THE THEORY AND PRACTICE OF ONLINE TEACHING AND LEARNING:
A GUIDE FOR ACADEMIC PROFESSIONALS
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INTRODUCTION

HOW TO USE THIS BOOK

In spite of its growing popularity, teaching online remains largely uncharted territory for many educators.

In creating The Theory and Practice of Online Teaching and Learning, we’ve brought together excerpts from some of our top titles, all written by experts in the field. We start with the basics, answering your questions and offering practical tips and advice. From there, we move into questions of theory and teaching online, and take a look at a couple different directions to explore in online teaching as it continues to grow.

The chapters here are as diverse as the field they cover, and address a range of issues, giving you a peek at some of what’s at stake in online teaching. To get the whole picture, make sure to check out the full text of the titles excerpted here, available online at Routledge.com/education.

CHAPTER 1

Although Teaching Online is now in its third edition, Susan Ko knows that many instructors still struggle with the idea of teaching online. This chapter takes on some basic but important questions about online teaching: how is it different from teaching in a traditional classroom environment? Do I need to be a computer expert? How can teaching online benefit my students? How can it benefit me?

In answering these questions (and more), the book offers practical tips designed to help instructors make the most of their online teaching, regardless of their level of experience with Internet instruction.

Susan Ko is Director of Faculty Development and Instructional Technology at CUNY SPS.

CHAPTER 2

In this chapter, from Essentials of Online Course Design, Marjorie Vai and Kristen Sosulski run through the basics of an online course and address questions such as how the timing of online teaching and learning differs from the timing of onsite teaching and learning. They also give you a sense of what sort of preparation and maintenance work goes into designing and teaching an online course, and provide some useful time-saving tips.
Marjorie Vai has been directly involved with online education and training for almost 25 years. Kristen Sosulski is Academic Director of Distance Learning at New York University’s School of Continuing and Professional Studies.

CHAPTER 3

This chapter introduces you to what author Gilly Salmon calls ‘e-tivities’: “frameworks for enabling active and participative online learning by individuals and groups.” These collaborative activities can be adapted to a wide array of different situations.

Gilly Salmon is Pro Vice-Chancellor of Education Innovation at the University of Western Australia.

CHAPTER 4

Here authors Barbara Means, Marianne Bakia, and Robert Murphy take on the issue of establishing some sort of typology for online learning. As the practice of learning online is such a wide and varied endeavor, it can be difficult for researchers to draw conclusions about the field. To address this issue, the authors of Learning Online propose a system that classifies online teaching methods using four categories: context, design, implementation, and outcomes.

Barbara Means directs the Center for Technology in Learning at SRI International. Marianne Bakia is a Senior Social Science Researcher with SRI International’s Center for Technology in Learning. Robert Murphy is a Principal Scientist with SRI International’s Center for Technology in Learning.

CHAPTER 5

In this chapter from Reusing Open Resources, authors Allison Littlejohn and Chris Pegler explore how the use of open resources expands the definition and outcomes of teaching and learning. By including open resources in educational experiences, opportunities for learning increase dramatically.

Allison Littlejohn is Director of the Caledonian Academy and Chair of Learning Technology at Glasgow Caledonia University UK. Chris Pegler was formerly a UK National Teaching Fellow and Senior Lecturer in the Institute of Educational Technology at the Open University, UK.
CHAPTER 6

In this chapter, Diana Laurillard examines the relationship between technology and education and issues a call to action to fellow educators: “it is imperative that teachers and lecturers place themselves in a position where they are able to master the use of digital technologies, to harness their power, and put them to the proper service of education. Education must now begin to drive its use of technology.”

Diana Laurillard is Professor of Learning with Digital Technologies at the London Knowledge Lab, Institute of Education.
1

TEACHING ONLINE
THE BASICS
TEACHING A COURSE ENTIRELY ONLINE

Perhaps the most daunting task is to plan a new course that will be taught entirely online, particularly if you’ve never taught online before. Composing the syllabus, assembling the exercises and quizzes, weighing the criteria for grades—all this presents a set of unfamiliar challenges.

Yet closer inspection reveals that the approach to solving such problems is similar to what you would use “on the ground.” The same instructional strategy you’ve learned for a live classroom—setting the goals of the course, describing specific objectives, defining the required tasks, creating relevant assignments—applies online. Similarly, if you’re converting an existing course into an online version, your basic approach need not change.

Where the online course differs is in technique and in discovering the new teaching and learning opportunities afforded by the new online environment. In a classroom, you have your physical presence—your voice, body language, intonation, expressions, gestures—to help you communicate with your students. Online, at least for the majority of the time, you don’t. In a classroom, a smile can be a powerful signal of approval. Online, it’s reduced to a ludicrous little emoticon —characters that look like a person grinning. In a classroom, the instructor is often the “sage on the stage.” Online, the instructor is more like the “sage on the page.” It is the written word, at least for now, that conveys the crux of what you want to say. Increasingly, there are opportunities to inject audio or video to relieve that burden of text. While these opportunities existed in previous years and were discussed in earlier editions of this book, the pace of change has picked up so that the easy-to-use tools for instructors to produce audio and video are now more widespread and cheaper (if not free) than ever before. Also, many more students are able to access these audio and video communications than was previously the case. However, for most readers of this book, these non-text methods for communicating and presenting are likely still secondary to the ubiquity of text-based communications.

EMOTICON

A text-based or graphic symbol used in online communications to express emotions that might otherwise be misunderstood when relying only on text. The word comes from combining emotion with icon. Text-based emoticons are formed from keyboard characters, like the smiley face :), and are usually designed to be read from left to right in Western cultures, but may be created to be read vertically (^_^) in Asian cultures.
The fact that the majority of online teaching is still done using the written word puts an inordinate emphasis on style, attitude, and intonation as they are expressed in print. A sarcastic aside, a seemingly innocent joke, shorn of an apologetic smile or a moderating laugh, can seem cold and hostile to the student reading it on the screen. None of the conventional ways of modifying ambiguous or ironic statements—the wink, the raised eyebrow, the shrug, and the smile—is available with online text. Thus an instructor communicating with the written word must pay particular attention to nuances.

In a physical classroom, moreover, you’re always there to listen to your students or observe their interactions. Online, you’re there only sporadically, at the times when you log on, whereas your students may post their comments at any time of day. These circumstances modify the instructional role you play, making you more a facilitator or moderator than the expert from whom all knowledge flows. Indeed, online courses depend heavily on the participation of students. As an instructor, you need to step back a bit from the spotlight in order to allow the students to take a more active part. Perhaps you will intervene only when the flow of conversation strays too far off the mark or when you need to summarize the conversation in order to progress to another point.

Conversely, online participation is just as important to the student as it is to you. What makes the Web such an attractive medium—the ability to communicate instantly with anyone in the world—is what drives students to the Internet rather than to a conventional classroom. If, when they log on to the course, all they can do is read the voluminous course notes you have posted there, they will soon become frustrated and drift away. And given your students’ propensity to upload photos and videos, while keeping up a continuous stream of communication via text messaging, instant messaging, or other online tools, they are likely already acculturated to being active participants in the online world.

It’s your responsibility to bear all this in mind when devising your course. You will fashion tasks and exercises that emphasize student collaboration and de-emphasize the traditional role of the instructor as the central figure in the pedagogical play.

This doesn’t mean that an online syllabus should include only tasks that must be performed online: hunting for online material, for example, or linking to a host of other web sites. In fact, such tasks can often prove counterproductive, requiring that students stay online an inordinate amount of time. Indeed, the sort of tasks you have your students perform need not, and perhaps should not, differ from what you would have them do on the ground. They still need to go to libraries to perform the functions...
of sound research (unless their institution provides database and full-text resources online), and they still need to investigate, examine, and observe phenomena on their own. What’s different is how they communicate what they have learned, how they talk to each other, and how you talk to them. A successful online course often includes challenging assignments that lead to publicly conducted discussions, moderated and guided by you. An online course will also find a meaningful way to incorporate the increasingly rich mix of resources available on the Web.

For instructors who teach face to face but use the Web to augment the work in class, there’s a somewhat different set of criteria. For these instructors, the Web may be a place to post information before class in order to inspire a meaningful in-class discussion. Or the information on the Web may help give students the proper context for a lecture, so that the lecture falls on well-informed ears rather than becoming a mere oration accompanied by the sound of pencils furiously scribbling notes (or the clicking of laptop keyboards, as the case may be).

Conversely, the web site might be used to elucidate or elaborate a point that was brought up in class. Students may begin a group project in a face-to-face session, continue it online for a number of weeks, then return to present it on campus, integrating the two modes in a series of tightly woven transitions. The Web may become a place where students can comment, critique, or analyze material in a leisurely and thoughtful way, instead of having to contend with other students in impassioned face-to-face debates. Indeed, the Web provides a safe environment for students who ordinarily might not chime in, too timid or shy to take part in discussions with those who are louder, more aggressive, or domineering. In this sense, using the Web as a means of communication can often provoke more thoughtful and reasoned discussions than might be possible in a classroom.

WHAT ABOUT SUPPORT PERSONNEL AND TRAINING?

It may have occurred to you that mastering new software and techniques is a task that ought to be handled by someone else—by computer support personnel, or instructional designers, for example, or by graduate student teaching assistants. On many campuses, however, neither the expertise nor the funds are available to provide the support each faculty member might like to have.

Most of the time, computer support personnel have to deal with problems concerning infrastructure, networks, and servers that shut down. When they respond to an individual faculty member, they’re typically concerned with hardware or software problems: “I can’t type the letter k on my keyboard”; “I can’t download this video.” Teaching assistants, for

IMPORTANT!
There’s no need to start from scratch to teach online. You can apply what you already know and add to it by using new tools and techniques adapted for the online environment.
their part, won’t necessarily have more advanced skills than faculty members, and are more appropriately concerned with pursuing their degrees. Instructional designers and instructional technologists are often specially hired to assist instructors, but they are seldom numerous enough to replace all of faculty’s own efforts.

Many instructors who have painstakingly acquired computer skills and familiarity with the Web may even feel intimidated by the increasing ease and frequency with which their students communicate via mobile phone text messaging, socialize on social networking sites like Facebook, create and upload videos to YouTube, and, in effect, live comfortably with technology occupying a major portion of their daily life. Some instructors struggle to keep up with the ever-increasing number of technology tools available, while others worry about looking foolish to their students through a too “faddish” and superficial adoption of these tools. (Do your students even want you to “friend” them on Facebook?)

Increasingly, online programs do offer ongoing support to their instructors. But even in these comparatively proactive programs, there’s a limit to how much attention and help can be offered to each faculty member, particularly as the number of online courses continues to grow. Of course, instructors who aren’t based on a campus have even fewer resources to help them troubleshoot problems.

While more prevalent than in the early years of online education, still scarce is the availability of reliable and effective training for online instructors. A hodgepodge of different workshops, brown-bag lunches, and self-paced online materials may be cobbled together to ease an instructor’s progress, but there are still a great number of instructors who must learn on the job. Often this means that the first course you teach is beset with errors, miscues, and miscalculations, much as may have happened when you taught your first class face to face.

Even for those who enroll in a formal training course, the results can be disappointing. Some tend to betray the idiosyncrasies of the particular person who delivers the training while others may be taught by technical staff with little teaching experience of their own. Some tend to deal with the subject as if it were a phenomenon to be researched rather than a new set of skills to be mastered and employed. To make matters worse, training is often offered in a conventional classroom or lab setting, depriving faculty members of the experience of learning online or learning online in a real-life teaching situation, i.e., alone, at their own computer.

The situation isn’t entirely bleak, however. Even if your institution doesn’t provide much in the way of preparation for online teaching, there are some reliable training
programs offered to the public. In addition, the amount of technical know-how you need before you begin is less than you may suppose. Newcomers to online teaching are likely to exaggerate the computer and overall technical expertise required. Let’s address that question directly.

**DO YOU HAVE TO BE A COMPUTER EXPERT?**

Instructors often wonder what qualifications—especially what level of technical computer skills—they need to consider teaching online. Do you have to be an expert or an advanced computer user?

In terms of technical computer skills, an instructor needs little to start with. A very basic familiarity with computers and the Internet will more than suffice. That means knowing how to do the following:

1. Set up folders and directories on a hard drive.
2. Use word-processing software properly (for instance, cut, copy, and paste; minimize and maximize windows; save files).
3. Handle email communications, including attachments.
4. Use a browser such as Internet Explorer or Firefox to access the World Wide Web.
5. **Download**, that is, retrieve a file from your institution’s computer network or from the Web and save it on your own computer.

If you lack some of these skills, you can pick them up on campus or in online workshops. Once you’re comfortable with these basic skills, you should, with experience, be able to build on them and become more skilled. With the advent of more user-friendly and menu-driven software, it is actually getting easier for instructors to learn to teach online. For example, it is no longer necessary for most instructors to learn HTML in order to format the text they post online because the advent of **WYSIWYG** (“what you see is what you get”) editors that operate very much like word-processing software are increasingly built right into the software programs instructors use to teach.

Faculty of all ranks who are enthusiastic about the possibilities offered by online teaching—and who are willing to invest some time in learning new technology and methods for the sake of personal and professional growth—are good candidates for teaching online.

This raises a question we are often asked—what kind of people make the best online instructors? Surprisingly, it is “people-oriented” people who make the best online instructors. Though these people-oriented people may initially feel the most anxiety
about teaching online, their desire to reach out to their students, their empathy and interest in others, and their urge to bridge communication gaps mean that they have the aptitude and motivation to become the very best online teachers.

WHAT CAN TEACHING ONLINE DO FOR YOU?

Beyond the case we have made for the greater flexibility and accessibility of online teaching, the rich and diverse world of resources that becomes available, and the fact that online learning is becoming more expected and even demanded by students, is there anything else that we might say to those of you who come to this book with one arm twisted behind your back, unconvinced of the desirability of teaching online? Although teaching online presents many challenges to the instructor, there are many more benefits to be gained from the experience. Let us highlight two major benefits you may not have considered.

HEIGHTENED AWARENESS OF YOUR TEACHING

Among instructors who have taught online, the advantage of the process that they most commonly express is that it makes them better teachers—not only online, but also in their face-to-face classes.

Few of us in higher education have any training in teaching methods or instructional design. We learn chiefly from osmosis [being in a classroom], from mentoring by more experienced colleagues [if we’re lucky], or through time spent as teaching assistants in graduate school.

Teaching online heightens our awareness of what we’re actually doing in the classroom. The interactions between our students and ourselves—which often consist of fleeting occasions in the on-campus classroom—are recorded for us online, available for our review and reflection. We also have the opportunity to observe and review how our students respond to our assignments and to track the growth of understanding or incomprehension as they respond to the lessons and activities we set in motion for their learning.

This heightened awareness can be both illuminating and humbling. We find that the instructional design process becomes less implicit and more of a deliberate enterprise. Sometimes this leads us to make changes in the way we do things or to try out new approaches, not only in our online courses but in our on-campus classrooms as well.
As you reconsider your instructional methods, you may find that the rapid and flexible communication afforded by the Internet fosters some creative new approaches. Isabel Simões de Carvalho, teaching mechanical engineering at the Instituto Superior de Engenharia in Lisbon, Portugal, began to use the online classroom to support her traditional face-to-face classes and soon found herself introducing entirely new types of learning activities, taking advantage of the way that face-to-face meetings and online activities could be paired to deepen immersion in a learning activity. She was surprised by the way students seemed to rise to the occasion—"a really interesting discovery was that by asking them to do quite a bit of challenging work, one can get students to more readily engage in learning and they even enjoy it!"

When you teach online, you, too, may experience that serendipitous moment when the possibilities of the medium and your course objectives suddenly come together. Grasp that moment and shape it to enliven and enrich your students' learning!

NEW CONNECTIONS WITH THE WIDER WORLD

A great fear among many instructors is that all human interaction online is inevitably superficial and that such a learning environment leads to more alienation between students and instructors, and less meaningful communication among colleagues.

Communication online isn’t the same as in person, but it can be both effective and satisfying. It also brings us new opportunities to communicate with, and even to get to know, people we would have no other chance to meet—either because they live at a great distance from us or because their schedules wouldn’t otherwise allow them to take our classes.

At the risk of sounding heretical, we will venture the proposition that meeting online is sometimes the ideal way to get to know a student or colleague. The by-now-old joke goes, "On the Internet, nobody knows you’re a dog," and by the same token, nobody knows whether you’re under twenty-one or over sixty-five years old. When one of this book’s authors, Susan Ko, met Gerda Lederer online, she formed a picture in her head of a woman of about thirty who had a fresh and open attitude toward life and who was bursting with creative ideas and enthusiasm for the new medium. Susan deduced from their extensive online communications that Gerda kept very current in her field of expertise, as well as up to date in her knowledge of culture and education in general. Susan and Gerda got to know each other rather well online, and eventually, when Gerda traveled to Los Angeles, they decided to meet in person. Susan was surprised to discover that Gerda was over seventy years old. Although
Susan felt that she was without any bias toward older adults, she had to admit that meeting Gerda’s ideas before she met her in person had actually been the very best way to get to know her.

Many instructors, including the authors of this book, arrange to meet online students at conferences. Online students will also network among themselves, carry on long correspondences, and sometimes meet in person. In fact, talking extensively with another online, observing that person’s interaction with others, and perhaps collaborating on a project can often form the basis of a solid friendship.

New connections with distant colleges also become possible. An instructor residing in Missouri may teach for an institution based in New York, and a professor on leave from a college in California may teach a class from a temporary post in France. In this way, instructors are often able to continue their institutional associations with their former colleges after they have moved far away from the home campus site.

With online education, cross-cultural and international collaborations become possible, without the expense and difficult logistics of travel, allowing students from different lands to exchange ideas and work in concert on projects and topics of interest to both parties.

For those who teach hybrid courses, one benefit that will be immediately obvious is the greater number of students heard from in your class—in a face-to-face class of fifty students, an instructor is lucky to get the active participation of more than a small handful of students. Many more lack the confidence to speak up in the classroom, while others may nod off or distractedly text friends on their cell phones during the in-class time. Online, especially if you establish a participation requirement, you are likely to “hear” from nearly all your students. That shy student in the back row of your classroom might end up being the most loquacious or even most eloquent contributor to your online discussion forum.
CHAPTER 2
ORIENTATION TO ONLINE TEACHING AND LEARNING
In this chapter we look at some of the key characteristics of teaching online. Some, such as format and delivery, are unique to teaching online. Others, such as how time is used, the structure of an online class, and communicating without face-to-face contact require understanding and some adaptation.

Make no mistake about it—your first experience teaching online will require adjustments. The following will most certainly be different from teaching onsite:

- **Absence of a physical teaching space.** You no longer have a brick and mortar classroom! This completely changes the way you interact with your students. For example, assignment instructions are usually written and lectures must be re-conceived for the online environment.

- **Planning and creating online class content.** Ideally, all or most of this happens before the class begins. This guide walks you through the process.

- **Communicating online rather than in person.** Whatever non-verbal communication techniques you use in class will now be replaced with something else—the tone of your writing, written encouragement, and perhaps some audio or video so that learners can associate your personality with the written text. On a one-on-one level, you will be in contact through emails or by phone.

- **Delayed feedback.** You won’t be there to clarify points as needed. So, it becomes important to use a writing style that is clear and straightforward. At times you will clarify by using references to online resources or definitions. Also, it is important to anticipate questions from students ahead of time and articulate the answers within your instructions for activities, assignments, etc.

- **Visual design.** Simple, organized, and clean page design supports clarity and understanding. Using images, and restating or providing examples in audio or video may help as well.

- **Flexibility.** When you add flexibility, you lose a certain amount of structure. Deadlines now play a key role in providing structure.

- **Time online.** You and the learners will need to adjust to how your time is used. We cover this in detail below.

- **Class participation vs. attending class.** The quantity and quality of online class participation replaces onsite attendance.

- **Office hours.** The way you provide extra help to students and answer questions

Learn—Knowledge makes everything simpler. Maeda (2006), 4th law of simplicity
will change, somewhat. Setting up office hours by phone or text/video/audio chat (e.g. Skype and Google Chat) is possible. Note: This doesn’t always work with international learners because of the time differences. However, scheduling one-on-one phone or real-time chat meetings with individuals is often possible.

ONLINE LEARNING IN THE TWENTY-FIRST CENTURY

Students who took all or part of their class online performed better, on average, than those taking the same course through traditional face-to-face instruction. -U.S. Department of Education (2009)

According to Marc Prensky, today’s learners are not the people our educational system was designed to teach:

It is now clear that as a result of this ubiquitous (digital) environment and the sheer volume of their interaction with it, today’s learners think and process information fundamentally differently from their predecessors... we can say with certainty that their thinking patterns have changed... Our learners today are all “native speakers” of the digital language of computers, video games and the Internet. -Prensky (2001)

In many parts of the world, learners that were 25 or younger in 2011 have probably grown up with computers, video games, word processing, and the internet. They have easy, portable access to the music, art, and entertainment of their liking, as well as at-their-fingertips access to large numbers of people that share their interests or have information they want.

These learners are not the passive recipients of such technology, as their parents might have been. They can and most often prefer to be players in multi-user environments. They use their imagination and creativity freely and openly. They work, play, and compete with people around the globe. These learners are used to levels of engagement, collaboration, interactivity, access, and instant feedback that could not be imagined 25 years ago.

And what of the older learners and teachers among us, the “digital immigrants” who were not brought up using the technology, but want to or have to embrace it now? We must adapt. And why not, it’s pretty exciting stuff.
We can begin here by becoming familiar with the elements and standards that make for a good online course. Visual, pedagogical, and organizational design needs to be clear and engaging enough for all to get it, “natives” and “immigrants” alike.

This guide introduces the pedagogical essentials of twenty-first-century online course design.

**ASYNYRONOUS LEARNING**

Real time is another term that can be used for synchronous.

*Synchronous* means that things are happening at the same time. *Asynchronous means that things are happening at different times.*

If a teacher in New York is teaching an onsite class, or if an online class is being taught in real time, it is happening in a synchronous time frame. Teacher and learners are communicating within the same time frame.

**REFLECTION**

Who are your Learners?

We can’t generalize about who your learners will be. Let’s look at some characteristics of online learners.

Many of your learners will fall under more than one category below. Many of you will have a variety of different students. We hope that this helps you to put yourself in their place and imagine what it’s like to be an online student. We also suggest that you take an online course if you have the opportunity, the time, and haven’t done so already.

- The “digital pros” are 25 or under. They grew up using the internet and email. They are used to scanning web pages, reading short messages on email, text messaging, and using social media websites such as Twitter and Facebook. Digital pros can’t conceive of a life without digital media.
- The “digitally evolved” Gen Xers grew up with computers but typically were introduced to the internet in high school or college. They may or may not find using digital/social media second nature, depending upon their background and attitude.
This is how asynchronous learning works: the teacher may post material online at 9 a.m. on Monday in Toronto. Learners, who may be situated anywhere in the world, can access that material and respond any time, night or day, within a defined number of days.

**Asynchronous learning is more flexible than real-time learning** since the class is not fixed at a set time period. Consequently, it is preferred by learners with busy lives, complicated schedules, or burdensome commutes. Learners can participate at a time of day that is convenient. The same, of course, is true for the teacher.

An asynchronous online course follows the daily personal schedule of learner and teacher. Class meets at no particular time and is of no specific length. In fact, an online class doesn’t actually meet in the sense that it does onsite. The learners do not need to be online together at any particular time.

- The “digital adopters” use computers but are used to reading longer texts, papers, and magazines. They are fairly comfortable with doing the basics on a computer, but may not feel comfortable jumping into a totally digital world with lots of bells and whistles.
- The pre-digital learners may be taking an online class simply because there is no other choice. They know little about computers.
- International learners’ first language is not English. They rely on the fact that the teacher is sensitive to this without being patronizing. Many of you who use this book will have entire classes of learners whose native language is something other than English. The chances are there will be some variation in cultures and first languages in most online classes.
- The classic (young) learners are probably also digital pros. They may be in high school, a community college, or a 4-year college. They may still be in the process of developing a writing style. Some may have trouble with grammar structure and use.
- Adult (probably working) learners have neither time nor money to waste. They may or may not be comfortable with the digital world. This group may or may not have difficulties with their writing, and the structure and use of grammar.

Look over this list again. Which of these groups do you belong in? Focus especially on those that are different from you and try to put yourself in their place.
Asynchronous online study is really the only convenient possibility for international or global study because of the time differences. It is also an ideal setup for people who travel a lot since they can teach and/or learn on the go.

Asynchronous learning allows for flexibility of:

- **Time.** One can study any time, day or night, within a series of fixed time periods.
- **Place.** To access the course one need only be able to access the internet. Parts of a well-designed course are portable (i.e. downloadable for viewing, printing, listening, or watching when you are offline). Given the proliferation of smartphones such as the iPhone, or devices such as the iPad or other electronic readers, learners can study on the go.
- **Pace.** Learners move through the course at their own pace—up to a point. They move more quickly through areas they know, or that are easy for them. They treat more difficult subjects more deliberately. For added support, they can easily research points within the course using the internet. These possibilities offer learners additional sources of support (once they know about them).
- **Participation.** There is no pressure on learners to respond to comments and questions immediately as there is for an onsite course. The ability to reflect before responding is one of the benefits of online learning and should be encouraged. Once learners have taken other learners’ comments into consideration, they may want to or have to (depending on the teacher’s specified requirements) respond again. They sense that they are contributing to a knowledge base—bringing in related materials, reconsidering issues, reconstituting the class in a way. This naturally becomes a learner-centered environment. It facilitates the development of higher-level thinking skills. Evaluation and re-evaluation become a core part of the learning process.

In addition to asynchronous and synchronous online formats, there is a third type of format: **blended learning.** This is any combination of at least two of the following: asynchronous online, real-time (synchronous) online, or onsite learning. Synchronous activities can be a good complement to an asynchronous course, circumstances permitting.

**ONLINE COURSE DELIVERY**

A learning management system (LMS) can be, and usually is, the program used to create and manage an online course. LMSs such as Moodle or Blackboard do not require that you be a “techno-wizard.” However, computer literacy is a must. You need to know how to use some of the most basic programs such as a word processor,
spreadsheet, photo manager, and email. Understanding how to properly save, upload, and download files is critical. Of course, it is equally important that you know how to get around on the internet.

Your institution should, at the very minimum, provide training on how to use the LMS that they have adopted. Keep in mind, however, that these are only the technical basics of building an online course. The larger challenge is the redesign of your onsite course content for effective online teaching and learning.

Note: We are not recommending any particular LMS. In fact, you can teach an online course without even using an LMS.

Visit the website for *Essentials of Online Course Design*, where you can view a movie of teachers walking you through an LMS. This should help you become familiar with LMS menus and navigation.

**FEATURES OF A LEARNING MANAGEMENT SYSTEM**

Tables 1.1 and 1.2 list the asynchronous and synchronous features of an LMS that you might choose to use in teaching your online course.

**TABLE 1.1 SAMPLE LEARNING MANAGEMENT SYSTEM FEATURES LIST—ASYNCHRONOUS**

<table>
<thead>
<tr>
<th>FEATURE</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syllabus</td>
<td>An overview of the course in outline form. It includes objectives, requirements, etc.</td>
</tr>
<tr>
<td>Calendar</td>
<td>Schedule of deadlines and course events.</td>
</tr>
<tr>
<td>Teacher Announcements</td>
<td>Teacher updates and reminders. In an online course they usually appear upon entering the LMS.</td>
</tr>
<tr>
<td>Course Email</td>
<td>Correspondence between course members.</td>
</tr>
<tr>
<td>Lessons</td>
<td>Content sections usually organized by topic.</td>
</tr>
<tr>
<td>Discussion Forums</td>
<td>Ongoing online voice or text discussions.</td>
</tr>
<tr>
<td>Wiki</td>
<td>An online environment that can be shared and edited by all members of a collaborative team.</td>
</tr>
<tr>
<td>Blog</td>
<td>An online space where one author creates a posting (e.g. article, critique, some type of narrative) and others comment.</td>
</tr>
<tr>
<td>Testing/Quizzing</td>
<td>Assessments that determine how successfully outcomes have been achieved. Ungraded self-assessments help learners adjust the pace of and reflect on their learning.</td>
</tr>
</tbody>
</table>
TABLE 1.2 SAMPLE LEARNING MANAGEMENT SYSTEM FEATURES LIST—SYNCHRONOUS

<table>
<thead>
<tr>
<th>TOOL</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chat</td>
<td>An online exchange of text comments and remarks between two or more participants in real time.</td>
</tr>
<tr>
<td>Live Class/Live Meeting</td>
<td>Online class sessions in which the teacher and all members are there at the same time and communicate using voice and video.</td>
</tr>
</tbody>
</table>

TIME—ONSITE VS. ONLINE

One of the first challenges for teachers new to the online environment is to understand how time works when teaching online.

When teaching onsite in a classroom, we think in terms of very specific and clearly defined periods of time needed for: planning, preparation, class sessions, getting to and from class, feedback on assignments, and office hours.

For example, U.S. universities generally define classes in terms of credits. Each credit represents 15 hours of class time. Most courses are 3 credits, or 45 classroom hours, long. Whether the class is 6 or 8 or 15 weeks long, a standard 3-credit class will usually have 45 hours of classroom time. In addition, it is expected that a learner will do an additional 2 to 3 hours of outside work per classroom hour. So, for a learner:

\[
\text{3-credit class} = 45 \text{ classroom hours} + \text{approximately 90 hours outside of class} \\
\text{3-credit class} = \text{approximately 135 hours in total}
\]

The hours per week vary depending upon the length (in weeks) of the course.

But what happens to this time frame when you teach a 3-credit asynchronous online class? Nothing is scheduled.

As with an onsite course, a 3-credit online course can be taught within a variety of time frames: 15 weeks, 9 weeks, 5 weeks, etc. (see Table 1.3). As with an onsite course, a 3-credit online course offered over 5 weeks will require more time per week than a 15-week course.
TABLE 1.3 LEARNING HOURS PER WEEK BY LENGTH OF CLASS IN WEEKS

<table>
<thead>
<tr>
<th>WEEKS</th>
<th>HOURS IN CLASS PER WEEK</th>
<th>HOURS OUTSIDE OF CLASS PER WEEK</th>
<th>TOTAL HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>3</td>
<td>6</td>
<td>135</td>
</tr>
<tr>
<td>9</td>
<td>5</td>
<td>10</td>
<td>135</td>
</tr>
<tr>
<td>5</td>
<td>9</td>
<td>18</td>
<td>135</td>
</tr>
</tbody>
</table>

WHAT IS A WEEK ONLINE?

An online course’s time frame is defined in terms of weeks, as it is in an onsite course. The teacher plans for how much time learners should be spending on work and participation. It should be equal to the time spent for its onsite equivalent. However, the actual time the learner spends sitting at a computer does not correlate to the amount of time spent sitting in a classroom.

The actual time the learner spends online in an asynchronous online class is not taken into consideration. Why not? Well, for example, one learner may spend an hour writing out responses or preparing a slide presentation offline, then cut and paste it in when online. The 2–3 minutes the student spends online putting up the material does not represent the amount of time they have spent working on the presentation. They may also write their discussion forum responses offline, then cut and paste them in.

Another student may do a great deal of their writing while they are online in the course environment. Learners will vary in how much time they actually spend online. While class participation is important, class session time is no longer a factor.

Online “attendance” is determined by looking at both the quantity and quality of learner participation. Requirements for participation are stated very clearly in the syllabus.

FLEXIBILITY AND CONVENIENCE

When teachers begin thinking about transforming their class to online they often feel uncertain about how to plan for time. One thing for certain, unless a class is in real time (synchronous) or blended, with part of it occurring at a set time either onsite or online in real time, “class time” is flexible for both the teacher and the learner.

TIP!

Make learners aware early on that deadlines will help to structure their time in an online course. Continue to remind them of this through online course announcements that are posted in the LMS and simultaneously emailed to students.
Because the course is asynchronous, **you can go online any time day or night, whenever it is convenient for you.** This kind of flexibility appeals to people with other commitments such as work or families.

This flexibility is also helpful if you are working with an international class. Learners and teachers can go online whenever convenient, working within their local time zones across the globe.

There are, of course, **deadlines and guidelines.** These play a crucial structuring role in an otherwise open time frame.

**Note:** Deadlines in an international class need to be stated in a set time zone (e.g., an assignment may be due on May 15 at noon GMT [Greenwich Mean Time—UK] or EST [eastern standard time—east coast, US]). The learners are responsible for calculating what that means in their local time frame.

**WHAT’S THE CATCH?**

The downside of flexibility and convenience is the absence of the kind of structure that you have when planning for classes scheduled at a set time. Here are two key points that will help with this:

- **In the end, the online course must be equal in content and challenge to the onsite course.** Content and learner work should be equal in both courses.
- **The course content is driven by the identical learning outcomes that drive the onsite course.** Use the learning outcomes as a check.

The online process is outcome- and content-driven. A week’s content for a 15-week online course is the same as its onsite equivalent.

**TIP!**

Use a website application that converts time zones, such as http://timezone.guide.com.

- Course material is sufficient and directly related to learning outcomes.
- Learning outcomes for an online course are identical to those of the onsite version.
HOW MUCH TIME DOES ONLINE TEACHING AND LEARNING TAKE?

Time spent on online teaching and learning is difficult to estimate. Generally speaking, it takes more time than the onsite equivalent. Of course, an argument can be made that much, or all, of this extra time is regained since you are not traveling back and forth to class.

A teacher goes online regularly. Depending on his schedule, style and working preferences, a teacher may go online once a day, or several times a day for shorter periods, or do something in between. Sometimes he will be just “checking in” to see how things are going. Other times he will spend an hour or more on online activities: posting announcements, initiating discussions, reading, and/or responding to learners. There may be a day when he goes online once, for only 20 minutes, and then, on another day, he may spend 2 to 3 hours online. He might download learner work and check it, make notes, then go online to respond when it’s more convenient.

Also, online work can be portable. The teacher might, for example, go through homework checks or read learner posts on a smartphone or on paper while on a bus. Flexibility and portability can also make online teaching feel like less time is spent.

WHAT IS THE TEACHER DOING WITH HER TIME?

The following is most likely how a teacher spends time (assuming she is both designing and teaching the course):

• **Designing the course.** Ideally this is done before the course begins.

• **Posting new material.** The teacher is putting up announcements, new learning material, introducing a new discussion topic, initiating a new kind of activity, etc., as needed.

• **Checking in on learner interactions, participation, and work.** This most typically happens in a discussion forum where learners are responding to new material, the teacher’s posts and other learners’ posts. It is also possible that this is happening in other ways and “places” online such as in wikis, the teacher’s blog, learners’ blogs, group “spaces,” presentation areas, etc.

• **Giving feedback on assignments.** Learner assignments require feedback. The time spent on this should be about the same as it is in an onsite course.

• **Class management.** Activities such as setting up places for learners to submit their work and communicate (discussion forum threads, drop box folders, chat rooms, etc.), sending out reminders of assignments that are due, grouping/pairing learners for team projects, and introducing new assignments and requirements.
SAVING TIME

One of the most important factors in saving time comes up during the course-building stage. While the course design and implementation of standards may require more upfront time, it can save time in the end. The very first time you create an online course may be quite time consuming. Each time that course is taught again, you will only be revising and updating. This will get easier as you gain experience.

Our goal in this book is to save you as much time as possible during the course-building stage. We do this by emphasizing:

- planning
- organization
- consistency
- simplicity and clarity of language and instructions
- easy access to or basic production of images, audio, and video
- models of a variety of activities and assessments, and
- the use of organizing templates.

Course material is sufficient and directly related to learning outcomes.

Learning outcomes for an online course are identical to those of the onsite version.
E-TIVITIES FOR ACTIVE ONLINE LEARNING
You can bask in the glory of happy, engaged and achieving online students. *E-tivities: The Key to Active Online Learning, 2nd edition* explains and explores e-tivities, the name I give to frameworks for enabling active and participative online learning by individuals and groups. E-tivities are important for the online teaching and learning world because they deploy useful, well-rehearsed principles and pedagogies for learning as well as your choice of networked technologies.

E-tivities do not remove the help and input of more knowledgeable humans—the people I called the ‘e-moderators’—but make their work more focused and productive. They focus on the learners—the people I call the participants, who are contributing, providing, reworking, interpreting, combining most of the knowledge. They overturn the idea that learning depends on one big expert and his/her conveying of knowledge.

E-tivities enable enjoyable and productive online learning for the greatest number of participants at the lowest cost. E-tivities are highly scalable. They are based on the strong idea that knowledge is constructed by learners through and with others. Such processes can happen through online environments just as well as in physical or formal learning and teaching environments, probably better. They work well combined with real-life and real-world environments.

You will find in *E-tivities* the original e-tivities research and the learning that has emerged from extensive and intensive 12 years of practice, so you can design and deliver e-tivities for yourself—easily, quickly and effectively.

E-tivities were first developed using text-based computer-mediated environments such as bulletin boards or forums. That’s the easiest place to start. I go on to describe how to use them for many other platforms. Once you get the idea, you will be able to use them in many different ways.

Learning resources and materials (what people once called ‘content’) are involved in the design and delivery of e-tivities, but these are to provide a stimulus or a start (the ‘spark’) to the interaction and participation rather than as the focus of the activity. So e-tivities give us the final break point from the time-consuming ‘writing’ of online courses.

**INTRODUCING E-TIVITIES**

The boxes below give you a quick introduction to e-tivities: who they’re for, what they can be, where they are valuable, what their purposes are and what you need to produce them.
3 :: E-TIVITIES FOR ACTIVE ONLINE LEARNING

E-TIVITIES ARE FOR:

- at least two people working and learning together in some way, and usually many more;
- participants who are not in the same locations. But e-tivities are also easily combined with location-based learning and teaching activities;
- a wide range of people, including those with disabilities who can be assisted through the technologies. The more diverse, the better the e-tivities work;
- everyone: e-tivities have attracted the interest of learning designers, academics, teachers and trainers from many sectors and levels of education.

E-TIVITIES ARE:

- designed in advance of the participants’ online arrival;
- quick and easy to produce, making the work of the tutor, or the person I call the e-moderator, much faster, easier, and more productive;
- suitable for entirely online programmes, for integrated and blended learning, mobile learning and everything in between;
- cheap to create and run;
- scalable and customizable;
- efficient for designers, participants and e-moderators;
- reusable and easy to try out, recycle, reuse and change: they improve the more they are deployed and adapted.

E-TIVITIES ARE VALUABLE FOR:

- forming a whole course or programme when sequenced with care; also useful if you want to try out one or two online activities;
- encouraging a very wide variety of contributions and perspectives and for tapping into participants’ up-to-date ideas and authentic experiences;
- replacing or supporting all other learning and teaching methods;
- any discipline, profession, or field of learning and for all topics.
THE PURPOSES OF E-TIVITIES ARE TO:

- enable academics, designers, curriculum developers and teachers to design for online participation by their students;
- provide learners with an effective scaffold to support them in achieving the learning outcomes;
- enable learners and e-moderators to work together on key learning resources;
- promote a learner-centred, task or problem-based approach to online learning (moving away from content-centric design);
- challenge and motivate participants to critique, contribute, review and consolidate ideas in a focused way;
- increase learner engagement;
- save staff time;
- make the course productive and fun;
- easily deploy the newer technologies such as social media;
- easily find purposeful ways of using freely available, topical and/or fun resources within the learning design;
- quickly incorporate sound pedagogical principles into teaching and learning, including into large-scale online approaches such as MOOCs (massive open online courses).

TO DESIGN E-TIVITIES, YOU NEED TO:

- have a way of thinking about the purpose and process of each e-tivity, and get it into draft format (the storyboard);
- work out how to place it ultimately into a learning sequence (the scaffold);
- write it in such a way that it can be placed online and participants can follow it (the invitation).
WHO’S WHO IN E-TIVITIES

Participants
I refer to all online learners, students and contributors taking part in e-tivities by the term ‘participants’.

E-tivities designers
Designers create the future! The person who understands the purpose of the online encounters through the learning outcomes and objectives needs to be involved in designing. This person might be the learning designer, academic or teacher who is setting up the online experience and who ultimately may also be the e-moderator. Sometimes there are two or three people and others working together—e-tivities get designed well with three!

Students can also help with design. When they become experienced, they too can become e-itivity designers.

Or, if large numbers of online participants are involved, the person or small team doing the designing of the e-tivities may be different from the person or persons delivering the course. Sometimes one small team can design and prepare e-tivities and then many e-moderators may be needed to deliver them.

Small multiple professional teams can work together on e-tivities—we call this process ‘Carpe Diem’.

E-moderators
I call the trainers, instructors, facilitators or teachers ‘e-moderators’ because they intervene and support the e-learning. The name describes the different role that each adopts online when compared to teaching face-to-face. There is much more about e-moderators in my 2011 book, E-moderating.

The role of the e-moderator is the promoter and mediator of the learning through e-tivities, rather than a content expert. The e-moderator needs to know enough about the topic to weave (adding value by pulling contributions together), summarize (closing off a topic, giving teaching points), give feedback and support and enable development, pacing and challenge to happen.
Swinburne Online (swinburneonline.com.au) in Australia provides university programmes based on e-tivities and the five-stage model (see Chapter 2 of E-tivities), creating an immersive online experience for participants.

Professor Kay Lipson, Academic Dean for Swinburne Online, tells us more:

In order to ensure that students are exposed to a consistent, pedagogically sound online learning experience, Swinburne Online has successfully developed an explicit set of principles that guide both learning design and delivery.

The learning design process is a collaboration between academics who are the university’s discipline specialists and a learning design team with expertise in online pedagogy, educational technology, online resource acquisition and copyright. Together they design and develop an online learning experience for students that is scaffolded by e-tivities. Each e-tivity is carefully created to ensure that students are engaging meaningfully with their learning materials, their learning advisors and each other.

Learning delivery is conceptualized as a learning journey undertaken by the students and their learning advisors, taking a path navigated by e-tivities. The learning advisors take the role of e-moderators. They facilitate, question and encourage their participant groups. They aim to develop in each student and group an understanding of the relevant knowledge domain as well as a capacity for reflection and self-evaluation. Many of the learning advisors are not traditional academics, but experienced practitioners in their field, trained for their e-moderating roles.

TECHNOLOGY FOR E-TIVITIES

E-mail, chat groups, bulletin boards and computer-mediated conferencing were developed to enable interaction between people. If a voice or text message is sent, the writer expects a response from some other person. This key characteristic can be harnessed for the purpose of interaction and engagement.

Some of the tools and platforms that we deploy are multipurpose, such as learning management systems (LMSs) and virtual learning environments (VLEs). Throughout my book I refer to them interchangeably as LMS/VLE. Many others were developed for social purposes or for entertainment, communication or business. More about those in Chapter 4, page 57 of E-tivities.
I hope to show you that the technologies for e-tivities can promote engagement and activity if they are appropriately used. Promoting robust and usable knowledge through engaging learners in authentic tasks and situations is critically important (Herrington, Reeves and Oliver, 2010).

Combining new ideas about mediation for learning and teaching through technologies and well-established learning theories results in fantastic possibilities, but they need a little human time and energy to get them to work. High-quality interaction, full participation and reflection do not happen simply by providing the technology; hence the need to design e-tivities carefully, to reduce barriers and to enhance the technology’s potential.

Many teachers and trainers at all levels of education are influenced strongly by how they themselves were taught. Most have not grown up learning to take an active part in remote or scattered groups, nor those spanning many different time zones. Many educators miss opportunities for working comfortably and effectively online because they assume that online co-operation and collaboration need to follow similar patterns to classroom interaction (Ehrmann, 2012). The patterns and processes of e-tivities are different, although they draw on the best traditions of active group learning.

Some students are concerned about learning online, even those who are familiar with social media. They see reduced social contact in learning contexts as a real threat. They are anxious about the lack of stimulus and fun from their ‘buddies’ and the potential loss of a special relationship with their teachers, trainers and professors. Somehow, without them, they believe a little magic seems lost! Hence learners need support to develop the skills of working together through interactive technologies of all kinds as well as online contact with leaders and teachers. E-tivities are an answer because they focus on contributing and achieving together.

CREATING THE FUTURE THROUGH LEARNING DESIGN

E-tivities are best designed and produced in advance of the participants arriving online. Good design processes result in more explicit and higher-quality activity by the participants and enable the development of more effective learning environments and interventions (Conole, 2012). By becoming an e-tivity designer, you are building in a quality learning experience.

E-tivities acknowledge teaching ‘as a design science’ based on continuous collaborative improvement and adaption in practice (Laurillard, 2012, pp. 8–9) and are a way of accessing and digitally applying teachers’ creativity, vision and inspiration.
E-tivities are very firmly rooted in learner-centred and technology-enhanced design in an increasingly complex, rapidly changing digital world (Sharpe, Beetham and De Freitas, 2010). E-tivities are a way of actually taking part in the ‘game changing’ that is gathering pace across all types of educational provision (Oblinger, 2012; Bonk, 2009; Ellis and Goodyear, 2010). They offer a viable, principled and practical approach. They acknowledge human systems for learning by developing and evolving; they tend towards order and organization, but via messy experimentation rather than forced imposition. Order arises out of shared values and common interests (Wenger, White and Smith, 2009).

Preparing effective online learning material is a very expensive business in terms of both actual and opportunity costs. It’s brought many organizations to their knees! Few academics or teachers have all the necessary skills, the time or the desire to spend months creating texts and video. Usually there will need to be an ongoing project with one or more subject experts, instructional designers and Web developers. If innovation is required, then add mobile app developers, information specialists, video developers and more.

Some people are very interested in comparisons between working online and traditional face-to-face learning. Others want to talk about the differences between online and print-based distance learning. In practice the benefits and costs are very different compared to campus-based learning. One thing we do know is that the cost of traditional ways of producing materials for online courses is very high, but savings can be made on ‘delivery’ (Rumble, 2010). E-tivities help with saving costs because they use existing resources, are reusable and adaptable and are based on the participants’ exchange of knowledge.

Quality assurance and evaluation processes are essential too, but they add time and require extra effort. Surprisingly, many teaching and learning organizations still start by developing resources of this kind, as they seem to be the safest ‘way in’ to e-learning. Then they find that there are no quick fixes, only expensive experiments and ‘pilots’ that fail to lead to ‘scale-up’.

Rather than pursuing such developments, organizations should know that e-tivities are lower risk, lower cost and a better place to begin—they inform prototyping and decision making too. If e-tivity development is built into a structured local team process, then capability is built up across the organization (see Chapter 5 of E-tivities).
THE PARTICIPANTS’ EXPERIENCE OF LEARNING THROUGH E-TIVITIES

Working with others online can be playful, liberating and releasing. Online participants are often more willing to try things out in a dynamic way than they would be face-to-face, which means that e-tivities can be more fun and still promote learning. Emotions can often surface and be expressed when they could not do so in face-to-face situations. We know that involving emotions helps to promote reflectiveness (Moon, 2006).

In the search for engagement of learners, e-tivities have proven to have a special place. New online participants wrote to me about their experiences:

- It is a very special and unique experience for me. To send a message to our online conference is like talking [writing] right out in the air—to everyone and no one!? I’m just crawling about online...And when I get an answer back...I’m amazed! KO

- Excuse me where exactly am I? Do I go through a new kind of looking glass into my lecture hall? Why do my words dance as if on a stage? MO

- Thank you for the invitation to take part. I know what I’m meant to do, and even who I am meant to do it with...but tell me, where are the drinks? PP

- It’s fun, it’s new. I like being involved. Before, the telephone was the master, now its [sic] text on the screen. My own personal access to the world! So much contact, so much at my fingertips. I feel skippy inside. It’s so unexpected sometimes. It’s cool. PS

Participants who are working in a language other than their own have a particularly sharp learning curve. This participant reported her experience:

- Last year I felt that before I could post anything, it had to be perfect! Then sometimes I was too late, simply because the discussion had moved on. This year, I saw native speakers make mistakes too. They mistype words or they write as they would speak, and then I felt more self-confident! I said to myself, ‘It needn’t be perfect, why don’t you just try and join in?’ And this is what I did! Maybe sometimes it was nonsense, but at least I tried, and I think text communication can only work online if you say something and somebody else says, ‘yes, but’...and then maybe
make you think again. So it was also new to me that you can write something and it’s still like speaking to somebody, and you can always correct yourself or add things. GB

TEACHERS AS E-TIVITY DESIGNERS

Many traditional teachers are surprised at how much learning can go on through structured online networking. You might be interested in this e-mail I had from a colleague, a very experienced distance learning teacher in the UK Open University Business School.

STORIES FROM THE FRONT LINE II

TRANSFORMING THE GROUP EXPERIENCE

Don led a team that produced a residential weekend school; then, with a colleague, he turned to the task of preparing an online equivalent of the residential school. He e-mailed me about his experiences.

We thought our job was to write the programme for the residential school. If we thought about the online version at all, we saw it as something that would be an imitation of the residential. We never said ‘pale imitation’, but I sense that the categorization was there in our minds.

How wrong we were. How much the preparation—the design, the reworking of the residential material—and the observation of the online school in action have changed my mind. The online school revealed itself as a remarkable event. As we worked on the design, and as we subsequently observed the virtual exchanges, so the remarkable features of the online environment came into view, one by one.

At residential schools, the contributions by the students are oral, short and immediate. During the sales and marketing role-play exercise, students air their initial thoughts on the task, and only sources of ideas, concepts and models from the course are the students’ own memories. One member typically captures these ideas, in abbreviated form, on a flip chart. By contrast, online, everyone has a full record of everything that has been ‘said’. The contributions are considered in a way that is not possible at face-to-face schools. There is scope for thoughtfulness and for reflection.

The role of the face-to-face tutor also differs from the role of e-moderator. At the residential school, the tutor may join a group for a while, sense what’s going on and
contribute as judgement directs, then leave. The tutor also acts as a ‘postperson’—to deliver the handouts! Because the e-moderator hears [reads] everything that is said [written] and can contribute, in an equally permanent fashion, without disturbing the discussion, the online experience challenges this familiar model. A student posts a thoughtful message, which is read not only by the group but by the e-moderator too. Another follows this. The e-moderator acts more as a commentator than a facilitator in such a circumstance. Online, not only does the e-moderator post the handout but he or she can also comment on it—act as a mediator between the content and the learning.

–Don Cooper, Open University Business School

ACCEPTING THE CHALLENGE

The work from which this book is derived is very much in the action research tradition. Action research involves the exploration of many aspects of online teaching through research into practice and experience. You can read about my methods in Salmon (2002b, 2004 and 2011). I have tried as much as possible to weave the principles into practice-based advice and examples.

To be successful in designing and running e-tivities you will need some passion and commitment. Designing for online involves shifting time about and changing patterns of how you work with colleagues and students. It involves setting up a computer and getting the software to work to your satisfaction, which may include going cap-in-hand to others for help. You may need to rethink your teaching and consider what is really important about the subject matter you want to teach. I hope to shine a light on a pathway for making all this more manageable and productive. It’s great fun when it works. It has its own momentum. Just try it—it’ll turn you into an action researcher, collaborating with your learners. Indeed, I think it’s time to harness the power of online learning for our purposes.
CHAPTER 4
THE VARIED TERRAIN OF ONLINE LEARNING
The tremendous range and variety in online learning make the field difficult to encapsulate. There have been a number of efforts to delineate types of online learning (Horn & Staker, 2011; Watson et al., 2009), but we see the field as too emergent with too many new variations emerging every day to find a typology terribly useful. Instead, we offer a set of dimensions that can be used to characterize online learning and that readers can use when judging the relevance of various experiences and research studies for their own work. As illustrated in Figure 1.1, we propose characterizing online offerings in four dimensions: context, design features, implementation, and outcomes. Our ability to accumulate knowledge about the kinds of online learning experiences that produce desired effects for specific kinds of learners under a given set of circumstances would be greatly enhanced if every research report used these dimensions and an agreed set of more specific features within each dimension to generate comprehensive descriptions of the interventions they studied.

The set of essential online learning intervention features that have emerged from our own work are shown in Table 1.1. These features and terms will appear prominently in the chapters that follow.
### TABLE 1.1 A CONCEPTUAL FRAMEWORK FOR DESCRIBING ONLINE LEARNING

<table>
<thead>
<tr>
<th><strong>Context</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Field of use</strong></td>
<td>K-12, higher education, postsecondary training, self-initiated, mixed</td>
</tr>
<tr>
<td><strong>Provider</strong></td>
<td>District, state, for-profit vendor, consortium, nonprofit higher education institution, other nonprofit, government agency, consortium</td>
</tr>
<tr>
<td><strong>Breadth</strong></td>
<td>Whole program, course, portion of course, brief episode</td>
</tr>
<tr>
<td><strong>Learner’s level of preparation</strong></td>
<td>Weak, adequate, strong</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Design features</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Modality</strong></td>
<td>Fully online, blended, Web-enabled</td>
</tr>
<tr>
<td><strong>Pacing</strong></td>
<td>Independent mastery-paced, class-paced, mixture</td>
</tr>
<tr>
<td><strong>Pedagogy</strong></td>
<td>Expository, practice environment, exploratory, collaborative</td>
</tr>
<tr>
<td><strong>Online communication synchrony</strong></td>
<td>Asynchronous, synchronous, both</td>
</tr>
<tr>
<td><strong>Intended instructor role online</strong></td>
<td>Active instruction, small presence, none</td>
</tr>
<tr>
<td><strong>Intended student role online</strong></td>
<td>Listen and read; complete problems and answer questions; explore simulation and resource; collaborate with peers in building knowledge</td>
</tr>
<tr>
<td><strong>Role of online assessments</strong></td>
<td>Determine if student ready for new content, tell system how to support student, provide student and teacher with information about learning state, calculate student’s risk of failure</td>
</tr>
<tr>
<td><strong>Source of feedback</strong></td>
<td>Automated, teacher, peers, mixed, none</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Implementation</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learning location</strong></td>
<td>School, home, other, mixed</td>
</tr>
<tr>
<td><strong>Co-located facilitator</strong></td>
<td>Primary instructor, monitor and facilitator, absent</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th><strong>Student-instructor ratio</strong></th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Level of online student-content interaction</strong></td>
<td>High, medium, low</td>
</tr>
<tr>
<td><strong>Level of online student-instructor interaction</strong></td>
<td>High, medium, low</td>
</tr>
<tr>
<td><strong>Level of online student-student interaction</strong></td>
<td>High, medium, low</td>
</tr>
</tbody>
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<table>
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<tr>
<th><strong>Intended outcomes</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cognitive</strong></td>
<td>Declarative knowledge, procedural skills, problem solving and strategies</td>
</tr>
<tr>
<td><strong>Engagement</strong></td>
<td>Primary goal, secondary goal, not explicit goal</td>
</tr>
<tr>
<td><strong>Productivity</strong></td>
<td>Course pass rate, graduation rate, time to completion, cost</td>
</tr>
<tr>
<td><strong>Learning to learn</strong></td>
<td>Self regulation, new media skills</td>
</tr>
</tbody>
</table>
CONTEXT

In describing the components of each dimension in our conceptual framework, we will begin generally with broad considerations and then move toward finer levels of detail. Under the dimension context, we consider first the field of use: whether the online learning application is intended for higher education, K-12 (primary/secondary) education, military or job training, or self-initiated learning. The resources we describe as “mixed field of use” are designed for use in more than one of these fields. A related dimension is the provider type: online learning is offered by district and state public K-12 education institutions (e.g., the Michigan Virtual School, Riverside Virtual School); for-profit vendors (e.g., K12 Inc., University of Phoenix); by public or private nonprofit higher education institutions (Arizona State University); other types of nonprofit institutions (National Geographic Society); government agencies (e.g., the U.S. Department of Energy’s Online Learning Center); and by consortia of multiple organizations.

Third, we consider the breadth of the online offering: whether it is a full certificate or degree program, a formal course or training experience, a unit or module within a course or training program, or a brief learning episode or “educational object.”

A final, important component of the context dimension of online learning is the nature of the learners. Some important learner characteristics—average age and amount of prior schooling—are largely synonymous with the field of use. But other important learner characteristics include the learner’s level of preparation, both facility with the basic skills of reading and mathematics and comfort with using technology. Other important learner characteristics include fluency in the language of instruction, sensory disabilities, and ability to regulate one’s own learning.

INSTRUCTIONAL DESIGN

There is an almost infinite number of possible features for the design of an online learning experience, but our conceptual framework is limited to features that some research suggests influence the outcomes of online learning. First among these is what we call modality: the distinction between online, blended, and Web-enabled learning experiences discussed above.

Next, there is the pacing of instruction. Allowing students to begin learning and to proceed to the next learning module when (and only when) they have mastered the current module is a practice incorporated into many online learning systems, as it was in the computer-assisted learning systems of earlier decades. It is also possible
to have a fixed or class-based schedule for when students are to be online and when learning components are supposed to be completed, much as the typical classroom-based course is run. Finally many instructors and online learning providers are experimenting with various strategies falling between these two pacing options, with some required times for online interaction or some completion deadlines but more flexibility than found in traditional classroom-based courses.

A related design feature is the synchrony provided by the technology used in the online learning system. In the earlier days of distance learning, some systems were designed to give learners in all locations the sense of being in the classroom, and they provided for synchronous [same time, different place] communication only. Other learning systems relied entirely on asynchronous [different time, different place] communication using materials posted online and discussion boards. Some researchers found that learning interventions using asynchronous communication were more effective than those using synchronous communication, but interest in the topic has receded with the dominance of modern, Web-based learning systems that support both synchronous and asynchronous interactions.

Describing aspects of the design dimensions becomes more complex as we move to consideration of the nature of the instructor and student roles. The intended instructor role online may be to lead instruction and conduct unscripted communication with students or may be primarily one of monitoring student progress and providing encouragement. In some cases the learner works directly with the online content and there is no online teacher at all, or an automated avatar takes on the role that an instructor might play in the classroom. The dominant intended student role online can vary markedly from listening or reading; to working on problems or answering questions; to exploring a set of resources, a simulation or game; to working with peers in a collaborative project. Most online courses try to support a mixture of several or all of these student activities, but it is usually possible to identify the role that will consume most of the student’s time online.

Online courses usually incorporate assessments, and the emerging ability to analyze the learner’s “click stream” is stimulating the creation of less obtrusive ways to get information about a learner’s level of understanding and degree of engagement with the learning system without administering anything that looks like a conventional quiz or test [U.S. Department of Education, 2013]. The role of online assessments will determine their design. In systems using mastery learning principles (also referred to as competency-based learning), the assessments are used to determine if the learner is ready to move on to new content. In more sophisticated adaptive systems,
assessments may be designed to provide data that the system can use to determine how much to scaffold the student in future, for example, with more or less explicit hints. Assessments may be designed simply to provide a measure of student performance, which can tell the student and the teacher how much has been accomplished. Some learning systems combine assessments with software using predictive analytics to calculate the likelihood that the student will complete the course successfully in the time available.

A final feature of the design dimension is the feedback mechanisms built into the software. Immediate feedback supports learning and, for some types of questions and problems, scoring can be automated so that the system provides it. Other online learning environments are designed with the expectation that the instructor will be responsible for providing feedback on students’ online work. Other systems provide supports for students to evaluate and provide feedback on each other’s work, an area currently being explored by MOOC providers as a strategy for dealing with more open-ended assignments in online courses with extremely large enrollments.

IMPLEMENTATION

The third dimension in our model is implementation. No matter how a course or learning system has been designed, students may have different experiences depending on how it is implemented in practice. Typically, many decisions about implementation are made by schools or teachers, but some are made, at least in part, by students. The first feature under this dimension is the learning location, whether school, home, some other setting, or a mixture. A related feature is the presence and role of a co-located facilitator. In school-based implementations, this person may be the student’s primary instructor with the online activities serving a secondary role or it could be someone who is in a learning lab with students learning online whose primary role is to make sure that the technology is working and that students stay on task. For home-based learning, a parent or other adult may assume one or both of these functions.

An important dimension of implementation from a cost-effectiveness standpoint is the student–teacher ratio. Some online learning applications are designed to preserve the typical ratio for the relevant grade level while others look to have several times the normal number of students per instructor in order to gain efficiency. The student–instructor ratio can be as low as 1:1 (online tutoring) and, with the advent of MOOCs, as high as hundreds of thousands to one.
Finally, regardless of the designer’s intentions and what the online learning system technology will support, learning experiences get implemented with different levels of student–content, student–instructor, and student–student interaction. These are some of the most influential aspects of online learning.

OUTCOMES

Finally, in describing and evaluating online learning resources it is important to keep in mind the intended outcomes. Most of the time we think about the cognitive outcomes valued by schools and colleges. But there are different kinds of cognitive outcomes and research and theory suggests that different kinds of learning experiences best enhance the different types, which can be described as declarative knowledge (e.g., learning the motor vehicle laws for your state), procedural skills (e.g., fluency solving algebra word problems), or problem solving and strategies for future learning (e.g., the split-half strategy for troubleshooting computer systems).

Another important category of outcomes has to do with the learner’s affective responses and engagement in the online activity. For much self-initiated learning and for some of the activities selected by teachers, the extent of student engagement is valued as much as, or more than, cognitive outcomes.

From an education policy perspective, one of the most important classes of outcomes are productivity measures. These include things such as the course pass rate, a school’s graduation rate, the time it takes a student to complete a program of study, or the costs of obtaining each course completion.

Finally, technology advocates believe that online learning experiences are vital for obtaining learning-to-learn outcomes. Two major classes of these outcomes dominate the literature. The first has to do with what is sometimes called self-regulation—the ability to plan and execute learning independently without needing someone else to tell you what to do and when to do it. Self-regulation skills include having an awareness of what you do and do not understand or know how to do and being able to set up and adhere to a schedule that meets completion deadlines. The other important class of learning-to-learn outcomes concerns the use of the new, Internet-based media themselves. As these media have become such a large part of our lives—socially and professionally—the mastery of online learning and communication skills has become a valued outcome in its own right.
REUSING OPEN RESOURCES FOR LEARNING
Opportunities for learning are opening up. Societal behaviours and attitudes towards open data have changed, fuelling a transformation in how, where and why online resources are created, shared, manipulated and reused for learning. Open resources provide a substrate that can be reused by anyone, anywhere to pursue their learning goals in education, at work and through everyday activities.

Over the decade since Reusing Online Resources was published our view of how online resources can impact on learning has transformed. The open release of resources and data is viewed as mainstream, rather than a specialist endeavour, changing societal expectations around resource access. The open access publishing movement has adopted the terms *gratis* and *libre* (Suber, 2008) to differentiate levels of openness. *Gratis* refers to items available free of charge to users, easily discoverable and openly accessible. *Libre* refers to openness to more extensive reuse, with freedom to build on and change resources based on permissions granted by the resource creator in the form of open licenses. As the cost of accessing resources or barriers to using them may be a significant deterrent to learning, gratis resources have the potential to open up access to previously excluded learners. In education there has been significant progress in opening access to *gratis* learning resources in the form of Open Courseware (OCW), Open Educational Resources (OERs) and Open Courses online, including Massive Open Online Courses (MOOCs). Some, but not all, of these allow *libre* openness in reuse, for example by using a Creative Commons (CC) licence [http://creativecommons.org/about](http://creativecommons.org/about) to alert users to additional freedoms beyond those offered in conventional copyright. The Open Education movement of the twenty-first century (Downes, 2011; Siemens 2010; Wiley, 2010) has moved beyond these initial steps, not only opening up education in terms of access by end-users to resources, but also in extending what they are permitted to do with these resources.

At the same time there has been wide recognition that access to resources alone is not sufficient for learning and expertise development (McGill et al., 2013). Learning requires the active agency of the learner. One form of reuse of resources is by ‘remixing’, or making something new from resources created by others (Lessig, 2008). This form of ‘read-write’ activity moves learners beyond passive, ‘read-only’ consumption of online resources. There have also been significant socio-technological advances since the publication of Reusing Online Resources, for example social network sites such as Facebook [started in 2004] and Twitter [begun in 2006] and media sites such as YouTube [initiated in 2005] now provide spaces in which users can interact around resources, and do so openly. People use these networking sites for learning across a myriad of contexts, accessing and sharing personalised, online resources to mediate the dynamic flow of knowledge and social exchange. As they do so, they draw...
upon their own hardware and software tools—which increasingly are mobile, wearable, ambient—assembling bespoke, personalised, open learning environments. Learners plan their own personalised learning pathways, rather than necessarily relying on someone else (a teacher or expert) to structure their learning for them. In these situations where learners plan their own learning, the activity is often not recognised as learning. Thus, to open up learning, recognition of what constitutes learning needs to broaden so as to include activity outside formal education.

Even the most promising structured online resources do not encapsulate the knowledge needed to support learning and development (Francis, 2013; Falconer & Littlejohn, 2007). The knowledge that underpins practice has two qualities: scientific knowledge which has meaning in itself and may be codified and instrumental knowledge which involves solving specialist, practical problems (Boshuizen & van de Wiel, 2013). Learning scientific and instrumental knowledge requires open interactions, usually with other people (teachers, experts, peers) (Engeström, 1999) or sometimes with oneself, through inner, mental dialogue. Examples of learning interactions around online resources include collaborative knowledge construction (Paavola & Hakkarainen, 2005) or resource design (Ponti, 2013). Here, open, online resources serve as a focal point for the co-ordination of learning (either by a teacher or expert, or by learners themselves), rather than as ‘learning materials’ in the conventional sense. The ability to know who to turn to for learning support becomes critical (Edwards, 2010a). These online interactions around open, reusable resources form a basis for new open learning practices.

SOCIAL AND TECHNOLOGICAL TRENDS

Socio-technical factors that influence open, online learning extend beyond the conventional boundaries of education. These factors generally are associated with social cohesion, socio-economic inclusion as well as technological and economic growth in society.

CHANGING SOCIETAL EXPECTATIONS AROUND OPEN ACCESS TO LEARNING RESOURCES AND COURSES

The focus of open education movements historically has been on using technologies to extend learning support to students who could not easily have accessed university education otherwise. For example, UNESCO’s Education for All initiative (UNESCO, 2014) has, for almost 25 years, been working towards providing ‘quality, basic free-of-charge education for all’, placing Open Educational Resources (OER) and open courses as central to achieving this ambition. Widening access to resources and
courses or removing charges to ensure learning is free of charge (gratis) can be viewed as an extension of the open learning movement of the twentieth century (Lewis, 1993), during which very large open universities, or mega-universities, were established, initially in the UK and later in India, South Africa, China and elsewhere (Daniel, 1996). However, resources and learning opportunities were offered only to conventionally registered students of the ‘open’ institution. More recent models of open education include learners who are not registered students at a single institution, extending participation in education. For example, by sampling open courses from across several sources, learners can gain an OER University degree [http://wikieducator.org/OERu/Home]. Alternatively, learners can participate in stand-alone courses presented as a MOOC or learn by reusing OCW (www.ocwconsortium.org).

Significant financial support has been channelled into extending open education by benefactors such as the William and Flora Hewlitt foundation, who provided $11 million of funding to help establish the Massachusetts Institute of Technology (MIT) OCW initiative (MIT, 2001; Vale & Long, 2003) and have continued to invest in OERs. The potential to translate resources into other languages, taking advantage of the libre nature of OERs, has resulted in translations of MIT OCW into 10 languages, including Spanish, Portuguese, Chinese, French, German, Vietnamese and Ukrainian; also support to teachers to help them adapt OERs to different cultural teaching contexts, for example the Teacher Education in sub-Saharan Africa (TESSA) and TESS-India projects (www.tess-india.edu.in), have further increased the reuse of open resources available. There is an appreciation that resources for open learning may not resemble conventional educational resources, not only in form and use, but also in the level of unpredictability about how they will develop in the hands of others (McGill et al., 2013).

The high level of political and philanthropic support has given rise to expectations about what reuse of open resources can achieve in helping those who would otherwise be excluded from high-quality learning activity. Whether these expectations take fully into account all problems that learners may encounter when using open resources is a subject which several of the chapters in Reusing Open Resources address.

What has been achieved is that institutions which would not formerly have been considered to be ‘open’ universities, including some of the most prestigious universities worldwide, are opening up courses as MOOCs or as OCW (www.ocwconsortium.org/). Other respected organisations are also releasing open resources, including some multinational companies, professional and government
bodies as well as third sector organisations (McGill et al., 2013). Motivations to release resources range from providing professional development materials for members or employees to marketisation and reputation building (Falconer, Littlejohn, McGill, & Beetham, 2012).

Reliance on financial support from universities, governments or philanthropists means that the long-term sustainability of these models of production of open resources is unclear (Falconer et al., 2013). Potentially successful examples range from payment or ‘freemium’ models (where basic resources are free but learners pay for additional services) to diversification of who creates online learning resources and how these are released.

**DIVERSIFICATION OF HOW ONLINE, REUSABLE LEARNING RESOURCES ARE CREATED AND RELEASED**

Perhaps the most startling difference between open learning online and conventional education is that online resources are created not only by teachers or experts. Resources are as likely to be created or adapted by learners themselves (Falconer, McGill, Littlejohn, & Boursinou, 2013; Weller, 2010). In fact learners now routinely learn through creating, adapting and sharing their own open resources, often as user-generated resources across social networks (Beetham, McGill, & Littlejohn, 2009). There are many examples from everyday life, such as blogging or commenting on other people’s blogs; uploading resources to social network sites such as Facebook; sharing media through social networks, for example videos in YouTube; micro-blogging through ‘tweeting’ or ‘retweeting’ in Twitter; filtering and sharing online resources via social bookmark sites like Delicious; using tools such as Scoop.it to source, discover, curate and share relevant resources. What we see is a less clear-cut distinction between teachers or experts and learners in terms of roles and division of labour, with a shift in agency from the teacher to the learner (Beetham, Littlejohn, & McGill, 2010). This has arisen at a time when publication for a global audience, whether through YouTube, SlideShare, Flickr or iTunes, has made it easier to share resources without attracting high costs. In fact, open sharing of resources has become an everyday activity.

Nevertheless, open sharing does not necessarily signify open, online learning. Another critical factor for open learning is the freedom and ability of learners to connect not just with resources, but also with other people to draw from their knowledge and support (Ponti, 2013). Other people are available online to support learners, or alternatively learners can support peers, providing sustainable models of
online open learning [Ehlers, 2011; Littlejohn, Milligan, & Margaryan, 2012]. This shift in the division of labour of learners and teachers calls for a reconceptualisation of learning–teaching roles (Candy, 2004; Fiedler, 2012). However, moving from conventional learning–teaching practice to new learning practices that extend beyond the boundaries of formal education has proved difficult (Blin & Munro, 2008). This problem is partly due to the deep-rooted values and cultures engrained in ‘schooled societies’ [Fiedler & Väljataga, 2011]. However, attempts to ‘democratise’ learning through opening access to resources without (at the same time) making effort to enable learners to self-regulate their learning could be ineffectual (Francis, 2013).

THE ESCALATION OF SOCIAL INTERACTION AROUND ONLINE, REUSABLE LEARNING RESOURCES

As the information requirements for operating effectively in professional or personal life become more complex, we increasingly make use of a multifarious mix of distributed expertise and resources. Some of these resources (now almost inevitably digital) are used as mediating artefacts or ‘social objects’ (Engeström, 2005; Knorr-Cetina, 2001), linking people as they work and learn. For example, studies on medical workers’ work and learning behaviours reveal that online patient records are critical mediating artefacts around which experts within different specialisms collaborate (Engeström, 2009). These resources create a basis for inter-professional learning within the medical professional, connecting doctors, nurses, social workers and ancillary medical professionals (Engeström, 2013). Health professionals relate to one another and exchange ideas using an online patient record as a mediating resource and a focal point for their learning. Other health professionals are a valuable resource to support learning. As learners interact with people with complementary knowledge, they have to have the ability to know who to turn to for learning support [Edwards, 2010a; Edwards, 2010b]. This ability to know who to learn with is termed ‘relational expertise’. Science researchers have further opened up relational practices through the use of open data and ‘open notebooks’ as a focal point for collaborative work and learning (Bradley, 2007). Fears around well-resourced competitors ‘running away with findings’ have been unfounded [ibid]. Rather, meta-level studies, which had previously been impossible, have now become a blossoming industry providing important evidence for work in areas as diverse as epidemiology, meteorology and astronomy. Thus, open datasets are online resources that are reused for learning. Progress in sharing open data has been slower in the social sciences, due partly to low interoperability of data, ethical concerns and a culture of individual working. Some social scientists are attempting to change this by opening up data, process and
deliberations, for example within OER research, which presents particular problems because of the fluidity in access to and use of open resources by learners (McAndrew et al., 2012).

These examples illustrate that learning has moved from individual problem solving and *knowledge acquisition* (Schmidt, Norman, & Boshuizen, 1990) to *knowledge building* negotiated with others around tasks (Engeström & Middleton, 1996), sometimes by interpreting a common problem, then finding appropriate responses to those interpretations (Edwards, 2010a), to knowledge creation through social interactions around open resources (Paavola, Lipponen, & Hakkarainen, 2004).

Examples of learning through knowledge creation are also found in education contexts. In the Digital Storytelling course (ds106) at Mary Washington University in the USA, not only registered students but open learners following the course create and contribute images, text and sound files, collaboratively creating rich digital archives, with encouragement to actively remix and share the knowledge resources created. The course could be described as a hybrid of ‘open’ and restricted access; some learners in the course are campus-based students, while others, who are not formally registered students at the University, participate and contribute resources. These may be ds106 ‘alumni’ who continue to actively engage, as learners and sometimes mentors, across different course presentations. Facilitating learning by registered students alongside non-registered learners has benefits for both (Levine, 2013).

In the PHONAR photography course at the University of Coventry in the UK, learners initiated their own open magazine as a way of extending their open sharing and making outputs from the course more visible (http://phonar.covmedia.co.uk). This course has attracted ‘professional mentors’ from around the world who are experienced photographers wishing to contribute to the course. These are not faculty in the usual formal, contractual sense, although they could be seen as having parallels with visiting speakers at a campus-based course. There is evidence from studies in work contexts that experts are motivated by attaining stature and respect within a community and that experts themselves gain knowledge from novices through working with them (Margaryan et al., 2009a; Margaryan, Littlejohn, & Milligan, 2009b). Another common feature of these examples is that participants learn through the involvement of those outside their usual sphere of work and learning. Capitalising on access to potentially massive numbers of people to support online open learning by drawing on the social, online interactions requires a rethink of the social organisation of learning (Anderson, 2008).
NEW SOCIAL ORGANISATION OF LEARNING WITH OPEN RESOURCES

Learning in social networks, with potential access to massive numbers of people, allows reconceptualisation of the social organisation of learning in terms of structure, composition, spatiotemporal cohesion, communication systems and leadership.

One of the most visible recent attempts at a new social organisation of learning in education is MOOCs. Some MOOC designs are based on networks driven primarily from the bottom up (OBHE, 2013). These structures are anarchic and require learners to have well-developed digital literacies (Kop & Fournier, 2011; Kop, Fournier, & Mak, 2011) and self-regulation abilities (Milligan, Littlejohn, & Margaryan, 2013). These decentralised structures sit uncomfortably in the top-down hierarchies found in educational institutions (Dron & Anderson, 2010). Other MOOC designs are based on classroom-based courses (Vale, 2013). Conventional, online course designs are more familiar to learners and faculty and fit more easily within university organisational structures. However, some designs have been slated for missing opportunities for social participation and knowledge creation within the diverse range of participants (OBHE, 2013).

Empirical research around sensemaking and the `collective` conscious demonstrated how social software provides an extra dimension to learning, in addition to conventional interactions between learners, teachers and knowledge resources (Dron, 2007). Learners co-operate within different constructs, such as groups, networks and with the collective (Dron & Anderson, 2010). Their co-operation is dependent on processes of discovery, synthesis and sharing of fragmented scientific and instrumental knowledge. As learners build knowledge openly, the knowledge changes and diversifies (Kaschig, Maier, Sadow, & Thalmann, 2010). The significance of this form of learning is that it brings together the individual with the collective in ways that are impossible with conventional (closed) learning approaches and systems (Littlejohn, Milligan, & Margaryan, 2012). Early attempts to inform and guide the formation and operation of social structures for learning have been through learning analytics to provide users with a level of organisation, empowerment and transparency (MacNeill, 2012). Systems and tools based on analytics provide an organising focus for learning, helping to connect each learner with the people and resources that are important for learning, thus developing a personal view of learning which (in turn) relates to other’s learning (Littlejohn, Milligan, & Margaryan, 2012).

Concerns around analytics have been expressed chiefly in three ways. Firstly, the use of analytics is a form of surveillance which requires the learner to have a sophisticated understanding of how and when to manage online identity or identities (Dron, 2007).
There are legitimate questions about how informed the acceptance of terms for engagement with open courses may be. Secondly, there is a perceived over-simplification of the application of analytics that tends to equate types of systems with users and stakeholders and a given (assumed) power relation (Berendt, Vuorikari, Littlejohn, & Margaryan, 2013). Typically, analytics systems display aggregates of learner behaviours in ways that primarily address teachers’ needs for evaluating performance. Thirdly, learning involves human interactions with the environment mediated by expertise, extending beyond the rational decision making afforded by systems based on artificial intelligence (Edwards, 2010b). Therefore, systems cannot replace human expertise.

REMOVING CONVENTIONAL CONTROLS AND BOUNDARIES AROUND LEARNING ENVIRONMENTS AND SITES

Online, open learning through knowledge creation challenges conventional controls and boundaries (Paavola, Lipponen, & Hakkarainen, 2004). For example, in open education where learners work together to build knowledge in MOOCs, formal learning activity is transformed as a direct consequence of the activity of the learners themselves. It becomes less appropriate to talk about students within open education environments and more relevant to talk about open learners and open learning engaging with open resources from diverse sources. That there have been other movements, outside education, based on open online activity—open source; open science; open data; open innovation; open research—emphasises the role that open knowledge building plays in a wider shift in societal expectations and behaviours.

Open, online learning extends across parts of everyday life or work practice which learners may not regard as learning at all. For example the textile crafts site Ravelry (www.ravelry.com), with over 3.7 million users (by the end of 2013), is centred on a user-generated repository of patterns, projects and discussions within which users create and share information about projects, techniques and practices. Users can conduct research, solicit and offer advice on techniques or photographs of practice examples, sharing outcomes from what is often a solitary craft activity with a wider online community to obtain feedback and support; a learning model similar to open studio working (Brown & Adler, 2008). As policymakers consider the mechanisms that have to be put in place for open learning to have sustained impact, there is a recognition that organisations that provide formal education have to radically open up through strategic commitments to reforming and developing new infrastructures (Redecker et al., 2011). Therefore, rather than focusing on access to educational resources, in Reusing Open Resources we adopt the Vygotskian (1978) idea of learning as a complex social interplay of mind, action and practice mediated by
different types of resources. In this sense, open, online learning crosses conventional boundaries, drawing on resources and people within and across different contexts of education, work and everyday life.

**REUSING OPEN RESOURCES FOR LEARNING**

Learners use and reuse open resources across the contexts of education, work and everyday life. These interrelated contexts provide a framework for the exploration of reusing open learning resources [Figure 1.1]. For example, the use of resources in social networks (such as YouTube, Facebook, LinkedIn and Twitter) cuts across these contexts, transporting learning activity, resources and insights across life, work and education spaces. Resources shared can be discussions and comments, images and embedded media or links to blogs, wikis and so on. Use of these resources involves interactions with others across the networks. The cascade of boundary-crossing resources shared openly is largely determined by individual learners and is unpredictable, but often represents a visible and extensive reuse of open resources for learning.

**Figure 1.1**

Open learning spanning formal and informal contexts
CHAPTER 6

TEACHING AS A DESIGN SCIENCE
Teaching has always been recognized as an art, because it demands creativity and imagination. Teachers perform and respond to their audience to inspire and enthuse their learners. They discover how to make a productive connection between themselves, their learners, and their subject. Teaching is certainly an art. But in the arts anything goes; the imperative is to create a powerful experience for the audience. That is not true for teaching; it must do more than that. It also has a formally defined goal. The imperative for teaching is that learners develop their personal knowledge and capabilities.

So is teaching also a science? Educational researchers do science when they investigate teaching, but do teachers do it themselves? They do not, after all, develop and share theories and explanations based on experimental evidence. Teaching is not a theoretical science that describes and explains some aspect of the natural or social world. It is closer to the kind of science, like engineering, computer science, or architecture, whose imperative it is to make the world a better place: a design science. Herbert Simon made this distinction in his classic book on *The Sciences of the Artificial*, contrasting them with the sciences of the natural world, including the social sciences, which aim to understand and explain: “the natural sciences are concerned with how things are...Design on the other hand is concerned with how things ought to be” (Simon 1969: 132–133).

A design science uses and contributes to theoretical science, but it builds design principles rather than theories, and the heuristics of practice rather than explanations, although like both the sciences and the arts, it uses what has gone before as a platform or inspiration for what it creates. Teaching is more like a design science because it uses what is known about teaching to attain the goal of student learning, and uses the implementation of its designs to keep improving them.

The story of *Teaching as a Design Science* is to explore what it means to treat teaching as a design science, and how the teaching community could collaborate, as design professionals do, to make things work better – in this case the institutions of formal learning. The hero of the story is technology – not a knight in shining armor, or a saintly savior. This hero is the flawed and misunderstood anti-hero who ought to come good in the end. At least, that’s my intention.
THE ROLE OF TECHNOLOGY

There has always been a strong relationship between education and technology. Tools and technologies, in their broadest sense, are important drivers of education, though their development is rarely driven by education. Writing, one of the most important tools in the development of human civilization, was not invented for education but for commerce. Books were used initially to spread the word of religion, not to educate (Manguel 1997). Education adopted both, but had little effect on driving the development of either. Blackboard and chalk was one of the very few tools ever invented specifically to serve education, and its modern counterpart, after all the years of digital technologies, is the virtual learning environment or VLE. That’s all. Even slide presentation tools were invented for the business community. We have to acknowledge that, typically, education does not drive technological invention. Instead we appropriate the useful inventions of the business and leisure industries. In an age of rampant technological invention, this becomes a critical issue.

The arrival of digital technology over the past three decades, increasingly impacting on work, leisure, and learning, has been a shock to the educational system that it has yet to absorb. In fact, the variety and power of digital technologies probably means they cannot be easily assimilated – the system will probably have to adapt to embrace them fully.

Precisely because of their potential to change education unbidden, it is imperative that teachers and lecturers place themselves in a position where they are able to master the use of digital technologies, to harness their power, and put them to the proper service of education. Education must now begin to drive its use of technology.

To do that, we have to be clear about where education is driving itself – what is its role and purpose in twenty-first century society? And we cannot leave consideration of technology development far behind in our thinking, because even though education must lead, it must do that in the knowledge of what technology has to offer, and the changes it is making to student life. We may not have decided that what education really needed was an online folk-generated encyclopedia, such as a wiki, but neither should we ignore its existence, and the fact that many students use it more often than their university library. If we are confident in our use of technology then we can go beyond mere awareness to full exploitation of these new opportunities. It is a rational response to interrogate every new technology for its potential to serve educational aims. But being beholden to the inventiveness of other fields, education could easily be sidetracked into inappropriate uses of technology if we are not clear what we want from it.
HARNESSING TECHNOLOGY FOR EDUCATIONAL ENDS

The academic community should challenge digital technologies, and we have to do that from a position of strength, with a clear and continually renewed understanding of what education requires of them. These are “knowledge technologies” in the sense that they change our relationship to what is known and how it can be known. That strikes deeply at the heart of the educational process.

Knowledge technologies shape what is learned by changing how it is learned. Let’s think about three different ways of learning in a business studies course:

- one learner reads and writes about a new business as a case study;
- a second role-plays the same case in a small-group business simulation; and
- a third experiments with a spreadsheet model of the same case.

Their respective learning outcomes will share a lot in common about the factual details of the case, but their very different experiences will yield very different ways of knowing. Reading and writing enables an inquiring analytical approach into what has been done and what lessons might be learned, to generate knowledge in the form of propositions and principles. Role-play elicits thinking about the relationship between actions and goals mediated by human relations, which develops a more experiential understanding of the case. The spreadsheet model offers a way of engaging with the flow of supply–demand and income–outgoings in a developing business in an experimental way. This is the kind of learning that can only be done through digital technology. It enables the learner to experiment with different decisions about, for example, how much to invest given different rates of interest and different trajectories of sales. The model shows them the results of their different decisions in terms of cash flow – giving intrinsic feedback on their actions, very different from the extrinsic feedback of the teacher’s comment on their essay, and from the social rules operating in the role-play feedback. The learner is building knowledge of the behavior of the business as a system.

All of these forms of knowledge – analytical, experiential, and experimental – are valuable. It means that as the teacher thinks through the curriculum topics to be covered, and how they are to be taught, the range of learning outcomes it is possible for their learners to achieve is being determined to a great extent by the range of teaching methods they employ. If they have no access to technology, for example, the spreadsheet experience is impossible. If the learning outcome “awareness of the parameters involved in building a viable cash flow” is sufficient, then reading and writing about a case study will be sufficient as a teaching method, but it could not in
itself achieve an outcome such as “understanding how the context of investment
decisions can affect short-term profits.” Similarly, working with a cash flow model
will not engage learners in thinking about the human relations that affect the case
they are studying. That may or may not matter, depending on the teacher’s aims.
The point here is that the curriculum being covered – what is learned – is significantly
affected by the range of teaching methods used – how it is learned.

There is a danger that technology could undermine formal education. The notion of
a formal education system was challenged originally by radical thinkers such as
Illich, who wanted to free the learning mind from the constraints imposed by the
transmission model of teaching practiced in the formal system (Illich 1973).
Arguments against formal education are now current again but, uninformed by any
understanding of the theory of teaching and learning, they plunge us back into
traditional approaches. Technology opportunists who challenge formal education
argue that, with wide access to information and ideas on the web, the learner can
pick and choose their education – thereby demonstrating their faith in the
transmission model of teaching. An academic education is not equivalent to a trip to
the public library, digital or otherwise. The educationist has to attack this kind of
nonsense, but not by rejecting technology. It is a stronger attack when we argue that
first we must ask what learners need from education and therefore from technology.

Educationists must resist the idea that because of new technologies students can do
it for themselves – instead they create an even more critical role for the teacher, who
is not simply mediating the knowledge already articulated, but is more deeply
involved in scaffolding the way students think and how they develop the new kinds of
skills they will need for the digital literacies. Roger Säljö puts the challenge like this:

To deal with these issues, we should try to be even more explicit
about issues such as epistemological beliefs, learning styles, and
the problem of what counts as valid knowledge and valid
arguments in various disciplines and areas of study. The critical
and productive learning — and metalearning — of how to use
technologies is itself one of the most important socialising
practices of modern education, and that will have to be high on
the agenda. (Säljö 2004 : 493)

We cannot challenge the technology to serve the needs of education until we know
what we want from it. We have to articulate what it means to teach well, what the
principles of designing good teaching are, and how these will enable learners to
learn. Until then, we risk continuing to be technology-led.