Resources, he has published *Teaching in a Digital Age* as an open textbook through BCcampus, making this admirable work available to a global readership as a dynamic, living project.

Four features make this book stand out in the growing literature on online learning. First, it addresses cogently the changing skill and content requirements for teaching and learning in the 21st century. Second, it offers direct help to academics in a variety of institutional settings who are grappling with the challenges and opportunities of integrating technology into their teaching. Third, it provides a 50-year historical perspective on the use of technology in teaching, citing research on student use of media from the 1970s onwards that is as relevant as ever. Finally, the beautiful structure and scaffolding of this e-Textbook reflect great credit on the author and his BCcampus editorial team.

Of the book's twelve chapters the first five address the purposes and requirements of teaching in a digital age. It begins with a discussion of the fundamental changes taking place in education, exploring contemporary structural changes in economies and societies in order to draw out the skills needed in a digital age, identify the right relationship between education and the job market and assess the impact of expanding enrolments on teaching methods. Is the nature of knowledge evolving and how should different views about it modify our approaches to teaching?

This first chapter, which notes that 'students are probably the most changed part of higher education in the last 50 years', sets the stage for what follows. The challenge today is to enable growing numbers of increasingly diverse students to achieve success. Attempts to reinforce elite systems by 'dialling the clock back to the 1950s' (Bates' comment on current UK policy) will not serve 21st century societies well.

Chapter 2 dives into epistemology and provides a thorough and well-researched account of theories of learning: objectivism, behaviourism, cognitivism, constructivism and connectivism. It summarises lucidly the important debate about whether knowledge is changing. The author concludes that the times require more emphasis on developing the skills of applying knowledge rather than merely teaching content. But he argues that the values and goals of academic knowledge do not – and should not – change much, although the way it is represented and applied must evolve.

The strengths and weaknesses of different methods of teaching are divided helpfully between Chapter 3 on solely campus-based instruction and Chapter 4 on fully online teaching. This is the second admirable aspect of the book: it starts where people – particularly academic faculty members – really are. Especially enjoyable are the occasional scenarios – doubtless only semi-fictional – which capture, candidly and entertainingly, the tenor of conversations at dinner parties, in staff common rooms and in the privacy of homes when academics discuss the impact of technology on their work and the latest bees in their deans' bonnets.

Bates is an acute commentator on the strengths and weaknesses of MOOCs and devotes chapter 5 to them. The ongoing media coverage of MOOCs has stimulated interest in online teaching everywhere and made them a driver of change. But they are at an early stage of maturation and have major structural limitations for developing deep or transformative learning, or for developing the high-level knowledge and skills needed in a digital age. As the design of MOOCs improves they may come to occupy a significant niche and replace some forms of traditional teaching such as large lecture classes. But the most promising applications of MOOCs may well not be in higher education but in tackling large global problems through community action.

Chapters 6 to 9 will be especially useful to those who are designing teaching for the online space. In summarising decades of research on educational technology – to which he has been a notable contributor – Bates observes that technologies are vehicles for various media, which he helps us examine in terms of their formats, symbols systems, and cultural values. Chapter 8, where he presents the SECTIONS model for media selection that he has refined over many years, is particularly compelling, while Chapter 9 explores choices of modes of delivery.

The three concluding chapters look at trends in open education, the challenge of ensuring quality and the need to support teachers and instructors in this digital age. Developments in open educational resources, open textbooks, open research and open data will be more important than MOOCs – and far more revolutionary because they will shift power from teachers to students. He defines quality as ‘teaching methods that successfully help learners develop the knowledge and skills they will require in a digital age’ and argues for newer concepts of quality that recognise and accommodate the affective or emotional aspects of learning. The design of many MOOCs and the high dropout rates in US two-year colleges new to online learning suggest that institutions are not yet following best practices or developing teaching methods that exploit the strengths of both classroom and online learning.

Finally, the author argues that we must get real about the need to train teachers for the digital age. ‘We have to move from a system of voluntary amateurism to a professional, comprehensive system of training for teaching in post-secondary education, and a modern, up-to-date curriculum for pre-service and in-service training of school teachers’. This impressive book provides a curriculum for such training. It is a splendid work, replete with engaging scenarios and lived experiences. Tony Bates shows us how to ‘walk the talk’ about teaching in a digital age.

Received: 21 June, 2015

A review from a digital education perspective: Digital Education Strategies, Ryerson University

By Leonora Zefi and the team at Digital Education Strategies, the G. Raymond Chang School of Continuing Education, Ryerson University, Toronto, Ontario, Canada

As a team dedicated to supporting instructors in using educational technology as a vehicle for instruction, our collective review of Tony Bates' latest work, *Teaching in a Digital Age*, has been anchored in the practical realities of supporting pedagogical change in higher education. After decades of contributions to the evolving knowledge base and discourse around educational technology, including twelve texts related to the subject, Bates has now provided educators worldwide with the gift of a resource for moving forward in somewhat perplexing times. This book is a model in many respects. It is published in open format – an increasingly adopted, if somewhat debated, mode of knowledge dissemination with which anyone in research and education today must familiarize themselves.

Bates (2014) offers the book as a "coach" to support instructors in fostering the required "thinking and knowledge" for student success in learning environments that are increasingly impacted by technology (p. 1). The work lives up to this coaching analogy to the extent that it offers a rounded and realistic training regimen of sorts, to help strengthen the instructional design and decision making skills of instructors and educational administrators; however, just as the artifacts and content of technology-enhanced teaching must be strategically organized and presented to best support learners, Bates' ideas and commentary require further organization and clarification to optimize their benefit to his audience.

One of the greatest strengths of *Teaching in a Digital Age* is that Bates "walks the talk" of active facilitation of learning rather than the passive transmission of knowledge. From the very beginning, Bates makes clear why his selected topics and stated objectives matter and how they will make a meaningful difference in the professional practice of his intended audience. To support his own work and observations, he guides readers, through references and web links, to many valuable, supplementary resources. He brings theories and concepts alive through vignette-like scenarios, practical real-world examples, and case studies from a range of institutions of higher education. Like any good facilitator, Bates presents content in a range of formats, including text and rich media such as videos, photos, diagrams and illustrations. Learning activities and reflective questions motivate readers to immediately apply Bates' ideas to their own work and context. As such, the book is a tremendous primer in effective pedagogy for all modes of teaching and learning.

Chapters 6 to 8 of *Teaching in a Digital Age* guide the reader through the world of educational technology and new media. For instructors and course designers who are exploring different media to enhance their courses, these chapters are "must reads." Bates presents his previously published SECTIONS model as a framework for when, how and why media should be used in instruction, and realistically conveys the complications that can surround its implementation. While these chapters are comprehensive and provide varied practical supports to decision making, the book would benefit from additional examination of issues such as the impact of mobile technologies on media selection and compliance requirements for accessibility.

It may be that Bates' strategic choice of an open and transparent authoring process precipitated certain challenges to organization and clarity for the book. Prior to its official launch, the book was circulated for feedback among Bates' colleagues and, through his blog, the wider professional community. The type of commentary emerging from these consultations, while undeniably valuable, cannot replace the adept,

professional editing that typically accompanies commercial publishing. For example, after establishing a solid theoretical and practical foundation in teaching theory and methods in Chapters 1 to 4, Bates offers a full and lengthy chapter examining the unavoidable and controversial topic of Massive Open Online Courses or MOOCs (Chapter 5). There is no question that a book such as this one should acknowledge and examine this trend, given its extensive reach and impact on the field (and Bates does so throughout many of his other chapters); however, the flow of the book would be well served if some of his key messages from Chapter 5 could be redistributed where relevant throughout the book. Similarly, Chapter 9, which looks at modes of delivery, might integrate more effectively if placed earlier in the book, i.e., adjacent to the chapters on teaching methods (Chapters 3 and 4). Additionally, the "Key Takeaways" section – a very helpful feature of the book – is provided at both the beginning and the end of each chapter. Offering just one instance of this section, at the end of each chapter, might help to streamline the content. Addressing issues of sequencing and repetition such as these will enhance the overall impact of Bates' message.

Having identified some highlights and drawbacks of the book, the fact remains that Bates has shared his singular abundance of knowledge in an engaging and accessible way. Readers who may not be familiar with his earlier publications are brought up to speed with key issues to consider in the area of educational technology, while loyal followers of his past work will find Bates' analysis of the current state of the field to be as helpful and practical as ever. Ultimately, because of the book's open format, readers may take from it that which best suits their own learning needs, their professional style and their teaching context. In fact, Bates states in the Introduction that there are many ways in which the book may be used. Given that Bates has acknowledged the book as a "work in progress", some additional attention to the organization and sequencing of his materials will help to ensure that readers gain equal value from each and every element of the work.

A sign of true passion for one's life's work is an unfailing commitment to the advancement and evolution of the field. Tony Bates is an outstanding example of this type of passion and demonstrates it through this book and through his dedication to its continuous improvement.

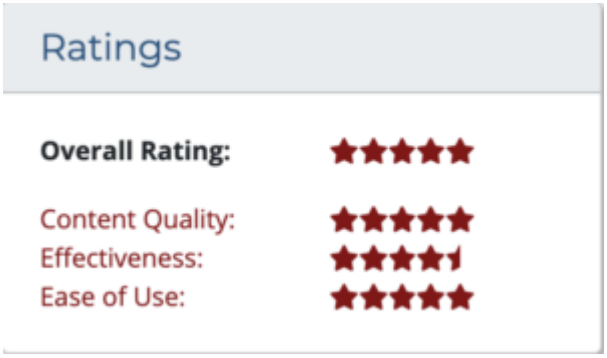
Received: 26 June, 2015

MERLOT II Peer Review

MERLOT is a curated collection of free and open online teaching, learning, and faculty development services contributed and used by an international education community. All MERLOT materials, unlike the materials in other learning materials collections, are examined in various ways to ensure that they are useful for the MERLOT community. The Peer Review process is led by an Editor, and includes editorial board members and peer reviewers.

This book was independently selected and reviewed by MERLOT. The original review can be accessed here: https://www.merlot.org/merlot/viewCompositeReview.htm?id=1356177

A shortened version of the review is reproduced here:



Reviewed: Jan 5, 2018 by Teacher Education

Type of Material: Open (Access) Textbook

Recommended Uses: Course reading and class discussions, professional development and continuing education material

Technical Requirements: Can be read online at https://opentextbc.ca/teachinginadigitalage/ or downloaded as a PDF (requiring PDF reader software, which is freely available).

Target Student Population: This book is appropriate for use by teacher educators, instructional designers, curriculum designers, practicing instructors, administration, those who support teachers, and those who are studying in the field of education.

Identify Major Learning Goals: The book examines the underlying principles that guide effective teaching in an age when everyone, and in particular the students we are teaching, are using technology. A framework and a set of guidelines are suggested for making decisions about your teaching, while understanding that every subject is different, and every teacher and instructor has something unique and special to bring to their teaching.

Prerequisite Knowledge or Skills: Familiarity with basic pedagogical theory and practice is helpful.

Content Quality

Rating: ★★★★★

Strengths: • Provides clear examples (in the form of scenarios) to illustrate concepts in the chapters. • Reviews (briefly but quite well) concepts underlying larger concepts (e.g., epistemology as a whole when addressing paradigms such as constructivism specifically). • References a wide variety of research in the field The content is timely. Students in a teacher education program are presented with how the digital skills are used by their students. The teacher candidates learn about digital skills and how to help students use those skills.

Concerns: None.

Potential Effectiveness as a Teaching Tool

Rating: ★★★★½

Strengths: One strength is the framework this text offers for making decisions about ones teaching. It is an enabling resource for the teacher to help students develop the knowledge and skills required in the 21st century digital age. The learning objectives are identified throughout the book. Concepts build on one another and the author references connections to other ideas in the book throughout.

Concerns: • The book is dense (at over 600 pages) and therefore is not concise, although it really isn't meant to be concise.

Ease of Use for Both Students and Faculty

Rating: ★★★★★

Strengths: Navigation within each chapter is very user friendly. Chapter sections scroll toward the top of the screen. To navigate to the next section, an arrow is clearly present to move forward or backward. Good use of graphics and charts to supplement the context of the section. Activities are placed throughout the text for readers to apply or reinforce the skills being taught. The book is easily accessed online or through downloading. Interactive links bring you to the exact point in the book where you wish to read. The illustrations are clear and helpful with adequate labeling.

Concerns: None

Feedback on Activities

Appendix 4: Feedback on Activity 1.8 Main conclusions from Chapter 1

Activity 1.8 Main conclusions from Chapter 1

Write down at least five conclusions you would draw as an instructor from this chapter (besides the Key Takeaways)

There are many possible conclusions one could draw, but here are mine:

1. Universities and colleges have a broader purpose than just meeting short-term labour market demands. On the other hand, there is a 'hidden contract' between the expansion of post-secondary education, and the need to create a work-force that is skilled, adaptable and competitive. I don't see a necessary conflict here. Many of the activities we consider to be central to the purpose of a university can fulfill these work-force needs with relatively little tweaking.
2. The diversity of the student body and the easy availability of content raises the importance of good quality teaching based on sound pedagogical principles and research in learning. This means professionalizing teaching in post-secondary education.
3. Technology change is constant. Indeed if anything it is accelerating. New technologies that could be applied in education are being developed all the time. So technology is not going away. It's no use shutting your eyes and hoping that you can manage without making some decisions about whether to use technology or not in your teaching. The pressure to use technology is going to increase, rather than ease up.
4. Relatively few technologies are designed specifically for education. There is more push from manufacturers and technology advocates than pull from instructors. Nevertheless it is clear that over time, many technologies have proved valuable educational tools.
5. There's a lot to choose from, and there are some major differences between tools. Researchers and instructors need to understand the educational differences, if any, between different technologies.
6. It is only in the last few years that technology has started to make major changes to the way we deliver education. Distance education and online learning were more of a fringe or peripheral activity to the main provision of learning, which was in classrooms and on campuses. But this is definitely beginning to change. Technology is forcing us to examine more fundamentally the purpose and process of teaching, what constitutes valid knowledge, and how best to acquire it.
7. All this means you need some kind of framework for making decisions about whether or not to use a technology, and how best to use it. This is the main purpose of this book.

Appendix 4: Feedback on Activity 7.1 How many technologies can you see in Figure 7.1?

Well, this is an unfair question, partly because the photo doesn't show all the technologies, and also because you wouldn't know what software or services were included, but just for the record, here's my list:

Hardware

1. Laptop computer
2. Music CD
3. Book: yes, a printed book is a technological artefact! It doesn't have to be digital to be a technology.
4. Mobile phone
5. Satellite receiver/converter
6. Television monitor
7. DVD player
8. Apple TV box
9. Audio-visual receiver/control box with 7 channels, 1080p HDMI, Dolby and DTS format support
10. Loudspeakers (3 in picture, including a woofer, back right)
11. Remote control (one: for all equipment except computer, mobile phone and book)

Software

Almost impossible to list and unobservable anyway, but would include iTunes, iPhoto (uses photos from iPhoto library as a screen saver for the TV monitor when music is playing), digital conversion in the A/V receiver, etc., etc.

Networks

Wi-fi
Internet
Telephone
Radio
Satellite TV (could have been cable, or broadband telephone, but isn't)

Services

Satellite broadcast television channels
Radio stations (global choice, via Sonos)
Apple TV (including Netflix and other streaming services)
Sonos music (including Deezer, a service similar to Netflix for music)

Necessary for integration

Single remote control (eHarmony)
Audio-visual receiver
Apple TV
Apple Mac Pro laptop computer
Mobile phone (controls Sonos and iTunes)

My wish for the future: one portable box, please!!!!!!!!

I think whoever owns this home entertainment system could do with a model for technology selection (OK, I'll admit it, it's mine). Or is it that the home entertainment industry needs to get its act together regarding standardization? But I digress. All this changed in 2016, when my Internet provider upgraded

to fibre optic and 5G from coaxial cable and 2.4G and offered a ‘deal’ on integrated services. I decided at the same time to upgrade the whole system with a new TV monitor, control box, modem, speaker system, and more apps such as Amazon Prime and DAZN, but the ‘live’ cable television programs are still just as awful as before!

Appendix 4: Feedback on Activity 7.5 Broadcast or communicative

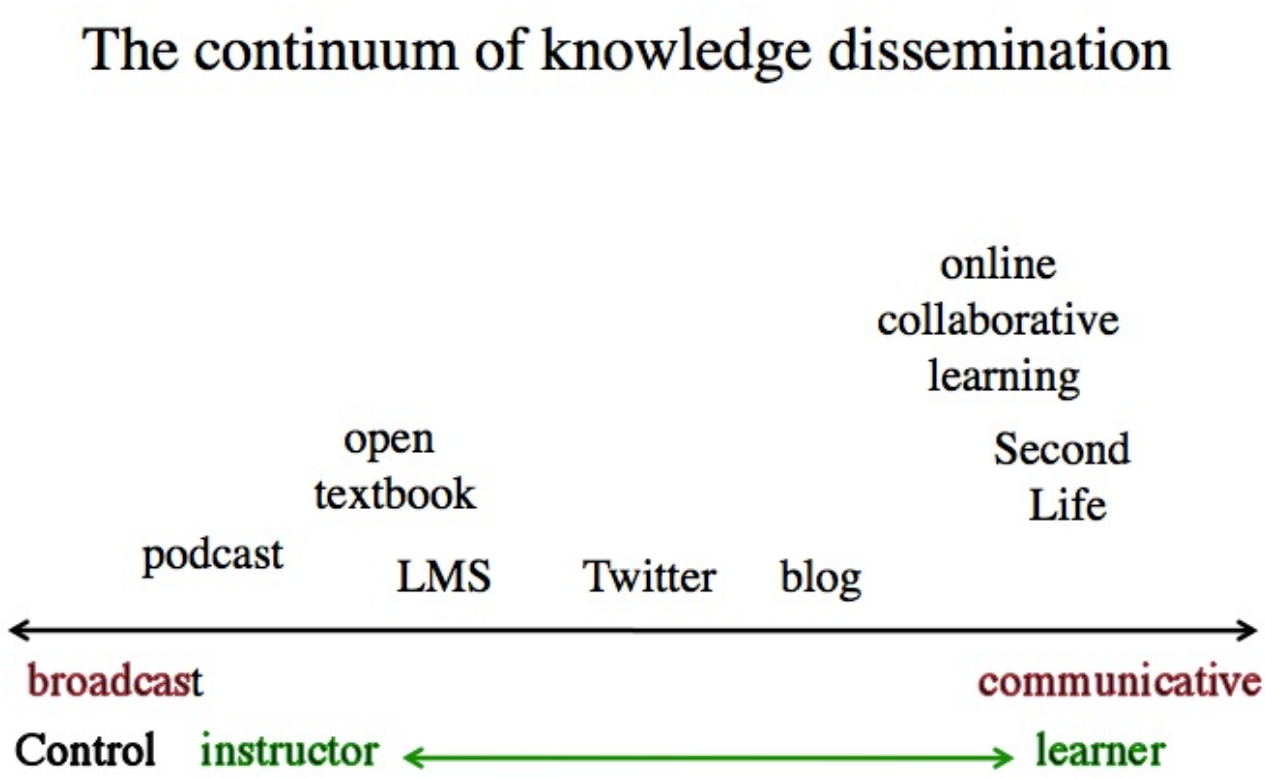
From the list below:

- a learning management system
- a blog
- online collaborative learning
- Twitter
- virtual worlds (e.g. Second Life)
- a podcast
- an open textbook

1. Determine which is a medium and which a technology, or which could be both, and under what conditions.

learning management system	either: technology as software, medium when used for course delivery
blog	medium (WordPress or other blog software is the technology)
online collaborative learning	medium
Twitter	either, but mainly a medium
Virtual worlds	medium
podcast	medium
open textbook	medium

2. Decide where, from your experience, each medium or technology should be placed on Figure 6.4.3. Write down why.



3. Which were easy to categorize and which difficult?

Difficult:

- online collaborative learning, because it is highly communicative but the teacher has a good deal of control over the medium
- Twitter, because it is definitely under the control of the learner, but it is also as much a broadcast as a communicative medium.

With both these, I gave more importance to the broadcast/communicative dimension compared with the control dimension.

4. How useful?

Understanding where different media are likely to fit on the broadcast/communicative dimension will help in choosing media, depending on my epistemological position. If I want a high level of student activity and interaction I would tend toward more communicative media. If I am more concerned with information transmission and comprehension, I would tend to use more broadcast media. However, in most cases I would want a mix of both. Knowing where each medium 'fits' on this dimension is one component I could use in my decision-making.

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