COMMONWEALTH of LEARNING



Guide to
BLENDED LEARNING

Guide to Blended Learning

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with
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COMMONWEALTH *of* LEARNING

The Commonwealth of Learning (COL) is an intergovernmental organisation created by Commonwealth Heads of Government to promote the development and sharing of open learning and distance education knowledge, resources and technologies.



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Foreword

The Commonwealth of Learning (COL) has the mandate to promote the development and sharing of open learning and distance education knowledge, resources and technologies. It has brought out several key publications and guides to help its stakeholders use appropriate technologies for enhancing teaching and learning. While research shows that there is "no significant difference" between the learning outcomes of distance and campus students, blended learning environments have resulted in better learner performance. This is usually due to the additional support received by the learners through one or more of the interaction options provided — student–student/student–teacher/student–content — facilitated by the online environment. Students in blended learning environments also spend more time engaging with the digital instructional resources, leading to enhanced achievement. Recognising the potential of blended learning, COL advocates the systematic integration of technology in teaching and learning in higher education institutions through policy development, capacity building and the use of appropriate low-cost technologies. While working with partner institutions for building capacity and implementing technology-enabled learning, it became clear that a definitive source on blended learning design would help teachers to follow available best practices. The idea for this *Guide to Blended Learning* emerged from this need. We hope this will be a valuable resource for teachers developing blended courses for effective student learning.

As we know, a good learning environment is a true blend of learning content and interactions of various types, leading to authentic learning experiences. Technology has made it possible to provide a diverse range of learning resources and interactions to enhance student learning in both distance and campus contexts. Typically, a blended learning course will have components of both online and face-to-face teaching and the context will determine the proportion of the blend. This guide provides teachers with a framework to design and develop courses with online and face-to-face components to offer the flexibility for addressing different learner preferences.

An important aspect of this publication is the use of video introductions to each of the chapters to trigger interest and help the reader focus on specific tasks. Professor Martha Cleveland-Innes from Athabasca University has presented complex ideas in a simple manner to help teachers use this rich resource as a step-by-step guide to develop blended courses. I take this opportunity to thank the author and especially the peer reviewers, who served as critical readers to enhance the quality of this publication.

I hope you will find the *Guide to Blended Learning* a very useful and practical resource for designing, developing and evaluating blended learning courses suitable for your specific contexts. I also hope that this guide will improve access to quality education and result in effective learning and success.



Professor Asha Kanwar
President and Chief Executive Officer
Commonwealth of Learning

CHAPTER 1: Blended Learning



This chapter is an introduction to blended learning: how it is defined, how it emerged, how it is being used and what it has to offer, as well as challenges you may encounter when implementing a blended learning approach in your teaching practice.

The Growth of Blended Learning

This guidebook presents new ways of thinking about teaching and learning to help you better prepare your students to learn and develop into 21st-century global citizens.

According to the U.S. Department of Education (Means, Toyama, Murphy, Bakia, & Jones, 2009), a blend of classroom and web-based teaching and learning offers access to the widest range of learning modes and methods for developing student skills and expertise as learners (Cleveland-Innes, 2017). Many findings on blended learning show an increase in learners' ability to learn collaboratively, think creatively, study independently and tailor their own learning experiences to meet their individual needs.

This guidebook also provides information about some of the technology tools you can use to support in-person delivery in a seamless, truly blended way. Through careful, thoughtful blending and with consideration for technological skill levels and Internet access, learning for anyone can now take place with greater flexibility and convenience.

Innovative educators have for many years been creating new delivery methods in education by combining elements of in-person teaching with technology-enabled learning to bring people together virtually. Since the late 1990s, when simple learning management systems began to emerge, blended learning has grown very quickly. There are now many possible combinations and permutations, but it took time for this to occur.

While computers became part of everyday life for most in the early 2000s, education was slower to integrate computer technology. When it did, technology use was often limited to supplementing the usual teach-by-telling approach. As computers and the Internet demonstrated opportunities for

connecting people in multiple locations as well as for more interaction, more visuals and greater access to information, innovation increased but in fragmented, uneven ways.

Soon, Internet connectivity and browser development allowed broader and more user-friendly resources for anyone wanting to learn. Web-based learning replaced CD-ROM materials. "Rather than having to distribute CD-ROMs to learners, organizations could simply upload material, eLearning assessments, and assignments via the web, and learners could access them with a click of a mouse button" (Pappas, 2015b).

Today, computers, tablets and smartphones are available to the majority of the world's population, and technology-enabled learning has become more varied and accessible. More and more institutions and teachers are adding web-based learning to their delivery methods, and learners have access to many applications to support their learning. The mantra "anytime, anywhere" has been taken up to describe the new wave of education. However, this notion is being challenged by education practitioners and researchers, who know that learning competence is not universal, student skills are very different from skills needed to participate in social media, and access to broadband Internet is not evenly distributed.

Teachers are still a key part of blended learning — teachers who have subject-matter expertise *and* basic technology skills, along with the new pedagogies that go with technology, such as constructivism and collaboration. Blended learning expertise provides both.

What is Blended Learning?

The simplest definition of the term *blended learning* is the use of traditional classroom teaching methods together with the use of online learning for the same students studying the same content in the same course. It is a "thoughtful fusion of face-to-face and online learning experiences" (Garrison & Vaughan, 2008). There are also *blended programmes*, in which students study some courses in face-to-face classrooms and other courses are delivered fully online.

In other words, blended learning is a term applied to the practice of providing instruction and learning experiences through some combination of both face-to-face and technology-mediated learning. During the technology-mediated components of these learning experiences, students are not required to be physically together in one place but may be connected digitally through online communities. For example, one blended learning course could involve students attending a class taught by a teacher in a traditional classroom setting while also completing online components of the course independently, outside of the classroom, on an online learning platform.

Classroom instruction time may be replaced or augmented by online learning experiences, and online learning can include varying degrees of interaction or just time alone in independent study and learning activities. However, in a quality blended learning experience, the content and activities of both in-person and online learning are integrated with one another and work toward the same learning outcomes with the same content. The various learning experiences are synthesised, complement each other, and are planned or orchestrated to run in parallel.

Blended learning is sometimes called *hybrid* or *mixed-mode learning*. These systems of instructional design use many types of teaching and learning experiences and vary in design and implementation across teachers, programmes and schools. The potential variations of mixed-mode learning are virtually endless; a good way to get a sense of the range of possibilities is to consider some examples:

- In one school, a few teachers create mixed-mode delivery in their individual classrooms. In another, a whole programme chooses to make blended learning its choice of delivery for all students; all teachers work together to learn how to teach in a blended delivery system.
- Videorecorded lectures, live video and other digitally enabled learning opportunities can be a student's primary instructional interactions with other students and the teacher. In some cases, students may work independently on online lessons, projects and assignments at home or elsewhere, only periodically meeting with teachers to review their learning progress, discuss their work, ask questions or receive assistance with difficult concepts. In other cases, students may spend their entire day in a traditional school building, but they will spend more time working online and independently than they do receiving instruction from a teacher.

Blended learning can be divided into three main models.

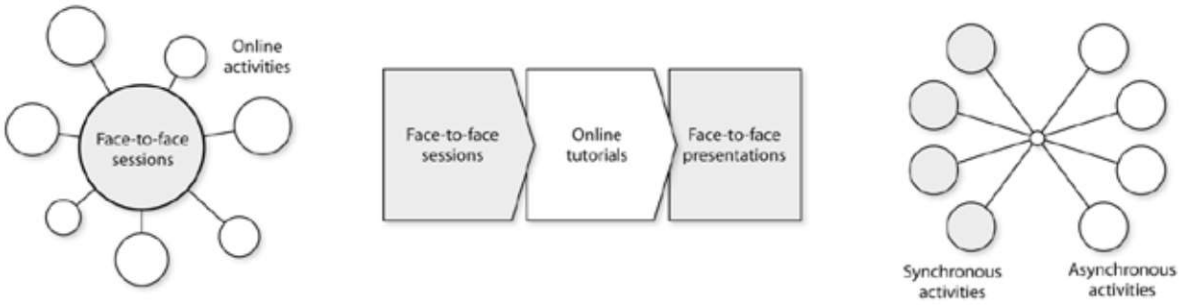


Figure 1.1. Models of blended learning

The first model, blended presentation and interaction, has classroom engagement as its primary component, with support from out-of-class, online exercises. The flipped classroom or *flipped curriculum* approach is a common example of this model, with students viewing podcasts or other online resources independently, followed by classroom-based tutorials or seminars for group learning based upon these resources.

The second is the *blended block* model (sometimes called a *programme flow* model), in which a sequence of activities, or "blocks," is structured to incorporate both face-to-face learning and online study, usually with consideration for both pedagogical goals and practical constraints. For example, a course for geographically distributed learners or working professionals may have limited opportunities for classroom-based learning and therefore begin with a block of intensive face-to-face sessions, followed by blocks of online study and collaboration through online tutorials, possibly followed by a further block of face-to-face learning or group presentations.

The third model is fully online but may still be considered blended if it incorporates both synchronous learning (for example, online tutorials) and asynchronous activities (for example, discussion forums). Thus, blended learning covers one or more of the following three situations:

- Combining instructional modalities (or delivery media).
- Combining instructional methods.
- Combining online and face-to-face instruction.

Table 1.1 Three models of blended learning.

MODEL 1	MODEL 2	MODEL 3
Blended presentation and interaction Activity-focused face-to-face sessions blended with online resources. For example, the flipped curriculum model combines: • short lecture podcasts, online resources with • face-to-face tutorial/seminars for interaction and presentation of group work.	**Blended block** Combination of: • intensive face-to-face sessions as one day or half days • weekly online tutorial/seminars for activities and interaction • online content and resources	**Fully online** Combination of: • short lecture podcasts with online resources and learning activities • online tutorials (synchronous) • interaction via online collaboration, discussion forums and/or group work

Source: Hannon & Macken (2014)

Blended Learning Uses

As we saw above regarding the blended block model, there are often practical considerations leading us to choose blended learning. In addition, many policy makers and postsecondary leaders believe that replacing some components of a learning programme with online or distance education is a cost-effective way to deliver postsecondary education.

Our focus in this guidebook is on professional development and the effective introduction of blended learning to improve instructional practice and learner outcomes, not solely to introduce a blended learning resource. While some efficiencies might be created through online delivery, there is increasing evidence about its effectiveness in delivering instruction.

Two recent studies provide different views of whether online education will increase student learning and success. Nevertheless, over the past several years, perceptions of online learning have been shifting in its favour as more learners and educators see it as a viable alternative to some forms of face-to-face learning. Drawing from best practices in both online and face-to-face methods, blended learning is on the rise at colleges and universities as the number of digital learning platforms and ways to leverage them for educational purposes continues to grow.

The opportunities for learning or the *affordances* blended learning offers are now well understood, and both educators and students find its flexibility, ease of access, and integration of sophisticated multimedia and technologies highly appealing. The current focus of this trend has shifted to understanding how applications of digital modes of teaching are impacting students. Findings are showing increases in learner creativity, independence and self-direction.

Benefits of Blended Learning

The advantages of blended learning for students include increased learning skills, greater access to information, improved satisfaction and learning outcomes, and opportunities both to learn with others and to teach others. Recent research identifies the following key benefits of blended learning:

1. Opportunity for collaboration at a distance: Individual students work together virtually in an intellectual endeavour as a learning practice.
2. Increased flexibility: Technology-enabled learning allows for learning anytime and anywhere, letting students learn without the barriers of time and location but with the possible support of in-person engagement.
3. Increased interaction: Blended learning offers a platform to facilitate greater interactivity between students, as well as between students and teachers.
4. Enhanced learning: Additional types of learning activities improve engagement and can help students achieve higher and more meaningful levels of learning.
5. Learning to be virtual citizens: Learners practice the ability to project themselves socially and academically in an online community of inquiry. Digital learning skills are becoming essential to be a lifelong learner, and blended courses help learners master the skills for using a variety of technologies.

Making Blended Learning Work

Technology integration in itself is not necessarily blended learning. If online learning is only a minor component of a classroom-based course, without offering students the independence, convenience and interaction opportunities of being online, it may not really be a blended learning system but simply a case of technology integration.

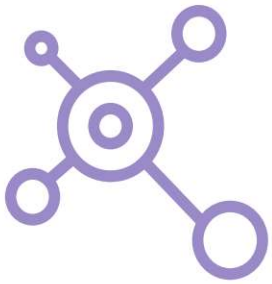
Creating an effective blended learning environment means making appropriate choices and overcoming the challenges that come with the use of technology. The following challenges and recommendations were identified in recent research on teacher perspectives, conducted by Athabasca University and the Commonwealth of Learning (Cleveland-Innes, Ostashewski, Mishra, Gauvreau, & Richardson, 2017):

1. Technology access: A critical first step is to know which resources are available to your students. Is there limited bandwidth, unreliable Internet connectivity, or lack of devices such

as laptops or smartphones? Once you are clear about access, you can choose learning activities with the technology in ways that allow all to participate.

2. Design: Creating the appropriate in-person and online activities means designing courses with the pedagogic principles of both and integrating technology in a way that supports meaningful learning.
3. Safety and security: Create awareness of cyber-malice and ensure security interventions against unethical learning practices, academic dishonesty, identity theft and bullying are in place.
4. Skill development, support and training: Both students and instructors must have technological literacy and competence with technology applications.
5. Motivation: Students need adequate motivation when engaging in a wide range of often shifting learning modalities, some of which may require significant skill development.

Later chapters will provide further guidance on using technology to create your blended learning environment.



CONCLUSION

This first chapter has introduced blended learning as an important and rapidly developing form of education, with an emphasis on the benefits it offers to both educators and students, including greater flexibility and convenience, as well as potential increases in learner creativity and independence.

Blended learning can be defined as the combination of face-to-face classroom instruction with online learning within a course or programme — a definition broad enough to include a wide range of variations appropriate to the individual needs and contexts of a school or course.

One key concept is that blended learning is not merely the addition of some technological element to an existing course but rather is an integrated plan utilising the best of what both face-to-face and online learning have to offer. The blended presentation and interaction model, the blended block model and the fully online model provide initial frameworks for the deliberate structuring of blended learning to improve learning outcomes.

The next chapter will expand on this idea by considering additional models and frameworks for developing effective blended learning, including the Community of Inquiry framework and a systems-based approach.

SCENARIO:

A Blended Learning Programme for Teachers

A blended learning programme including the following components was designed to provide teachers in a rural area with the knowledge required to implement technology-enabled learning, as shown by the following blended block model.

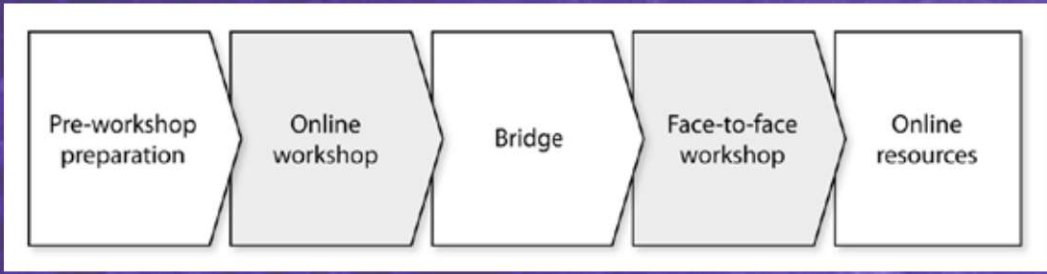


Figure 1.2. Blended block model

Pre-workshop preparation: A questionnaire was sent to participants before the online phase, asking them to describe their role in the educational system and their particular skills. The questionnaire helped facilitators adjust activities to the participants' backgrounds.

Online workshop (core component): The workshop included individual study with online lessons and activities supported by facilitators. Both synchronous and asynchronous communication were used for online discussions and group work. The main outcome of the online component was an individual activity plan to help participants reflect on their teaching situation and to serve as a resource for the later face-to-face activities.

Bridge period: During this period between the two core components of the course, online support was provided to participants as they prepared for the face-to-face component.

Face-to-face workshop (core component): The face-to-face workshop consisted of classroom activities where participants presented and discussed their activity plans, practiced teaching principles and techniques, and further developed their activity plans.

Online resources: After completion of the course, additional online resources were available to help teachers transfer their new knowledge to their individual teaching settings.

(Adapted from Food and Agriculture Organization of the United Nations [2011], p. 19.)

REFLECTION QUESTIONS

1. What access to technology do your students have?
2. How are your technology skills? Do you need technology support? Where is it available?
3. What tools would you use to decide which learning activities to offer in person and which to offer online?
4. What is the nature of blended learning? What are the different components of your blended learning?
5. Do you need instructional design support?

Resources for Further Reading

The following examples are in-practice blends of technology-enabled learning with in-person teaching:

Bowman, J. D. (2017). Facilitating a class Twitter chat. *Edutopia*. Retrieved from https://www.edutopia.org/article/facilitating-class-twitter-chat

All the steps you need to prepare for and use Twitter as a way to engage students in learning activity discussions.

Wolpert-Gawron, H. (2017). Extending classroom management online. *Edutopia*. Retrieved from https://www.edutopia.org/article/extending-classroom-management-online

A case example of management strategies when you are using a blended classroom.

CHAPTER 2: Theories Supporting Blended Learning



Grounding our practice in theory will help us make better decisions when implementing blended learning and support our learners more effectively to achieve deep and meaningful learning. In this chapter, we review two main theoretical frameworks that can be applied to blended learning, then consider several models of blended learning and technology integration.

Introduction

As most of us around the world have done the majority of our learning in person and in classrooms, we usually refer to the combination of in-person and online teaching as a special form of learning called "blended." Someday, however, we expect this form will become the standard, and we will drop the term "blended learning" altogether.

Blended learning "is part of the ongoing convergence of two archetypal learning environments" (Bonk & Graham, 2006, p. 2). However, the influences of the two types of delivery are not equal, and how to blend looks different if you are starting from an in-person school to how it looks if you are coming from a distance education background.

Traditional face-to-face, in-person, classroom-based teaching and learning has been used for centuries as the ubiquitous delivery method. Distance and distributed teaching and learning opportunities are much newer, particularly in reference to technology-enabled learning. When online education became available, it was used first in distance education, with students studying fully online. Notions of blending classroom-based learning and online or distance education came later.

Only over the last few decades has technology for learning been readily available. It emerged so quickly that use of these technologies was implemented well before we had substantial knowledge of its impact and the differences it made for teachers and students. Now, with more evidence, improved theories and models, and more clarity about how to use both in-person and online teaching and learning, we can blend the two delivery modes with careful attention to each.

Using Theory to Support Blended Learning Practice

Why is theory important? Effective blended learning is more than just tips and techniques; understanding the key concepts in blended learning and what makes it successful are important. First, we will talk about theory and conceptual frameworks for blended learning; the tips will come later!

It is not possible to review all models of blended learning here. Wang, Han and Yang (2015) provide an important overview of all major blended learning theoretical frameworks available. Our focus in this chapter will be on two frameworks: the *Complex Adaptive Blended Learning System* and the *Community of Inquiry.*

These two models take a comprehensive view of the design and implementation of blended learning. They are applicable to blended learning in any segment of education, with appropriate adjustments as necessary based on learners' needs and characteristics, whether you are a teacher or instructor in K–12 schools, colleges and universities, the military, the industrial workplace or the corporate world.

The Complex Adaptive Blended Learning System

Figure 2.1 presents a diagram that outlines all the components of the Complex Adaptive Blended Learning System, or CABLS framework. The learner sits at the centre of the model, but all components impact each other. There are six elements in the system, all with their own sub-systems. These six elements are:

- the learner
- the teacher
- the technology
- the content
- the learning support
- the institution

Not only does each element have its own character and subsystem, but each acts in relationship to all the others. As in any complex system, the relationships are dynamic and integrative. This adaptive system of blended learning emerges from the relationships and the effects of each element acting with and on the other elements.

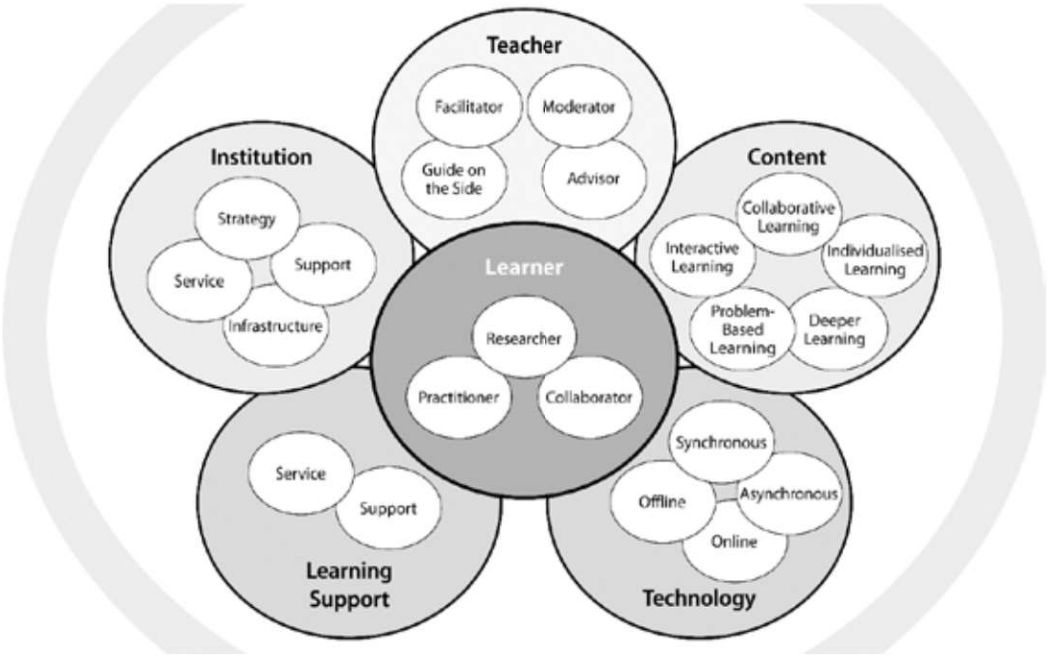


Figure 2.1. The CABLS framework

Table 2.1. The six elements of the CABLS framework.

LEARNERS	The role of learners changes, or adapts, as learners engage for the first time or in new ways with the elements in the system. Most important is the well-researched change from passive to active learner. This is key to the support and training of lifelong learners, a characteristic identified as important in 21st-century society.
TEACHERS	The role of teachers is also new in blended environments and will co-evolve with students as both engage with and adapt to each other and the other four elements in the system. The assumption is that teachers engaging in blended learning will adapt to pedagogies appropriate not only for blended learning but for learners preparing to engage productively in 21st-century societies, which are characterised by significant diversity. These "teachers" will be identified by new labels, such as facilitators, mentors, advisors and moderators.
CONTENT	Subject matter is still an important influence on the delivery of learning. Content refers to subject matter and the material elements used to engage learners in the process of mastering that subject. The interactive, dynamic, media-rich materials available online create opportunities for teachers and learners to add content before, during and even after the course experience. The dynamic between the learner, the teacher, the technology, the learning support and the institution impacts the choice and use of content. The opportunity for deep learning of content is available via this complex engagement of multiple learning modes influenced by many elements.

TECHNOLOGY	Technology in general terms refers to any equipment or mechanism that extends the human capacity to get things done, the creation and use of technical means, and their interrelation with life. Emerging technologies are tested and then either adapted for new uses or discarded if not of significant value. Technology for learning requires new roles for the learner and teacher and new ways of accessing and working with content. Much research is available on technology for learning in many settings with diverse learner groups, resulting in a large range of outcomes. There is still much testing and research needed to identify the applications, challenges and outcomes of technology for learning. In this theoretical framework, the technology has to be seen as part of the system of blended learning, one that includes all elements working in relation to each other.
LEARNER SUPPORT	Helping learners master the content *and* become competent learners has to be part of their education. Learner support is included in this framework to emphasise the development required to be a competent blended learner and the ongoing support needed when the system includes complexity. Support can involve technology troubleshooting, material access and learning to communicate effectively online, as well as all the other usual support around understanding content and assignments. In addition, there is a measure of independence attached to online learning that, once mastered, is a lifelong asset. However, it does require the scaffolding of support across diverse learners and over time. For Wang et al. (2015), learner support means "academic support focusing on helping learners to develop effective learning strategies, such as time management and collaborative skills, and technical support aiming to help students improve their knowledge of the technological tools and the fluency with which they use the tools to complete specific learning tasks" (p. 384).
INSTITUTION	Just as classroom-based learning requires buildings, desks, lighting and other accessories of brick-and-mortar institutions, blended learning requires technological infrastructure and digital janitors. Institutional support is a necessary if not sufficient condition for successful blended learning.

The CABLS framework is designed to "facilitate a deeper, more accurate understanding of the dynamic and adaptive nature of blended learning" (Wang et al., 2015, p. 390). This systems approach allows someone new to blended learning to consider key interacting components at work as they create and offer a blended learning course or programme. Teachers will be most interested in the relationship between content, learners and technology. For more on designing with interacting components, see Richardson et al. (2012).

The Community of Inquiry Theoretical Framework in Blended Learning

In 2000, Garrison, Anderson and Archer published a theoretical framework developed to structure the process of learning in an online or blended environment. The Community of Inquiry (CoI), a model of inquiry-based teaching and learning, is based on the work of John Dewey and constructivist views of experiential learning.

The CoI framework describes the necessary elements to create deep and meaningful learning. The original framework identifies the education experience as occurring at the convergence of three presences: *cognitive*, *teaching* and *social*. In our application of this model, presence is defined as a state of alert awareness, receptivity and connectedness to the social, cognitive, emotional and physical workings of both the individual and the group in the context of their learning environments (adapted from a definition by Rodgers and Raider-Roth, 2006, p. 1).

Inquiry-based teaching and learning is more important now than ever before, as both a process for learning and a subject for learning to learn. Inquiry-based teaching and learning has its roots in the new learning movement of the 1960s, the time of the so-called "me generation." This call for more active learning drew insight from foundational thinkers in education like Dewey (1938) and Vygotsky (1997), who saw the use of individual experience and the construction of one's own knowledge structures as key to engagement and learning outcomes. Now called inquiry-based learning by way of contrast to content-based learning, learning through cognitive engagement allows students more control over the way they develop a knowledge base. Beyond content acquisition, inquiry-based learning is seen as a key opportunity for developing competence in higher-order thinking skills (Garrison, 2016). Passive, amateur learners are not part of inquiry-based learning. Inquiry-based teaching, then, requires a focus on providing meaningful engagement opportunities rather than direct instruction about content; the latter supports and fosters passive learning.

Inquiry-based teaching also requires making the learning process explicit. Building on the early work of Schwab (1966), this teaching practice offers structure to move learners through active inquiry processes. For Schwab, the active inquiry process starts by using questions, problems and material to invite learners to identify relationships between concepts or variables. As learners advance, questions or problems are presented and the learners discover the path to answers themselves. As a third and final stage, a topic is presented, and learners themselves identify questions, problems, methods and answers while the teacher provides guidance and facilitates learning.

Creating a Community of Inquiry: What the Research Tells Us

The CoI framework supports guided inquiry by identifying teaching activity and provides guidance, based on theory and practice, on content and processes for blended learning.

In keeping with the original three presences of the CoI framework (social presence, cognitive presence and teaching presence), blended learning using the CoI framework creates opportunities for self-reflection, active cognitive processing, interaction and peer-teaching. In addition, expert guidance from teachers at the right time encourages engagement and shared application activities, highlighting the importance of creating communities of inquiry in the classroom — whether face-to-face, online or blended.

Creating communities of inquiry in blended learning is one of the most researched pedagogical approaches in universities and colleges. The original Garrison, Anderson and Archer (2000) article explaining this framework has been cited in the scholarly literature over 4,000 times. Much of the early research focused on understanding social presence (Richardson & Swan, 2003) as a new way to approach teaching beyond strict transmission models of delivery. A significant amount of research

has also been done to measure the components of this framework and how they operate in reference to one another (Arbaugh et al., 2008; Garrison, Cleveland-Innes & Fung, 2010). A recent analysis of the literature identified that in measuring and applying the CoI, "the most frequently used and the one adopted the most commonly in the literature is the CoI survey instrument developed by Arbaugh et al. (2008)" (Olpak, Yagci & Basarmak, 2016, p. 1090).

Accurate measurement of the framework allows for a more detailed examination of cognitive presence. This is important, as none of the presences stand alone. Cognitive presence emerges out of four distinct but overlapping components of practical inquiry: triggering events, exploration, integration and resolution. Establishing deep and meaningful learning requires activity in all four components. However, Akyol and Garrison (2011) report evidence that cognitive presence requires a balance among cognitive, social and teaching presence. Direct instruction and facilitation of cognitive activity, beyond just explaining content, is a key role for teachers using this framework. This corroborates Archibald's (2010) evidence that teaching presence and social presence explain 69% of the variance in cognitive presence.

Teaching presence, rather than "teacher presence," is so named to allow for a teaching function for both teachers and students in a CoI. While the teacher, or instructor of record, plays a leadership role, teaching presence allows for and fosters peer-teaching among students. Recent studies clarify the importance of teaching presence in the generation of satisfying learning experiences among students (Chakraborty & Nafukho, 2015; Morgan, 2011; Shea, Hayes & Vickers, 2010). It is, however, linked to other presences in a significant way. For example, Shea and Bidjerano (2009) report evidence that the student experience of teaching presence affects the emergence of social presence.

In addition to these three presences, emotional presence has been suggested (Cleveland-Innes & Campbell, 2012; Stenbom, Cleveland-Innes & Hrastinski, 2016). Emotional presence is defined as the outward expression of emotion, affect and feeling, by individuals and among individuals in a community of inquiry, as they relate to and interact with the learning technology, course content, students and instructor. Item indicators for emotional presence have been analysed with the instrument measuring the original three presences (Arbaugh et. al, 2008). Exploratory factor analysis suggests emotional presence may stand alone as a separate element in this framework (Cleveland-Innes, Ally, Wark & Fung, 2013). Further research is required to evaluate the relationship between emotional presence and other elements in the framework.

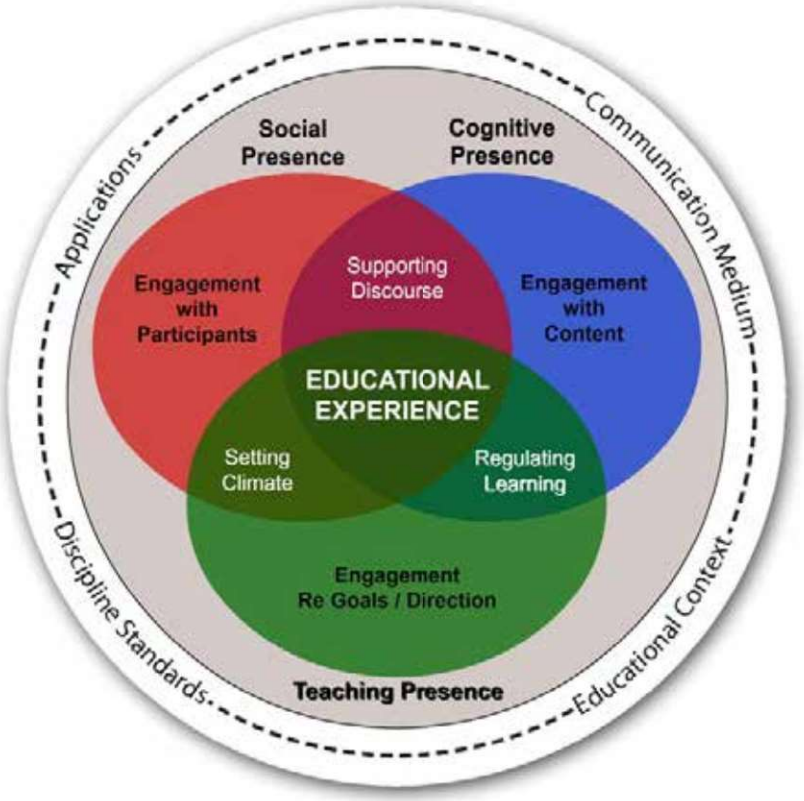


Figure 2.2. The Community of Inquiry model

Seven Blended Learning Structures in Education

Now that you have a view on the theory underlying blended learning, we can discuss more concrete applications of types of instruction.

Many factors must be considered when choosing how to blend in-person and online teaching and learning activities. In some cases, most interactions between students and the teacher, as well as the direct delivery of instruction, take place in person in the classroom, while materials and possibly some additional activities are delivered online. In other cases, most of the class activities occur online, with infrequent meetings in person to solve problems and support community building. In some blended arrangements, students may choose which activities to complete online and which to complete in a classroom.

Ideally, blends are personalised so individual students have the blend that best fits their age, life circumstances and learning needs. These are called *à la carte* models. Students choose what to take fully online, what to take fully in person and, when the design is available, blended courses where they choose when to go to in-person classes and when to watch videos, download readings and complete assignments online.

This kind of personalisation is not always available. Most important is ensuring that students are able to function well as learners with any delivery method, single-mode or blended, even if it is not their preference or the best situation for them. Teachers are valuable coaches for helping students manage in any learning situation; it is up to teachers and learning designers to offer blended activities that best suit the subject, the learners' needs and the curriculum requirements. Not all unique and interesting blended learning designs are one-size-fits-all model.

Below are seven sample configurations of blended learning activities, offered by O'Connell (2016) for you to consider for your teaching situation. These examples of blended learning are drawn from higher education but can be shaped to fit any teaching and learning situation. Chapter 3 will provide further information about creating your own unique design of blended learning.

- **Blended face-to-face class:** Also sometimes called the "face-to-face driver model," the blended face-to-face class model is based in the classroom, although a significant amount of classroom time has been replaced by online activities. Seat time is required for this model, while online activities are used to supplement the in-person classes; readings, quizzes or other assessments are done online at home. This model allows students and faculty to share more high-value instructional time because class time is used for higher-order learning activities such as discussions and group projects.

- **Blended online class:** Sometimes referred to as the "online driver model," this class is the inverse of the blended face-to-face class. The class is mostly conducted online, but there are some required in-person activities such as lectures or labs.

- **The flipped classroom:** The flipped classroom reverses the traditional class structure of listening to a lecture in class and completing homework activities at home. Students in flipped classes watch a short lecture video online and come into the classroom to complete activities such as group work, projects or other exercises. The flipped classroom model can be seen as a sub-model of the blended face-to-face or blended online class.

- **The rotation model:** In this model, students in a course rotate between various modalities, one of which is online learning. There are various sub-models: *station rotation*, *lab rotation* and *individual rotation*. Some of these sub-models are better suited to K–12 education; station rotation, for example, requires students to rotate between stations in the classroom at an instructor's discretion. Others work well on a college campus; the lab rotation model, for example, requires students in a course to rotate among locations on campus (at least one of which is an online learning lab). In the individual rotation model, a student rotates through learning modalities on a customised schedule.

- **The self-blend model:** While many of the blended learning models on this list are at the course level, self-blending is a programme-level model and is familiar to many college students. Learners using this model are enrolled in a school but take online courses in addition to their traditional face-to-face courses. They are not directed by a faculty member and choose which courses they will take online and which they will take in person.

- **The blended MOOC:** The blended MOOC is a form of flipped classroom using in-person class meetings to supplement a massive open online course. Students access MOOC materials — perhaps from another institution or instructor if the course is openly accessible — outside

of class and then come to a class meeting for discussions or in-class activities. In 2012, according to Campus Technology, San Jose State University piloted a blended MOOC using MIT's *Circuits and Electronics* course, with students taking the MOOC out of class while face-to-face time was used for additional problem solving (LaMartina, 2012).

- **Flexible-mode courses:** Flexible-mode courses offer all instruction in multiple modes — in person and online — and students choose how to take their course. An example of this is San Francisco State University's hybrid flexible (HyFlex) model, which offers classroom-based and online options for all or most learning activities, allowing students the ability to choose how they will attend classes: online or in person (Beatly, 2016).

Evaluations are sparse but are now under way, testing different types of blended learning models for results — see, for example, Stockwell, Stockwell, Cennamo and Jiang (2015).

Blended Learning as Technology-Enabled Learning in the Classroom

Another type of blend adds technology in the classroom. Often called technology-enabled learning, adding technology to in-person teaching and learning may foster engagement and improve learning outcomes. The SAMR model, well-suited for K–12, is an approach for the progressive implementation of new technology.

Table 2.2. SAMR descriptors

SUBSTITUTION	Here, computer technology is used in the same way pen and paper might be used: a worksheet is filled out, either on paper or on a tablet, smartphone or computer. There is no functional difference, only the opportunity to use a different tool for the same exercise. This can be the learner's choice or teacher directed.
AUGMENTATION	Here, the technology adds a dimension not available with traditional teaching tools: a computer quiz can be taken rather than a pen-and-paper quiz. The difference lies in immediate feedback, as the computer provides correct answers and additional reinforcement with video, audio or text when correcting an answer or acknowledging a correct answer.
MODIFICATION	In modifying the traditional tools, technology is used to change the function of the lesson. For example, an essay-writing exercise uses video and/or audio software to turn the essay into a story and performance. Technology offers new recording functions for peer and teacher feedback and student editing.
REDEFINITION	In this case, using technology is an entirely new teaching and learning activity: students use devices to search the Internet for material rather than looking in books or going to the library. Applications to help complete tasks are offered, such as spell-check or Grammarly. Wikis are used to create multi-authored artefacts and texts to complete group assignments.

The following graphic illustrates these comments, using types of coffee as examples.

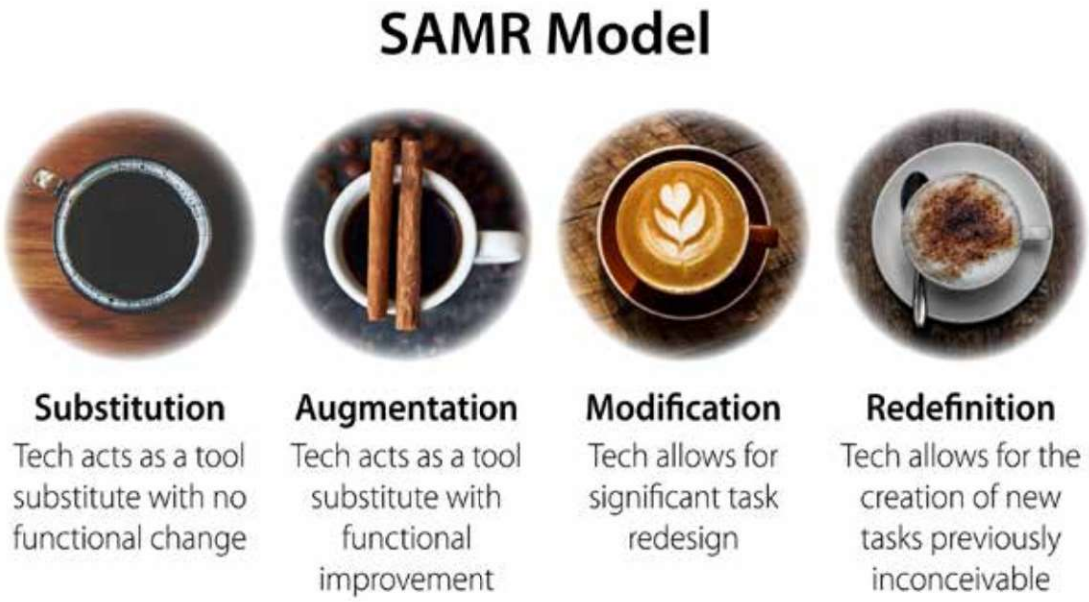


Figure 2.3. SAMR Model (Brubaker, 2013)

CONCLUSION

In this chapter, we have laid the theoretical foundations for the successful implementation of blended learning, with a special focus on two frameworks: the Complex Adaptive Blended Learning System and the Community of Inquiry.

The CABLS framework analyses learning into a complex and dynamic system of six interacting elements: learner, teacher, technology, content, learner support and institution. The CoI emphasises inquiry-based teaching, describing meaningful learning as the convergence of cognitive, teaching and social presences, with emotional presence as a potential fourth component. Both frameworks can provide guidance in developing blended learning content and processes to support active, lifelong learners.

We have also looked at seven sample configurations of blended learning design: blended face-to-face class, blended online class, flipped classroom, rotation model, self-blend model, blended MOOC and flexible-mode courses. When it comes to blended learning models, one size does not fit all; teachers and learning designers should offer blended learning activities to best suit the content, the learners' needs and the curriculum requirements.

Finally, we considered the relationship between blended learning and technology-enabled learning, using the SAMR model — substitution, augmentation, modification and redefinition — to describe how technology can be progressively integrated into the classroom.

Guided by these theoretical frameworks and models, we turn in Chapter Three to the development of purposeful and successful blended learning, from initial instructional design decisions to evaluation.

REFLECTION QUESTIONS

1. Identify the six components of the CABLS framework as applied to your own teaching setting. How might this framework support improvements in your teaching setting?
2. Consider your own course as you review the questions in the CoI Survey found in Appendix 1. Are all three presences — cognitive, teaching and social — represented?
3. Consider the seven blended learning structures as they might be used in your own teaching setting. Which do you think would be most successful? Which do you find most appealing in your context? Design your own model of blended learning.
4. Consider the SAMR model as it might apply to your teaching setting. At which stage of technology integration are you currently? What might it take to move to the next stage?

Resources for Further Reading

The Community of Inquiry resource site, including an overview of the CoI framework, survey and key publications. Retrieved from http://coi.athabascau.ca/

Common Sense Education. (2016). Introduction to the SAMR model. *Common Sense Education*. Retrieved from https://www.youtube.com/watch?v=9b5yvgKQdqE

O'Connell, A. (2016). Seven blended learning models used today in higher ed. Retrieved from http://acrobatiq.com/seven-blended-learning-models-used-today-in-higher-ed/

Wang, Y., Han, X., & Yang, J. (2015). Revisiting the blended learning literature: Using a complex adaptive systems framework. *Journal of Educational Technology & Society, 18*(2), 380–393. Retrieved from https://www.j-ets.net/ETS/journals/18_2/28.pdf

CHAPTER 3: Successful Blended Learning



In this chapter, we begin to focus on the implementation of blended learning, providing central principles for planning blended learning in keeping with the ideas and theories presented in Chapters 1 and 2. Chapter 4 will provide more concrete instructional design examples to use when actually creating blended courses.

Introduction

The most effective blended learning design offers a learner-centred approach that is personalisable and accessible (Baldwin-Evans, 2006), with the best designs integrating a range of learning opportunities that allow learners more control over their formal and informal learning actions. The most impactful blended learning:

- follows training for teachers in using in-person activities and technology, and creating the right blend of activities for deep, meaningful learning, and
- includes opportunities for students to adjust to the online learning environment, and new principles for teachers to consider when thinking about teaching and learning, both online and in person.

Here we will look at each of these factors in turn, outlining a design process grounded in a set of principles and a theoretical framework to guide you in developing an appropriate blend of online and in-person activities and an effective learning environment.

Preparing for Blended Learning

For several decades, technology has been purchased and provided to schools and classrooms, often without careful planning for usage. Technological developments and opportunities raced ahead of

our ability to understand how to use the devices so that both students and teachers could engage in collaborative deep and meaningful learning.

However, blended learning is more than technology in the classroom. According to Beams (2017) and others, "introducing technology for the sake of technology *doesn't* work." She suggests a specific process, one that includes the following:

1. Focus on the pedagogy, and identify the benefits of blended learning design and delivery in your specific situation. In this way, the design and delivery may provide excellent outcomes and high student engagement and satisfaction. No technology for its own sake; no blended learning without benefits. Start by defining exactly what blended learning means for you and your students, based on the type of course, the subject and the students' background, and as you decide what activities to offer in person and what activities to offer online, keep these things in mind. See the Blended Learning Design Template in Appendix 2.

2. Choose your technology carefully so that all learning activities that are not in person are well-suited to the needs of the subject matter and the students. The technology and the activities must support the blended environment. Comfort and competence with the technology has to be demonstrated before the learning activities commence. Technology that supports blended learning will support (1) flexibility and personalisation for students, allowing them to learn in their own way at their own pace, and (2) activity monitoring by the teacher through learning analytics and electronic assignment submission. What the students do in person must be linked to what they do online and vice versa. Well-timed feedback balanced with supported learner independence is a keystone of successful blended learning.

3. Remember the curriculum. What are the outcomes of the programme and the course? What outcomes are in the hidden curriculum (writing skills, language, social skills, etc.)? Remember the lab rotation model, station rotation model, flexible model and virtual model. Ask yourself whether this course in this programme is appropriate for blended delivery. Do any of the common models work, or will you design your own? This is a key consideration: in all blended models, flexibility, student choice and opportunities to learn about learning should be included.

4. Create a detailed syllabus with documented learning outcomes, descriptions of technology devices, clear delivery methods, explicit engagement opportunities, and assignments aligned with learning outcomes. Have the syllabus reviewed by experienced colleagues and blended learning experts. Blended learning can be expensive and time consuming, but particularly so when errors are made; this detailed planning makes errors less likely.

We summarise this section with a quotation from Beams (2017):

> Start the process by looking at what type of digital programmes and resources will support your curriculum, instruction, and vision for blended learning. What devices or what type of technology are you going to use? What does the related professional development look like? And, how are we going to support teachers and students through the transition? One of the great things about a blended learning environment — though it's probably the hardest part — occurs when teachers can let go of the control in their room and let the students thrive. (n.p.)

Consider the Creation of Individual Blended Learning Designs

Given this emphasis on context-specific design, there is clearly no prescription, no one size that fits all for the creation of blended learning. Rather, it requires careful analysis of the in-person, classroom teaching and learning with which you may already be familiar, along with the additional flexibility, access and new modes of learning made possible through the use of technology, particularly the Internet.

The delivery of a course using both in-person and online activity for the student must be designed with reference to the students taking the course, the amount of experience they have with different types of learning and their access to technology. "Instructional design considers the learner, learning outcomes, the content of what is to be learned, instructional strategies, and results of instructional interventions" (McGee & Reis, 2012, p. 17).

As teaching and learning experts, you will engage in the following activities to create an appropriate "blend" of in-person and online activities for your courses (McGee & Reis, 2012):

1. Start by writing student-centred learning outcomes. These can influence the environment of the content delivery and learning activities and how these are connected together and assessed (online or in person).
2. Create a syllabus with a course schedule that clearly communicates when and where students will engage with content and learning activities. Blended learning requires the development of self-directed learning and time-management skills, so students need to know what the expectations and deadlines are.
3. Consider what you will do and what your students will do, and when and where. Blended courses are most effective when both online and in-person activities are intense, engaging and challenging. The two modes of delivery must link to and complement each other.
4. Avoid creating a course and a half. Just adding online activities to a traditional course will increase the workload for teachers and students. Creating a blended course should be viewed as a complete redesign where the time and place of each component is carefully selected.
5. Consider what is to be accomplished by using learning technologies in person or online: sharing of course content, group work, peer assessment, question facilitation, fostering community. Make sure to choose technology that fits the level of technical expertise of you and the students and supports course objectives.

Purposefully Integrate In-Class and Online Activities

One strategy to structure a purposeful and effective mix of in-person and online activities as outlined above is to use the teaching, social and cognitive presences of the Community of Inquiry theoretical framework to assist your design.

The Feagure 3.1. lists the three presences and their sub-categories, with bolded elements suggested as particularly suitable to each modality. Selecting the elements you may wish to highlight from each modality will help you design a blend of activities appropriate for your own teaching and learning situation.

In addition to the design of activities, the framework above introduces us to the second main factor of impactful blended learning design in this chapter: the design of opportunities for students to adjust to online learning, as well as new principles for teachers to consider when thinking about their teaching and learning.

	IN PERSON	ONLINE
TEACHING PRESENCE	**Design** **Facilitation** Direct instruction	Design **Facilitation** **Direct instruction**
SOCIAL PRESENCE	**Open communication** **Affective expression** Group cohesion	**Open communication** Affective expression **Group cohesion**
COGNITIVE PRESENCE	**Triggering event** **Exploration** **Integration** **Resolution**	Triggering event **Exploration** Integration Resolution

Figure 3.1. Activities in blended learning

Preparing Students for Blended Learning

Although it might not normally be a teacher's job to help students adjust to changes in society, it does normally fall to the teacher to support students when moving online in blended learning environments.

In a study by Cleveland-Innes, Garrison and Kinsel (2007), five areas of adjustment were noted by novice online students: a different type of interaction or communication, a new role for the instructor, a new identity as a learner, challenges with the technology, and a unique design for learning. In keeping with the Community of Inquiry framework, we noted the following adjustments in reference to the three presences.

- **Cognitive Presence:** Learners voiced concern regarding their adjustment to contributing to online content discussions that lack the visual cues available in face-to-face interaction. Some mentioned their fear of being misunderstood or saying something wrong. First-time online

learners also reported an adjustment to assuming more responsibility for their own understanding of the material without direct instruction from the professors. Concern was voiced that without more direction from the instructor, it became necessary to rely on fellow students for interpretation, and this could lead to uncertainty or dissatisfaction with learning outcomes. Several learners commented that their participation in online discussions was greater than in a traditional classroom, where they were often shy and reluctant to speak up, while others reported a feeling of intimidation when they perceived that classmates had a greater understanding of the concepts or dominated the forum discussions.

- **Social Presence:** First-time online learners need time to get comfortable communicating via text and to adjust to expressing emotion and communicating openly where no visual or other non-textual cues are available. Some appreciated connections with other learners in small group activities, while others found this difficult. Being real and sharing their ideas and personalities takes practice and support for novice online learners.
- **Teaching Presence:** Many indicated that a more visible teacher presence at the beginning of the course would ease their adjustment to the online environment, as the instructor is more of a facilitator than a purveyor of knowledge. Some reported that they needed to assume more responsibility for their own learning outcomes. Others expressed concern that the students were left to discuss content on their own without assistance from the instructor to let them know whether they were on the right track.

Teaching Principles that Support Blended Learning

The book *Teaching in Blended Learning Environments: Creating and Sustaining Communities of Inquiry* focuses on practices required of blended learning approaches and designs. This practical view of teaching provides a template for integrating in-person and online learning. We summarise the important practice points below; the book is available for free download at http://www.aupress.ca/index.php/books/120229

Blended learning is more than just a combination of delivery methods; it includes a new way of thinking about teaching and learning. First, new information and communications technology means that it is much easier to support student engagement and collaboration. Based on the Community of Inquiry theoretical framework introduced by Garrison, Anderson and Archer (2000), active learning by the student is part of the design. In addition, there is an active role for the teacher to work toward active cognitive and social presence in person and online. Different from the lecturer role as expert in traditional face-to-face teaching, or the role of tutor or facilitator in traditional distance education, a "blended" teacher is actively and collaboratively designing, facilitating and directing learning.

Second, teaching presence in blended learning environments is guided by specific principles of practice. These seven principles build on long-standing teaching requirements. However, they include principles that address connecting with students via new information and communications technologies. Be aware that "just blending face-to-face learning with information technologies cannot provide effective teaching and efficient solutions for learning" (Hadjerrouit, 2008, p. 184). It takes a new approach to teaching and

learning to create a successful blended learning environment. The following principles, in support of all three elements or "presences" in blended learning, are presented as a foundation for design, organisation, facilitation and direct instruction in blended learning environments.

1. **Design for open communication and trust.**
This principle refers to one-on-one interaction between teacher and student as well as communication to the whole group and between students. Open communication means all matters related to the course and course material are available for discussion. Concerns are raised openly by teachers or students. Agreeing at the start of the course what the rules or norms are for communication is helpful in making the learning environment open and trustworthy. For example, one rule might be "we respect everyone's opinion" or "everyone gets the chance to talk." Trust in a learning environment comes from knowing the rules, having teachers who are responsive and timely when needed, and treating everyone politely and fairly.

2. **Design for critical reflection and discourse.**
In contemporary society, it is important that students learn to think carefully about what they believe to be true, and to share their ideas carefully and thoughtfully. First, students need the opportunity to reflect during the course. This means being able to identify their thoughts and feelings when responding to course content in relation to their own experiences, opinions, events or new information. It is a way to consider their own learning and the amount and type of knowledge they are gaining. To do this ***critically*** means to carry out the reflective exercise with purpose and care, asking themselves whether what they are thinking and feeling is accurate.

3. **Create and sustain a sense of community.**
The opportunity to learn together, and even teach each other in a peer-teaching setting, is an example of social learning. According to theory by Vygotsky (1978), learning is enhanced through collaborative engagement of learning with others. As learners review and share the course material through online postings, the ensuing dialogue (whether in person or online) is where knowledge is constructed and assimilated. However, support from expert others (the teachers) supports this interaction among students, allowing them to proceed with confidence and realise learning that may not have occurred if the dialogue was limited to amateurs (the students themselves). Community supports this kind of activity. Teachers can support the development of healthy community relations by allowing for and encouraging open communication, setting norms or working together early in the course, and ensuring connections are made among all in the learning group.

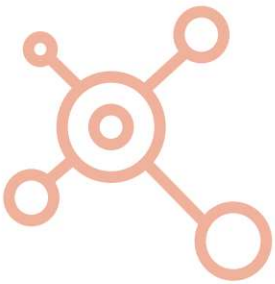
4. **Support purposeful inquiry.**
Inquiry-based learning refers to active intellectual processing during *learning*. This is meant to be in contrast to passive acceptance and memorisation of presented facts and information. The inquiry originates with an issue, problem, question, exploration or topic that provides opportunities to create or produce something that contributes to the world's knowledge. Just like the blended learning environment, inquiry teaching and learning requires a variety of roles and perspectives. Teachers provide more facilitation of learning than direct instruction. Students are offered multiple, flexible ways to approach the problem, issue or question under

study that use methods of inquiry central to the underlying discipline. The inquiry leads students to build knowledge that brings about deep understanding.

5. **Ensure students sustain collaboration.**
Sustained collaboration in the development of new knowledge for learners is a recent addition to education practices. The need for students to work collaboratively refers not only to new ways of learning and remembering course material, but also to skills required for graduates, who must live and work in a complex, interconnected social and economic world. This can be difficult to accomplish in large classes, but technology provides new opportunities for project-based group work. Blended learning presents more ways to offer connections and communication among students as ways to sustain collaboration, both in person and online.

6. **Ensure that inquiry moves to resolution.**
The components of the CoI presences will be explained further in Chapter 4. *Resolution* is one of these components, the end of the practical inquiry process that defines cognitive presence. Facilitation becomes more directive and the teacher moves students to complete, or resolve, the inquiry under study. Here, the teacher is specifically tasked with ensuring systematic and disciplined investigation that moves participants through the inquiry phases in a timely manner.

7. **Ensure assessment is congruent with intended learning outcomes.**
Planning detailed learning outcomes, ensuring the design of activities that lead to attaining these outcomes and, most importantly, ensuring their alignment with learning assessment are the marks of a sound and effective blended learning environment. There are three broad types of assessment available when designing blended learning. The first is *self-assessment*. Students are encouraged, supported or mandated to reflect on and measure their own learning progress throughout the course. *Peer-assessment* can be informal and formative, with students responding to each other's work in individual or group assignments, or it can be formal and summative, where peer evaluation is used as part of the grade for a course. Third, *teacher assessment* through assignments and examinations should be explicit, well-articulated in reference to learning outcomes, and rubric-driven such that students are clear as to why they received the grade given to their work. Ideally, *mastery assessment* is offered, whereby students may or must redo assignments or exams until they reach a level of mastery.



CONCLUSION

In this chapter, we considered two main factors for impactful blended learning design.

First, we recognised that introducing technology for technology's sake does not work and that teachers need guidance in both using the technology and creating the right blend of activities for deep, meaningful learning. Beams (2017) provided us with a design process emphasising the importance of defining our particular learning situation when selecting our blended model, online and in-person activities, and accessible technologies. We then considered five additional design activities based on clearly defining our learning outcomes and goals, and finally the role the

Community of Inquiry framework can play in selecting design elements for each modality according to the teaching, social and cognitive presences.

We then turned to the second main factor for impactful blended learning — the design of opportunities for students to adjust to online learning — as well as new principles for teaching and learning. Moving online in blended learning environments poses a number of challenges for the novice online learner, including new forms of interaction and communication that often lack visual or non-textual cues, and new roles for both learners and teachers. Addressing these challenges requires a new way of thinking about teaching and learning in which technology is used to support student engagement and collaboration. Seven principles were presented for creating open, collaborative and reflective communities of inquiry, leading to learner resolution and assessment.

Together, these two main factors — the selection of relevant activities, both in-person and online, and the creation of learner-centred communities of inquiry — are fundamental to the design of impactful blended learning. In the next chapter, we will dig more deeply into this design process, including the development of learning objectives, outcomes and lesson plans.

REFLECTION QUESTIONS

1. Using the four headings in Beams' (2017) design process, describe the most important factors that should be considered when designing blended learning solutions for your own course or programme.

2. Apply the CoI to reflect on a blend of design elements suitable for your own course or programme. If you like, expand on this selection by developing a syllabus to create an individual blended learning design.

3. What challenges do you see your own students facing in the move to online learning? What practical steps would you take to create a learner-centred CoI that meets the seven principles described above?

Resources for Further Reading

Stacey, E., & Gerbic, P. (2008). Success factors for blended learning. In *Hello! Where are you in the landscape of educational technology? Proceedings ASCILITE Melbourne 2008* (pp. 964–968). Retrieved from: http://www.ascilite.org/conferences/melbourne08/procs/stacey.pdf

These authors provide an overview of blended earning and its need in, and impact on, contemporary education. The paper identifies the requirements for successful blended learning for the institution, the teacher and the students. The authors speak of pedagogical considerations, emphasising how important it is to provide a seamless blend of learning activities in virtual and place-based settings. They also offer good suggestions for future research.

CHAPTER 4: Designing for Blended Learning



Introduction

There has been significant growth in the use of blended learning. It is clear in research findings that blended learning results in improved learning outcomes. The implementation of such blended course structures and pedagogical choices are important to these outcomes. Less research is available about the impact of implementation, but multiple models are at work. Graham, Woodfield and Harrison (2013) studied institutional adoption of blended learning at institutions at various stages of blended learning adoption, including (1) awareness/exploration, (2) adoption/early implementation and (3) mature implementation/growth. Where is your school or institution in the process of blended learning development?

This chapter begins with a look at ways institutions have restructured to include blended learning, then presents concrete instructional design examples for guidance when actually creating blended courses.

Institutions and Blended Learning

While many classroom teachers provide innovative teaching methods that can offer some form of blended learning, institutional commitment as well as an institutional review and plan can provide much-needed support and resources to ensure a comprehensive, evidence-based approach to blended learning. Graham, Woodfield and Harrison (2013) provide a caution, as indicated earlier: just using the Internet or technology in some way does not mean the learning is blended. Figure 4.1 makes this idea clearer.

As indicated in previous chapters, blended learning requires the detailed combination of learning activities using in-person and online environments, each of which will include interaction, material distribution, learning facilitation, direct instruction and, if using a COL approach, constructed organisation and design throughout the course, with dedicated student participation and critical reflection.

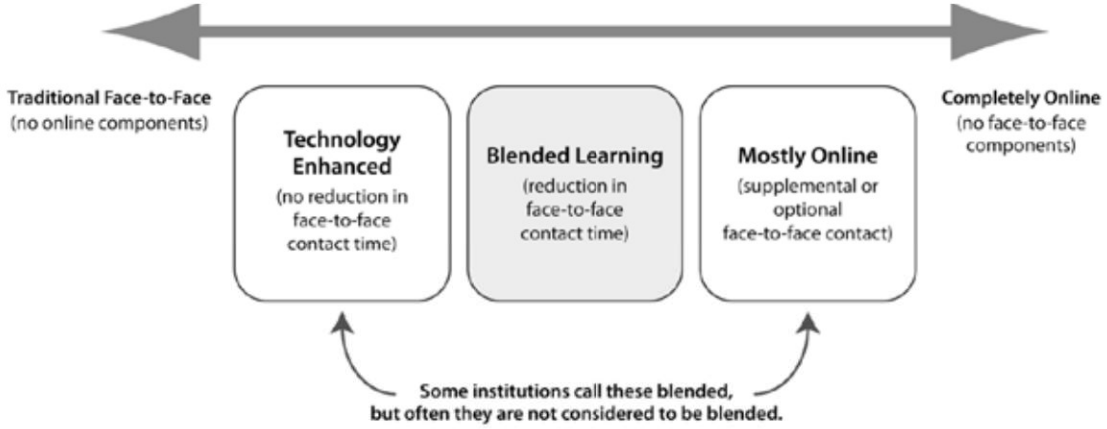


Figure 4.1. Blended learning in context

It is imprudent to try to specify how much course time should be dedicated to in-person or online interactions without considering the teaching and learning transactions, which depend on the subject, the type of materials, and the needs of the students. As the design moves from its initial conception to a later stage, the proportion may change. Some students may spend more time online in their interactions with peers, the instructor and the material, and may be less active in person. Or it may be the other way around.

This personalised, dynamic, constructed approach to blended learning has implications for the implementation of blended learning in schools and institutions. For Masoumi and Linström (2012), the integration of technology-enabled learning requires a comprehensive set of interventions to create an "e-quality infrastructure." The infrastructure is represented in their E-quality Framework, shown in Figure 4.2.

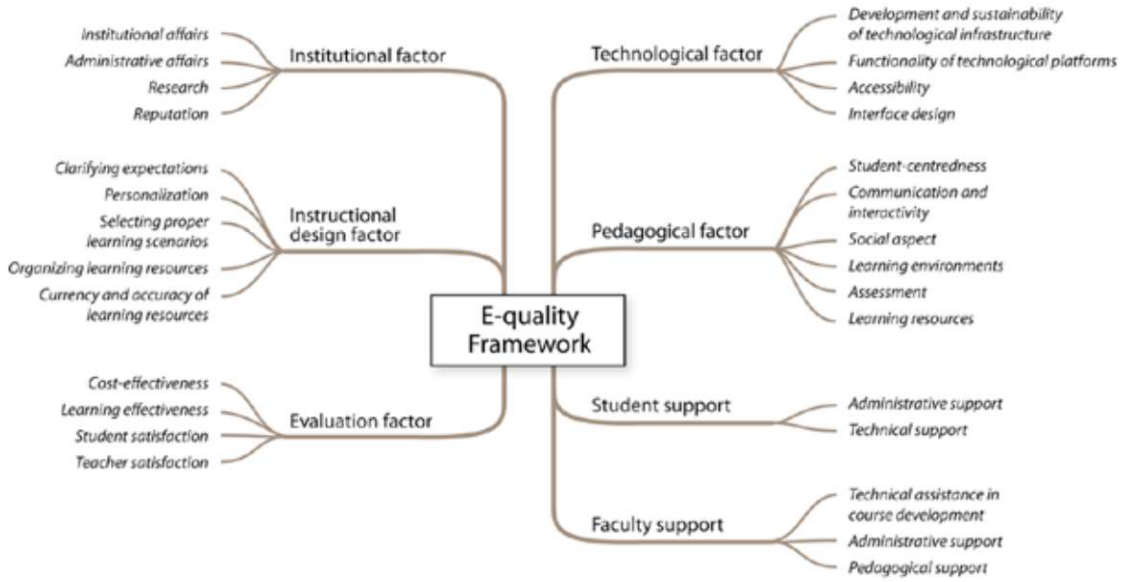


Figure 4.2. E-quality framework (adapted from Masoumi & Lindström, 2012).

Each category and subcategory listed below is outlined by Masoumi and Lindström (2012). Highlighted here are some critical pieces to consider for instructors wishing to add blended learning to their courses.

For more information about open-source tools to use at little or no cost, Capterra's guide to classroom management software is one option. "Digital classroom management and other tools don't have to soak up your budget. You can manage your classroom, instruct individual students, and conduct digital lessons for free with the top free collaboration tools and digital classroom management software."[1] Whether supporting your online course through a learning management system chosen by your institution or one you chose for yourself, it is always good to have a set of criteria that applies to your context. An LMS evaluation rubric is presented by Iles, Quigley and Tower (n.d.).

Technological factors are identified by instructors as the most relevant for blended learning, and the most challenging. You could begin by assessing your institution for available resources. Most important are sustainable and well-functioning technological infrastructures, accessibility and a useable and appealing interface design. Take time to assess what is available to you in your school, school board or surrounding area. Ideally, not only will these resources be available but instructors will have technical assistance to develop courses with a range of technologies, administrative support and pedagogical support to reference a range of learning theories and instructional activities. If you are in position to request these things so as to guide your institution or board in creating the needed technology infrastructure for blended learning, make use of Masoumi and Lindström's valuable resource to consider all necessary infrastructure resources for quality blended learning.

Instructors are often thrown into technology-enabled learning with little or no technical and professional development to assist them in adding technology to create a blended learning environment, particularly in developing countries (Stoyanov & Kirschner, 2004). If this is a do-it-yourself project, you may have to look to available resources for possible ways to use technology and engage students both in person and online.

Understand Enticers and Barriers to Blended Learning

This guidebook offers a comprehensive view of models and opportunities found in the blended learning space. Like any new way of doing things, there are both benefits and challenges to implementing innovative processes and products. We've referred to them as barriers and enticers, language from Lewin's Force Field Analysis for assessing any new activity (MindToolsVideos, 2018).

Here is a start to creating your own list of the benefits and challenges of creating blending courses and programmes in your institution (DigitalChalk, 2014):

[1] https://www.capterra.com/learning-management-system-software/#user-friendly

Benefits

- **Opportunities for collaborative learning.** Online learning spaces offer greater, more engaging collaboration experiences between students and instructors. These opportunities include collaborative tools such as online forum discussions, wikis, blogs, chat, etc. Through these tools, collaborative connections are available in or out of the online classroom.
- **Improved accessibility.** Access to classroom and online materials and communication provides convenience and learning skill development.
- **Communication improvement.** Teachers can reach part-time or full-time students through multiple communication channels. Learning management systems offer many communication opportunities: email, chat, news, forums, assignment spaces, etc.
- **Assessment strategies.** Student evaluations of both formative and summative feedback can be more detailed and frequent through online reporting structures. Self-evaluation and practice assessments can improve engagement and learning.

Challenges

- **Technological requirements.** Technological requirements include hardware, software and Internet access with appropriate bandwidth. These resource requirements can create systematic lack of access. Technology tools must be available, user-friendly, reliable and current for Internet use to support learning in a meaningful way.
- **IT knowledge and skill.** Termed IT literacy, preparation for use of technological tools is required. Lack of such knowledge and skill is a significant barrier to access in the first place and quality learning experiences thereafter. Access to technical support is a related and significant requirement.
- **Lack of self-pacing and self-direction.** Online learning both requires and encourages learner independence and management. For example, some research suggest that many students will watch multiple weeks' worth of video lectures at once rather than according to course structure. Students come to online learning with varying degrees of learning competence; supporting such learning self-management should be part of all online learning experiences.

In Chapter 8, we will discuss in more detail how to evaluate your institution's readiness for blended learning.

Peer-Review Instructional Design and Blended Course Development Plans

The peer-review process is the most respected means of testing scholarship quality. From this review comes support, intellectual development, shared resources and verified knowledge claims. Peer review, however, is rare in course design and instruction. At Athabasca University (AU), course design follows a phased creation process, which includes a principal designer as well as peer consultants, a web analyst for technology advice and a professional instructional designer. This can

provide quality assurance; 97% of our students leave our programmes ranking their education experience at AU as very good. If there is no opportunity to engage a web analyst or instructional designer at your school or institution, there is usually still the opportunity to engage in peer review.

The Peer Review of Teaching is a guidebook to the basics of peer review. It covers peer review "purposes, challenges, and common practices. The primary audience for this guide consists of departments, programmes, or schools considering implementing peer review, although individual faculty, staff, and students are likely to find what follows interesting, as well" (Brandy, n.d.).

If you do research as part of your job, you can use your course design and delivery as a research project as well. Ernest Boyer (1990) has named this the "scholarship of teaching and learning."

Writing Learning Objectives and Learning Outcomes

Learning objectives set benchmarks for learning activities, while learning outcomes set measurable outcomes to be realised from those objectives. The creative work of identifying both learning objectives and learning outcomes is part of any educational development exercise and falls under the label of instructional design.

How does the process of writing learning objectives and outcomes change with the move to blended learning? Instructional designs bridging both in-person and online learning must include appropriate learning activities for each, and activities that link the two environments become a new and critical area for learning objectives. For example, online learning activities will be specified where digital materials are used to add video, audio and graphics; troubleshooting or problem solving is best done in person; and collaborative activities should begin in person and then continue online. Most importantly, in-person learning activities must reference and build upon online learning activities. For example, an in-person session can start with a review of recent online activities; conversely, adding materials or asking questions in a new online post should reference recent in-person activities. These bridging activities are key to a successful blended learning course. For more on this, see Vaughan, Cleveland-Innes and Garrison (2013).

Grebow (2015) focuses on "pull-based learning" as performance-based. A "pull-based" approach is an example of constructivist design, where the student is engaged in continuous learning and course design. Here, students pull what they need and want from a range of information sources and share with peers and instructors.

Consider How Subject Matter May Influence Blended Learning

We know that teaching, instructional design and online learning are affected by the subject matter being taught (Arbaugh, Bangert and Cleveland-Innes, 2010). Some subjects may be supported best through hands-on learning in person, such as in science labs or art rooms. That doesn't mean it isn't possible to simulate science labs online, or teach art through video presentation or videoconferencing with students. Choosing which learning activities to assign to online spaces and which to assign to in-person learning should be done in reference to the subject you are teaching.

At COL workshops on blended learning design, a template is used to help teachers think through the design elements of blended learning. Appendix 2 presents the template, which you may like to modify and use.

Student Needs Assessment

If we return for a moment to an earlier point, we are reminded that evaluating the overall readiness for a blended programme includes an assessment of the learners' needs and preparedness for blended learning. Most learner needs assessments are generic and can be created by you in a way that determines how well learner needs align with blended learning.

Some of the areas that you can ask yourself about your learners' needs are:

- Should I gather information about learners' backgrounds? If so how I will use it?
- What kinds of access to technology do my students have?
- How will they use these technologies, and what is their skill level?

Specific questions about learner needs in reference to blended learning centre on the need for flexibility, technical skill, technology access and learning preferences. Most learners will have the relatively simple and common skills of listening and note-taking in the classroom. Working online requires different skills, but the more convenient, media-rich online environment offers increased engagement opportunities for diverse learners. Most importantly, the online environment provides practice in becoming a virtual citizen, particularly in working and learning with diverse others in mediated communication and information-rich, web-based learning spaces.

Aligning Assessment and Learning Objectives

There is student needs assessment prior to designing a blended learning course, and then there is assessment of learning within a blended learning course. As with course design, assessment of learning has to align with the course's learning objectives. John Biggs (2003) provides a design model for assessment that ensures consistency from learning objectives to assessment strategies, and from assessment strategies to teaching and learning activities, illustrated in Figure 4.3.

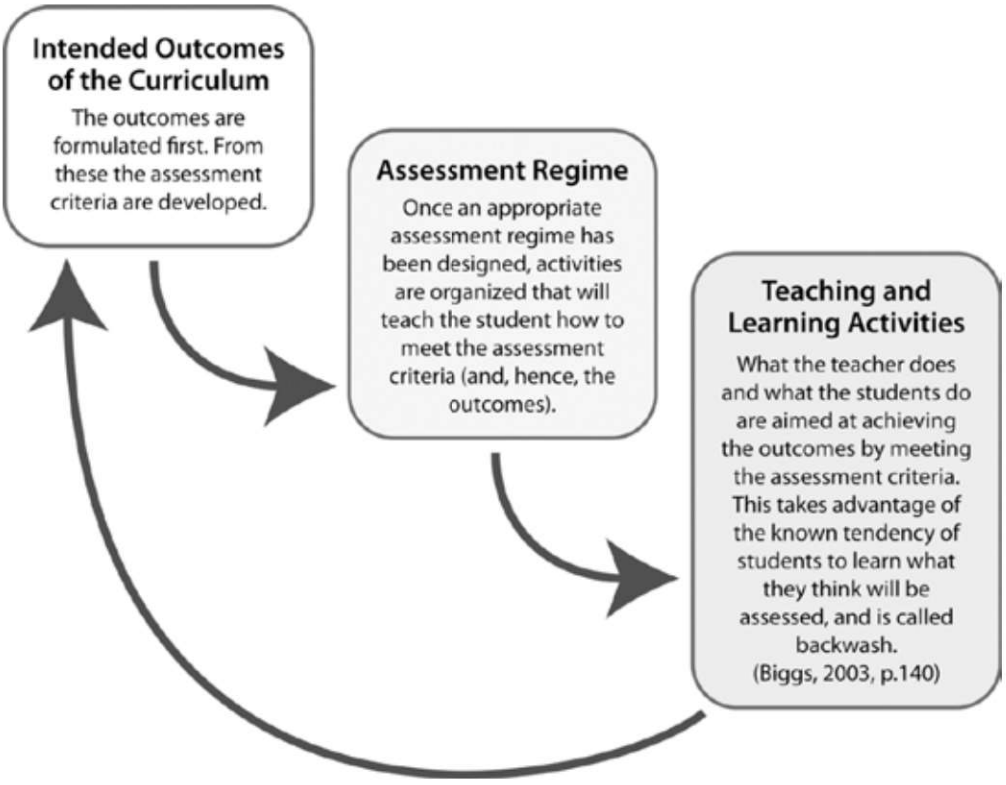


Figure 4.3. Aligning assessment with learning objectives (adapted from UCD Teaching and Learning [n.d.])

The book *Teaching in Blended Learning Environments: Creating and Sustaining Communities of Inquiry* (Vaughan et al, 2013) focuses on practices required of blended learning approaches and designs, including a chapter on assessment. Here, we emphasise three important points about assessment.

First, consider using both formative and summative assessment. In formative assessment, learning is reviewed and supported, but work is shaped and the learner continues to produce products that demonstrate knowledge and skill; this allows the diagnosis of any misunderstandings and provides feedback and guidance for continued progress. Summative assessment, on the other hand, is where learning is demonstrated and graded.

Second, we know from the literature on deep learning that assessment has a significant impact on outcomes. Assessing learning through activities involving application, problem solving and creativity fosters deep, meaningful learning.

Finally, graded activities that include collaboration and constructed thought, activity and products will also encourage students to engage in deep learning. Assessment activities can include group projects, peer assessments, presentations, theory and model building and structured academic debate. For more, see Chapter 5 of Vaughan, Cleveland-Innes and Garrison (2013).

CONCLUSION

In this chapter, we have considered the implementation of blended learning both within a larger institutional framework and at the level of an individual course or programme.

While individual teachers can often create small-scale, innovative blended learning experiences within their classrooms, larger and sustainable change typically requires the commitment, support and resources of an institution. We began with an overview of Masoumi and Lindström's E-quality Framework, which maps out the key factors — from institutional to pedagogical to evaluation — that should be considered when assessing your institution's readiness for technology-enhanced or blended learning, as well as the resources that are available or required. We also re-emphasised an important point in planning any blended learning programme: the balance between online and in-person learning is dependent on your individual educational goals and situation; trying to specify a precise mix in advance is usually counterproductive.

We then considered some of the enticers and barriers, or pros and cons, of implementing blended learning at an institutional level. While the barriers may create some resistance to adopting new blended programmes, they are also useful for indicating the range of supports necessary for successful implementation, including technological support and learner support. Establishing a peer-reviewed instructional design process can be an effective way to ensure high-quality learning materials and activities.

We then turned to key instructional design principles for implementing blended learning programmes or courses; the writing of learning objectives and learning outcomes was seen as central to this process. In blended learning, objectives and activities must be specified for each mode — online and in-person — but also for bridging the two, with activities beginning online and then continuing in person or vice versa. This bridging or referencing between online and in-person activities is critical; the two forms of learning should not seem isolated from each other. We also emphasised how the subject matter may influence the mix of your blended course or programme, as well as the importance of a thorough student needs assessment. A final consideration in implementing a blended course or programme is the alignment between the learning objectives and assessment activities, including both formative and summative assessment and assessments that encourage deep learning.

This chapter has provided a broad sketch of the most significant factors to consider when implementing blended learning. The remaining chapters will explore these factors in more detail, including the range of available technologies, and activities you may want to incorporate in your own blended learning programme.

REFLECTION QUESTIONS

1. When you consider your institution and blended learning activities, are you able to identify enticers for and barriers to blended learning?
2. How will you use learning objectives and learning outcomes when designing blended learning?
3. What learning assessment strategies do you currently use, and how will they change when you create a blended learning environment?

CHAPTER 5: Technologies for Blended Learning



Introduction

As you begin to plan out the educational technologies you will use to create your own blended learning course or program, it is important to keep in mind a very broad definition of technology that includes not only the physical equipment but also the software, services, and media options available to you.

In this chapter, we will first consider this expanded definition of technology in education and why it is important to see beyond the hardware, followed by an outline of some of the main categories of educational technologies, including their potential applications and issues.

Technology in Education: An Expanded Definition

Educational technologies are often initially defined in terms of hardware: the computers or mobile devices our students will use and the networks — wired and wireless — that connect them. The physical equipment will of course be a major and essential component of any technology plan and has to be considered carefully in terms of both available resources and learner accessibility, whether your blended model includes an in-school computer lab or a bring-your-own-device flipped classroom. We have discussed and provided guidance for some of these structural issues around technology choice in earlier sections of this guidebook, including Chapter 3 on "Successful Blended Learning."

However, one of the key themes of this guidebook is that simply introducing new technological equipment into the classroom is not sufficient for creating a blended learning environment. To understand the contributions technology can make to learning, we need a broader definition of educational technologies.

Technology is a tool or system used to solve problems. In education, that means "things or tools used to support teaching and learning" (Bates, 2015). Under this definition, educational technologies — as tools — can include software (such as word processors), systems (such as learning management systems), services (such as YouTube or Google Docs), and environments (such as virtual worlds), as well as the hardware and networks on which these all depend. It can also include traditional "technologies" such as blackboards and textbooks, though we will focus here on their online or digital counterparts.

The other component of the definition is equally important: technologies *solve problems.* A tool becomes a technology when it is applied with some intention to meet some human need; the definition of an educational technology will include its teaching or learning purpose. In many cases, this will mean delivering learning content as various forms of media (e.g., text, video, games), but it can also include social or collaborative activities (such as discussion boards or videoconferencing) or the creation of artefacts by learners (assessment activities or e-portfolios). The purposes we identify and the problems our technologies are meant to solve reflect our values and priorities as educators; our technological choices should go beyond whatever is trendy or new.

The remainder of this chapter will present an overview of some of the technologies available for teaching and learning in blended learning environments, along with example applications and key issues to consider when adopting these technologies. As you work through the list, it is important to see it not only as a catalogue of available tools but as technologies (1) creating opportunities for particular forms of learning, whether instructional, collaborative or constructive and (2) solving specific educational problems.

A Note on Technological Change and Obsolescence

Given the rapid rate of technological change, it is neither possible nor useful to try to capture a complete snapshot of currently available tools in a guidebook such as this. What is effective today may cease to exist tomorrow, replaced by an entirely new technology opening up unexpected and innovative possibilities for teaching and learning. Technologies also famously move through a "hype cycle" (Panetta, 2017), often reaching a peak of popular interest only to vanish into obscurity before reappearing with more modest, mainstream applications.

Our goal in the following is not to recommend specific tools we believe all blended-learning educators should be using. Rather, it is to present broad categories of technologies, or technological themes, that meet teaching and learning objectives and should tend to persist even as the individual tools come and go.

Learning Management Systems

A learning management system, or LMS, is often the technological cornerstone of a blended learning environment. An LMS is an integrated software application to deliver content and resources online,

to provide interaction or collaborative workspaces, and to manage complete student, course and programme administrative functions, including registration, assessment and analytics.

There are several large commercial vendors of LMSs, including Blackboard[2] and Desire2Learn,[3] as well as popular, fully functional open-source alternatives, such as Moodle[4] and Canvas.[5] An LMS is typically implemented on a school-, institution- or district-wide level and requires vendor or in-house infrastructure and technical support. However, there are also web-based classroom management systems, such as Google Classroom,[6] that can be initiated by individual teachers, as well as subscription-based LMSs, typically used for workplace training; applications of these simpler systems are often limited to posting a course syllabus, receiving student assignments and using basic discussion boards.

A full LMS can be a complete, end-to-end solution for eLearning. Having been developed originally for delivering correspondence content online, LMSs are sometimes criticised for emphasising student management while encouraging a passive transmission model of instruction, including surface-level assessments such as multiple-choice quizzes. Indeed, in a flipped classroom model of blended learning, the LMS may be used primarily to allow students to access video lectures or other content between campus-based classes. However, through the careful planning and facilitation of discussion boards, chat and collaborative workspaces (now often supporting audio or video submissions as well as text), an LMS can provide a home base or platform for learners to participate in deeper, more reflective, and constructivist-based communities of inquiry.

Another common criticism of LMSs is that they can increase student and teacher workload; as always with blended learning, it is important to consider activities within the LMS not as merely an add-on feature of the course but as integral components of the overall course structure.

We will look at LMSs again in the next chapter as key to developing blended learning, as they provide an easy way to integrate many technologies into one platform.

Web Conferencing

Web conferencing can be used in blended learning as an online counterpart to classroom-based tutorials, seminars or any synchronous (real-time) learning activity, such as collaborative, project-based work. Its most typical applications are for one-to-many slideshow-based presentations (webcasts) and many-to-many group meetings (webinars), but it can also include one-to-one private tutorial or innovative assessment sessions. Web conferencing tools are usually highly multimodal, with simultaneous video, voice, text chat, whiteboard annotations and screen sharing, making them rich and dynamic — but also complex — learning environments

[2] www.blackboard.com

[3] https://www.d2l.com

[4] https://moodle.org

[5] https://www.canvaslms.com

[6] https://classroom.google.com

The more powerful web conferencing tools, such as Adobe Connect,[7] Blackboard Collaborate[8] and Zoom,[9] are typically offered as hosted web services with subscriptions on a monthly or per-user basis, though some may be installed in-house with appropriate technical support and infrastructure. These systems often include more advanced features that can mimic certain classroom activities, such as polling or breakout groups, and can therefore be effective for varied and interesting workshop-style learning sessions. As with LMSs, there are also low-cost or free alternatives, such as Skype[10] and BigBlueButton,[11] that can be implemented by individual teachers as open-source alternative. These tools are usually more limited and are used primarily to allow for live, personal and spontaneous learning discussions and brainstorming sessions between students and teachers.

Criticisms of web conferencing in blended learning usually revolve around accessibility, complexity and capacity. As with any synchronous learning activity, web conferencing requires learners to log in at scheduled times, which may undercut some of the flexibility we hope to achieve through online blended learning. It can also require stable, high-bandwidth Internet connections, which may make it less accessible for some learners or locations. While its multimodal capabilities can ultimately lead to stimulating class sessions appealing to a wide variety of learners, they can also initially be complex and overwhelming; training sessions and ongoing technical support may be necessary. Finally, there can be capacity limitations for many of these tools or services, such as limits on the number of simultaneous users or minutes per month, which have to be considered when planning a blended learning programme.

Nevertheless, the dynamic qualities of web conferencing environments and the sense of direct, personal connection through video and voice make these tools particularly effective for developing social and teaching presence, while the potential for collaboration can lead to more creative and flexible forms of learning. We will explore some examples of synchronous learning activities in a later chapter.

Digital Textbooks

Digital textbooks, or e-texts, potentially offer significant advantages over printed texts: lower initial and updating costs; improved accessibility, flexibility and customisation (including localised material); and richer learning experiences through multimedia content, embedded assessments, and interactivity. They are often considered key components of educational reform, and several jurisdictions have begun mandating the widespread adoption of digital texts.

Digital textbooks are available both through commercial publishers and through open-source initiatives. While commercial e-texts will typically be promoted as being of higher quality or better aligned with regional or national standards, the higher cost warrants a careful comparison between commercial and open-source alternatives; open-source texts are often of equal or even higher quality and offer additional advantages. Open-source texts can be shared freely and, unlike many commercial

[7] https://www.adobe.com/products/adobeconnect.html

[8] www.blackboard.com/online-collaborative-learning/blackboard-collaborate.html

[9] https://zoom.us

[10] https://www.skype.com

[11] https://bigbluebutton.org

texts, never expire, allowing students to retain them as permanent references. They can be easily updated, modified or supplemented with locally relevant content or problem-based assessments, or adapted for special learner populations, and those modifications can in turn be shared with the broader teaching community.

Despite the potential for much lower costs, the development or adaptation of digital texts, especially those with rich media or interactive simulations, can still be a significant expense or require release time for teachers. Digital texts may also place a greater burden on students if they are expected to provide their own laptops or tablets, limiting the promise of greater accessibility. Studies have also raised the question of whether students in fact prefer printed texts, despite the convenience of bookmarking, searching and other usability features of digital texts. Nevertheless, digital textbooks will be a key educational technology in online and blended learning.



Blogs and Wikis

Blogs and wikis are online writing tools; in blended learning, blogs are primarily used for individual, reflective writing, while wikis can be very effective for collaborative research and writing activities.

A blog is an online diary that can be shared across the class or with the general public, allowing individual learners to write reflectively about their own learning and to receive feedback from their peers. Beyond reflective writing, common blog-based learning activities include reviewing and critiquing online articles or resources, journaling about experiences in project- or field-based studies (acting, in essence, as a form of e-portfolio), or citizen journalism. Recently, microblogging has become a popular form of recording momentary experiences or commenting on online references. Twitter is an example of microblogging, and while it may not be effective for deeper, reflective writing, it can be used creatively for connectivist activities such as tagging useful learning resources, as with social bookmarking, described below.

Wikis are collaborative writing spaces constructed around interlinked webpages. Using a custom markup language and management tools, learners (with the appropriate access) can create or edit any wiki page at any time, with all modifications stored in a restorable list of revisions, allowing for highly constructivist learning activities. Some common activities include brainstorming, group essays, or class books (including digital textbooks); wikis can also be effectively used for collaborative class planning or syllabi, as often found in connectivist MOOCs (cMOOCs). Wikis are very flexible and allow for a number of creative and innovative forms of learning; however, that flexibility comes at the cost of complex page management and a non-intuitive markup language, making wikis challenging for novice users.

Blogging tools and wikis are often available within LMSs or can easily be created through commercial or non-profit services such as Blogger,[12] EduBlogs[13] or WordPress.[14] MediaWiki[15] is an open-source

[12] https://www.blogger.com

[13] https://edublogs.org

[14] https://wordpress.com

[15] https://www.mediawiki.org/wiki/MediaWiki

software for creating wiki platforms. This software actually powers the Wikipedia[16] platform. We must note, however, that with any commercial service used in education, learner privacy issues must be considered.

Social Bookmarking, Mashups and Digital Storytelling

Social bookmarking is the relatively straightforward activity of collecting, tagging and sharing online resources such as articles, news reports or images. Del.isio.us,[17] Digg[18] and Scoop.It[19] are popular commercial bookmarking services, but RSS aggregators can also be included in this category. In blended learning, social bookmarking activities can provide the basis for critical in-class or online discussions about the resources themselves and the reliability of web-based information.

Mashups extend the idea of social bookmarking to allow learners to compile, combine and remix online resources and data in more structured ways to produce new interpretations or meaning. These new structured forms can include knowledge mapping, historical timelines or data visualisation and can be powerful tools for developing learners' research skills. A simple example is Wordle,[20] a web service for creating word clouds, but we can expect to see more sophisticated analytical tools emerge over the next few years.

Digital storytelling can, in turn, be considered an extension or "completion" of the notion of mashups and can be a very rich and meaningful learning experience. Through digital storytelling, learners combine a range of media — text, images, video, audio, maps and data — to craft a unified narrative. Storytelling can be a powerful way for individual learners to explore and express personal experiences, while collaborative storytelling can be the basis for group research projects and constructivist learning around multiple points of view. Course curricula can be structured around extended storytelling projects, and as learners develop their stories over the term, they also develop a wide range of digital literacies, as well as important higher learning skills such as analysing, evaluating and synthesising information. In blended learning, digital storytelling activities can be effectively combined with in-person presentations and can be applied at almost any educational level, from primary to post-secondary.

Simulations, Serious Games and Virtual Worlds

Simulations, serious games and virtual worlds are more advanced forms of educational technology, and the lines between them are often blurry.

Simple simulations can often be incorporated into blended learning as open educational resources to help illustrate mathematical, technical or scientific concepts; Khan Academy[21] offers a number of such

[16] https://en.wikipedia.org/wiki/Main_Page

[17] https://del.icio.us

[18] http://digg.com

[19] https://www.scoop.it

[20] www.wordle.net

[21] https://www.khanacademy.org

simulations. As simulations become more complex, asking learners to consider trade-offs and multiple values, they begin to take on more of the nature of a serious or applied game. A game is considered "serious" (though hopefully still "fun") when it is played with some pedagogical purpose in mind, and can include games in which learners explore environmental issues while playing the role of a city planner, or historical patterns while developing a civilization.

Some serious games, such as flight or medical simulations, immerse learners in three-dimensional settings and begin to take on the characteristics of virtual worlds. The full concept of a virtual world is reached when learners can begin to interact with other learners within the three-dimensional space. SecondLife[22] is the most familiar example, though there have been experiments with learning in "massively multiplayer online role-playing games" or MMORPGs.

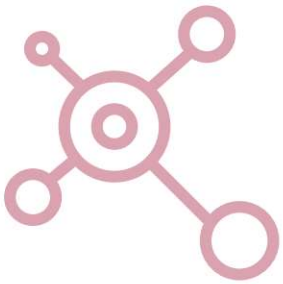
Other than simple simulations, which are commonly used in blended learning, and some serious games, these more immersive technologies can be very demanding in terms of equipment, resources and learner support.

E-portfolios

Electronic portfolios, or e-portfolios, are collections of writing, documents and other artefacts maintained individually by students to demonstrate their learning over a course or programme. Although they are typically considered in terms of assessment (e.g., as a "capstone" project) or as showcasing skills and achievements (for future employment), e-portfolios can also play an important developmental role, requiring learners to reflect on their work and evaluate it objectively. In this way, an e-portfolio becomes more than a mechanical assessment exercise; it encourages learners to take a broader, holistic view of their learning, to understand their own learning progress over time and to find meaning in the work they have done.

Electronic portfolios can be integrated into LMSs or be based on software or web-based applications, and they can be valuable additions in any learning environment — online, in-person or blended. Mahara[23] is an open-source e-portfolio system that can be integrated into Moodle.

CONCLUSION



In this chapter, we have surveyed a range of technologies and tools that you can consider when planning your blended learning programme or course. We have used a broad definition of technology, including systems, software and services, to encourage you to look beyond the hardware; simply incorporating new technological equipment or devices without considering applications or how they support learning activities will not lead to effective blended learning experiences.

[22] https://secondlife.com

[23] https://mahara.org

Technology changes rapidly, with older tools becoming obsolete as new technologies emerge, bringing new pedagogical opportunities. We have therefore emphasised broad categories of technologies rather than simply listing the latest popular tools, with the belief that understanding the uses of different forms of technologies, their implications for teaching and learning as well as their potential issues will better prepare you for adapting your blended learning in the face of constant technological change.

The technological centrepiece for most blended learning plans is the learning management system; we will continue to explore the role of the LMS in the next chapter. We have also given an initial sketch of learning activities possible through both synchronous (e.g., web conferencing and virtual worlds) and asynchronous (e.g., wikis and social bookmarking) tools; this sketch will be filled out in later chapters. Above all, we hope to have given you a rich picture of the potential uses of technologies in blended learning, from collaborative learning through web conferencing or wiki-based activities, to deep learning through blogs or digital storytelling projects.

There are many technologies with important educational applications that we could not include here. For example, social networks such as Facebook allow for the establishment of learning communities outside an LMS, while social media applications such as YouTube can be useful for teachers who want to find or create their own open educational resources, or for learners as a platform for video-based learning activities. We encourage you to continue exploring these and other technologies, to find new and innovative uses for them in your own blended learning courses or programmes, and whenever possible to share your ideas and learning activities with others.

REFLECTION QUESTIONS

1. Consider which technology applications you have used and which are new to you. How might you use them in a blended course design?
2. Web-conferencing offers much opportunity for student engagement and interaction. GoogleHangout, Skype and BigBlueButton are available to you and your students even if your institution doesn't offer a web-conferencing tool. Can you envision where in your blended course one of these tools might be used and what educational experience it could provide that otherwise might not be possible? Which of the three suggested here look user friendly and accessible to you?
3. Review the description of e-portfolios. How might you or your students make use of such a tool?

CHAPTER 6: Development of Blended Learning



Introduction

In this chapter, we will take a closer look at the development process for blended learning. Integrating an online component into your course introduces new technical and design considerations, from the initial design of your learning management system (LMS) to assessment strategies, and you will see how you can customise your course or programme to support deeper, more meaningful learning. The chapter also includes an overview of the important topic of open education and open educational resources.

The Role and Common Features of a Learning Management System

We provided a general description of LMSs in Chapter 5. An LMS is your central piece of technology to support the online version of your blended course and is a place to document all activities, including in-person activities, throughout the blended course. This section of Chapter 6 will provide more detail about the elements of an LMS and how they can be used in a blended course.

It is possible that part of your blended learning development will include the selection of an LMS for education delivery. The LMS is a software application that will help you do many things, including manage the course material layout, engage the students with each other, organise the assessments, provide student feedback, and plan the communication process among the students, between the student and the instructor, and between the student and the materials. In other words, an effective LMS will help you engage, facilitate, track and evaluate the many different types of teaching and learning elements involved in a blended learning course or programme.

Here are four principles to consider when matching your LMS to your blended learning course design.

- First, make sure you use the technology to support multiple learning strategies, but provide choice for students who may be more or less confident and more or less comfortable using technology in certain ways for their learning experience. Do your best not to dictate the activities, only to support the outcomes.
- Second, using the technology is part of the hidden curriculum and provides learning development not just about the content, but about learning and the technology itself. Make sure that you are prepared to support all the challenges that may arise as part of using the LMS.
- Third, use aspects of the LMS to provide the blend, that being the space between the in-person and online learning environments. In other words, you want to be consistently weaving links between the in-person activities and the online activities. The LMS can record and remind everyone about all of the activities that are taking place, as a way to provide a consistent web between the two learning environments.
- Finally, while the LMS will be home base, or the mothership, don't forget the potential to link to mobile and further cloud technologies to support what the LMS offers.

Based on the work done by the designers of the Accord LMS, the following are some common questions for LMS users, with some brief answers.

1. **How do I choose between a proprietary or open-source LMS?**
   Open-source LMS models are an attractive choice because resources that might go to buy the LMS can be spent on customizing and implementing the software. However, it's important to realize that technical resources must be available and dedicated to building and maintaining the open LMS. There are costs required to design, implement, and support the learning activities available in the open-source learning management system. Often the licensing fee paid for proprietary learning management systems comes along with the technical support and expertise required for the successful running of a course on an LMS platform.

2. **What authoring tools will your instructional designers need to put the course together using the LMS?**
   The learning materials that will populate the LMS will be of many kinds. Once the syllabus is designed and clearly articulated learning objectives are prepared, then the choices must be made as to which materials, and in what form, will support the learning. Often text-based materials that provide reading activities for the students make up a large portion of the learning activities. These can often be embedded quite easily into standard LMS platforms. Other software tools to create audio clips and videos must be evaluated and chosen for use. There are also graphic packages and authoring software tools that must be considered. Tools such as Articulate[24] and Lectora[25] are popular authoring tools, and Camtasia[26] is a commonly used audio and video capturing tool. Researching and exploring all these tools is a significant part of

[24] https://articulate.com/

[25] https://www.trivantis.com/products/lectora-online-authoring

[26] https://www.techsmith.com/video-editor.html

creating your online environment with an LMS, particularly in such a way that the in-person activities are well linked to all that's being done online.

3. **What type of interface tools do I need to link the LMS to student tracking systems and other software used outside the LMS and/or in the education institution itself?**
Your choice of an application programme interface to serve your purposes will depend on the web service you are using, how large and complex your course or courses are going to be, and the number of connections you're going to have to make. If you are in an education institution, these kinds of decisions are often made across the institution. If you are working more individually, you may have to find and/or develop the expertise on these kinds of interfaces yourself.

4. **What kind of support will I need?**
An LMS must be uploaded, connected, designed and deployed. The support should start before you even launch the system. You must speak to your team of experts to put all the pieces together, or to your vendor if you are using proprietary platforms. There are training requirements for the implementation and deployment of an LMS. However, you once you are familiar with the platform you're using and how all the necessary connections are made, each subsequent deployment gets much easier!

Adding Some TEC-VARIETY, by Curtis J. Bonk and Elaine Khoo, provides 100+ activities for motivating and retaining learners online. We recommend that you download the book from https://tec-variety.com.

Create Learning Activities Based on Blended Learning Best Practices

In this guide, we have reviewed many lists and ideas that refer to best practices for blended learning as researchers and practitioners in the field. To develop your own list of best practices, we suggest you consider the many topics discussed so far, relating them to your specific situation, including your subject, your students' needs, the available technology and the types of intended learning outcomes.

Customise as Needed for Context and Learners in Every Design

In the tradition of constructivism, the course creation process should be dynamic, flexible, creative and ready to take advantage of all the opportunities of blended learning. However, customisation of your course follows a temporal sequence: the course design should be planned to begin with engagement, then allow for immersion in the experience, and finally wrap up.

The Community of Inquiry theoretical framework for designing blended learning provides empirical support for pedagogical activities throughout the blended course. The elements of social presence, open communication, group cohesion and self-presentation are most critical at the beginning and the end of the course. The opportunity to be social in both in-person and online spaces creates enhanced and unique opportunities for learners to get to know their fellow students. This is the basis

for the collaborative, constructed learning environment that provides high levels of engagement and a high probability of realising deep, meaningful learning for students. In using an LMS for a blended environment, the elements of social presence can be supported both in person and online.

Cognitive presence, the process of moving through content via triggering events, exploration, integration and resolution, builds on the foundation of a sound, socially present community. Group cohesion provides safety and support, and open communication allows people the voice necessary to respond to triggers, explore their thoughts and emotions, integrate what they're learning with what they already know and come to a solution of application and understanding. While the LMS's most notable role is to organise the online component of the course, it is critical for it also to refer to, record and integrate as artefacts and uploaded materials what is happening in the in-person environment.

Teaching presence of course refers to the activities that monitor, manage and coordinate the social and cognitive activities in the community. I want to remind you that teaching presence in a blended community of inquiry includes the design and organisation as set out at the beginning of the course, and that the activities, interactions and student needs are adjusted formatively as the course unfolds. Beyond design and organisation, teaching presence also includes direct instruction and the facilitation of learning. Direct instruction is most often done by the instructor of record, particularly in the beginning stages of the course. As the community evolves, it's more likely that students will begin teaching each other, or at least offering considerable peer support where difficulties with content occur. The facilitation of learning refers particularly to cognitive support but can include all kinds of learning support and encouragement. This can be done by both the instructor of record and the students themselves.

The Delaware Department of Education in the United States provides an example of the link between blended learning and OER, through province-wide legislation that supports online virtual networks to provide digital resources and data analysis capabilities for the delivery of "blended learning to personalise instruction for students" (Delaware Department of Education, 2016).

The customisation of blended learning environments, based on the needs of the student, the subject matter itself, the type of LMS, and the mix or blend of in-person and online activities, is the most essential and beneficial aspect of a blended learning environment. It provides you, as the course designer and instructor, the opportunity to use many types of learning in the construction of a complex but well-managed blended learning environment.

Finding, Using and Creating Open Educational Resources

Open educational resources (OER) are defined by the United Nations as any type of educational materials in the public domain or introduced with an open licence. Critical to supporting open knowledge and open access, OER are learning materials supporting legal and free (a) copying, (b) usage, (c) adaptation and (d) sharing. These resources can be anything from textbooks to syllabi, lecture notes, tests, videos or animations. OER offer the opportunity to provide access, quality

and cost-effectiveness in education delivery and have led to significant dialogue around policies for knowledge sharing and capacity building in the social and economic global world.

While OER are not a necessity for successful blended learning, these two education innovations combine to make a powerful contribution to high-quality, accessible and affordable education. Using well-designed, available OER can free up resources that can then be used to design and deliver blended learning opportunities.



We encourage you to register for the short two-hour course Understanding Open Educational Resources.[27] This course will help you gain a basic understanding of what OER are and why you should consider using them in your teaching; it also provides links to further resources. You can receive a certificate when you complete the test.

Identify Useful Sources of OER

Creative Commons[28] is a global, collaborative movement for the sharing of free, international, easy-to-use materials. The goal of this international community is to enable greater access and equality; it supports education for everyone. Those who created and now support and use Creative Commons believe in sharing and collaborating on materials such that the full potential of the Web will be realised; most importantly, this will also be true for the individuals who will use it. Creative Commons provides a set of licences for anyone to use while releasing any teaching or learning resources as OER. The licences also provide a technical solution to tag the resources with a machine-readable language to identify them as OER. This allows potential users to filter their searches by "usage rights" in Google Advanced Search.[29]

There are many platforms through which you can find and share OER. The Community College Consortium for OER,[30] in the United States provides a common place to link several resources.

[27] https://learnoer.col.org

[28] https://creativecommons.org

[29] https://www.google.ca/advanced_search

[30] https://www.cccoer.org/learn/find-oer

Learning Assessment Strategies Available in Blended Learning

We re-emphasise here that blended learning includes reshaping the roles of instructors and students and re-inventing relationships and practices in teaching and learning environments. Based on these foundational changes, learning assessment also plays out differently.

Assessment was identified in Chapter 4 as a critical piece of your blended learning course design. Understanding assessment and assessment strategies is essential for instructors and students engaged in the co-creating of their blended learning experience. As an instructor, you will need to identify and implement explicit assessment strategies supporting not only the content learning objectives but also the learning process objectives in a blended learning environment.

Resources on Assessment Strategies for Online and Blended Learning:

Vaughan, N. (2015). *Student assessment in a blended learning environment: A triad approach*. In S. Koç, X. Liu, & P. Wachira (Eds.), Assessment in online and blended learning environments. Charlotte, NC: IAP.

Conrad, D., & Openo, J. (2018). *Assessment strategies for online learning: Engagement and authenticity*. Edmonton, AB: Athabasca University Press. Retrieved from http://www.aupress.ca/index.php/books/120279



CONCLUSION

In the previous chapter, we looked at a range of technologies you can use for your blended learning course or programme, including the learning management system as a centrepiece for your online activities. However, we stated that simply introducing new technologies into your course does not in itself create effective blended learning; they must be fully integrated into an overall teaching and learning plan. In this chapter on the development process, we have therefore emphasised the idea of customising your design and your use of these technologies to create a strong learning community and a flexible, effective blended course or programme.

We took a closer look at LMSs, including a number of questions for selecting and working within an LMS, and saw that there are four principles to consider: use the technology to support multiple learning strategies, remember that learning how to use the technology itself will be part of any blended learning experience, use the LMS to weave together in-person and online activities, and consider linking out from the LMS to other technologies, such as mobile or social applications.

We also reviewed a set of best practices for blended learning development, with a focus on designing for learning and making connections between learners, rather than a design based on the technology itself. Once again, the Community of Inquiry provides a useful framework: designing for social, cognitive and teaching presence not only leads to deeper, more meaningful learning but also can provide a temporal structure for your blended learning course or programme.

Open education and open educational resources are important and interesting topics in their own right. We have included only a brief overview here, including some of the benefits they can offer and where they can be found, but open education and OER and making significant contributions to high-quality, accessible and affordable education, and we encourage you to explore them further.

Finally, we rounded off this look at the development process by considering how your assessment strategies may change with the move to blended learning. In the next chapter, we will look more closely at the learning activities themselves as we move towards a complete blended learning design.

REFLECTION QUESTIONS

1. Think back to opportunities you've had to use or create OERs. How might this enhance your blended learning design?
2. Review again the common features of a Learning Management System. How do these features represent any LMS you've used before? Which common features to you feel are most critical to a successful blended learning design?
3. Can you think of any challenges you may have adding a Creative Commons license to resources you create for you blended learning courses?

Resources for Further Reading

Marrinan, H., Firth, S., Hipgrave, D., & Jimenez-Soto, E. (2015). "Let's Take it to the Clouds: The Potential of Educational Innovations, Including Blended Learning, for Capacity Building in Developing Countries." *International Journal of Health Policy and Management*, *4*(9), 571–573. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4556572/

This article reviews the benefits of blended learning in education and the workforce in the context of developing countries.

CHAPTER 7: Synchronous and Asynchronous Activities



Introduction

In the previous chapter, we looked at implementing a blended learning course or programme within a learning management system, and we introduced open educational resources as tools for providing content and supporting learning. In other words, we have so far considered the structure and the fixed elements of our design. But we have not yet asked what our learners will *do* in our blended course or programme.

In this chapter, our focus will be on the learning activities themselves. An effective blended learning course or programme will include a balance between synchronous (time-coordinated) and asynchronous (time-independent) activities, and we will examine both in turn, including their benefits and their challenges. Finally, we will look at why the careful integration of both forms of activity is essential for effective blended learning and how the Community of Inquiry framework can provide us with a guide to activity design.

Synchronous Activities for Blended Learning

We will begin our discussion by looking at synchronous activities as part of the blend in a learning experience where all students participate in the same synchronous and asynchronous activities. Note that this form of blending is different from having blended students, where some participate online and others participate in person. Blending online and in-person students is more like former videoconferencing models, where the teacher is there in person with a number of students while other students are participating virtually via some type of technology. This is blended participation, but not blended learning! See Wang, Quek and Hu (2017) for more information about designing blended participation environments.

Contemporary blended learning allows the same students in the same course to experience both synchronous engagement, where participants are **doing the same thing at the same time**, and asynchronous engagement, where students are **learning together separately at different times**.

Let's start by exploring the synchronous opportunities of blended learning. Synchronous learning is not the same as in-person learning; synchronous learning activities can be created both in person *and* online. In fact, we can no longer refer to in-person, place-based learning participation as "face to face" or "classroom based." We have long been able to be face to face using technology, although expensive videoconferencing equipment was required until Internet software applications became available. Now, virtual classrooms and face-to-face opportunities are readily available at a much lower cost. We no longer have to miss body language and facial expressions when working at a distance.

As defined by the eLearning industry, synchronous learning happens in real time. The learners can meet in person at the same place, or log on to an eLearning platform that offers web conferencing or webinar tools to engage with the instructor and peers. This can be as simple as an online chat room where all agree to meet at a specific time and date, or as complex as a tool that offers presentation space, webcam software, and chat boxes. Some research suggests that distracted or unmotivated learners benefit from the active, collaborative synchronous experience. Self-guided learners may be in less need of remediation but can also benefit from the higher level of immediate support and direction offered in synchronous learning experiences (Pappas, 2015a).

In a blended course or programme, synchronous learning is often in-person, place-based classroom learning. However, blended learning can also mean technology-enabled synchronous learning. In this case, the synchronous engagement may be text based but in real time at the same time. More often, however, it uses technology that provides the full range of visual cues normally available with in-person, place-based engagement, and the communication method is primarily verbal, allowing for dialogue in real time. Some examples of these technologies are videoconferencing, audioconferencing, live web-casting, online chat or instant messaging. Popular but proprietary applications such as Skype, Zoom, Blue Jeans or AdobeConnect offer video, audio and chat; BigBlueButton is an open-source alternative designed for online learning and can be integrated directly into most learning management systems.

Examples of Synchronous Activities for Models of Blended Learning

Synchronous learning has some advantages, whether it is in person or technologically enabled and online. A great deal of research identifies the importance of immediate feedback as learners participate in a learning experience; synchronous learning provides more opportunity for such feedback, allowing learners to make immediate adjustments to skill, knowledge and performance. Group activities such as brainstorming are more easily provided and facilitated synchronously, and they support cognitive presence in the exploration phase or the more difficult analysis and integration phases. The social obligation to be present and participate adds a layer of motivation and enhances social presence, encouraging communication and adding to group cohesion. These in turn can support increased engagement and improve the likelihood of deep, meaningful learning.

Asynchronous Activities for Blended Learning

As the name suggests, asynchronous learning is about learning that happens not at the same time or in the same place. Students learn at their own pace and time from anywhere in the world. Most asynchronous learning environments provide teaching materials online; learners read/view the materials and then participate in online discussion forums. As such, asynchronous learning involves the ability to maintain communication without having to meet in the same place and at the same time. Asynchronous learning networks (ALNs) all have a common conference space (e.g., a virtual blackboard, email, a chat room) available where everyone can post, read or respond to a message, all within the same shared spaced. (Varde & Fogler, n.d.).

Asynchronous activities allow learners to engage in learning activities at their convenience, unrestricted by when other learners or the instructor participate in the course. Each learner decides when and how to engage with the online resources, and the necessary tools and information are available at all times. To provide structure and support, there are deadlines and schedules that learners must follow; some instructors provide maximum flexibility with loose deadlines, while others may require learners to participate and follow timelines more strictly. As we saw in the previous chapter, asynchronous and blended courses usually have a learning management system that provides a common space where learners can socialise, post questions, turn in assignments or engage in suggested or self-directed learning activities.

Examples of Asynchronous Activities for Models of Blended Learning

The online learning management space for asynchronous learning activities is a complex space with many activity opportunities. Learners will often be in the space alone, yet through their engagement with the written discussions, artefacts and other traces of activity by the instructor and other learners, the space can feel active and dynamic.

To encourage learners to be present as whole persons and not just students, create a "social café" for them to stop in and share personal and social aspects of their lives. Individual students can decide how comfortable they are with sharing personal information, or rules can be discussed and laid out by the group. There can also be a "news" forum, where interesting events or applications related to the subject of the course can be identified and discussed. The mainstay of asynchronous learning is a weekly discussion board, where weekly content is presented and discussion questions are raised. Discussion boards can be led by instructors, or students can be assigned topics to facilitate throughout the course. Audio and video clips, visuals, graphics and links to other collaborative spaces or information are provided in all these spaces.

Balancing the Practical Implications of Synchronous and Asynchronous Activities

So how much synchronous engagement should be included in our blended learning design, and how much should be asynchronous? Of our synchronous activities, how much should be in person and place based, and how much can be offered through virtual tools?

Synchronous opportunities must first be considered and weighed against the more convenient and accessible asynchronous learning. Secondly, once the amount of desired synchronous learning is determined, the choice between in-person and online synchronous learning must be considered. Throughout, the learner must remain at the centre of our decisions. As we saw in Chapter 2, the Complex Adaptive Blended Learning System emphasises close alignment between technology and learners.

For some learners, limited network bandwidth or the greater complexity of synchronous technologies may create obstacles for synchronous learning. The long-standing use of asynchronous learning in distance education also means that asynchronous tools outnumber those for synchronous learning and can be as simple as some form of text-based chat. Asynchronous learning provides flexibility and convenience, without the travel time or costs of in-person synchronous learning or the bandwidth demands of technology-based synchronous learning. There are also training implications of additional technology usage: blends that include technologically enabled synchronous learning must include the support needed to adjust to the new learning environment.

On the other hand, while synchronous learning may impose restrictions for both teachers and students in terms of accessibility, convenience and flexibility, particularly with respect to time, the benefits of traditional classroom engagement and immediacy are difficult to achieve with asynchronous learning.

Here are the most critical questions to review when deciding how much synchronous learning to include in your blend:

1. What are the costs to learners of being required to engage synchronously?
2. Do the benefits of increased immediate support and dialogue outweigh the costs of being required to engage synchronously?
3. Are the costs of travel and time to be present in person greater than the costs of having to ensure the necessary bandwidth and the skill development to participate synchronously online?

The following table outlines some of the advantages and disadvantages of synchronous and asynchronous learning.

Table 7.1. Advantages and disadvantages of synchronous learning

	ADVANTAGES	DISADVANTAGES
SYNCHRONOUS LEARNING	• Discussion and collaboration in real time • Immediate feedback • Time and cost savings • Instructor assessment of learning via observation • Increased engagement and motivation via social presence	• Requirement to participate in the same place at the same time • Can require advanced technical infrastructure and skill • Quality of engagement depends on facilitator skill • Learner self-pacing less available
ASYNCHRONOUS LEARNING	• Anytime, anywhere learning • Convenient access to course process and materials • Time for research and reflection before responding • Instructor assessment of learning via reflection and thoughtful response • Written expression more thorough and detailed	• Potential for feelings of isolation, lack of connection • Self-pacing requires increased levels of self-direction • Quality of engagement depends on facilitator skill • No immediate access to instructor

Preparing to Design for Learning through Synchronous and Asynchronous Activities

Now that you understand the affordances and possibilities of each, Table 7.2 presents some examples of how to use synchronous and asynchronous learning opportunities.

Table 7.2. Using synchronous and asynchronous learning

	ASYNCHRONOUS	SYNCHRONOUS
WHEN?	• Reflecting on complex issues • When synchronous meetings cannot be scheduled because of work, family or other commitments	• Discussing less complex issues • Getting acquainted • Planning tasks

	ASYNCHRONOUS	SYNCHRONOUS
WHY?	• Students have more time to reflect because the sender does not expect an immediate answer	• Students become more committed and motivated because a quick response is expected
HOW?	• Use asynchronous means such as email, discussion boards and blogs	• Use synchronous means such as videoconferencing, IM and chat, and complement with face-to-face meetings
EXAMPLES	• Student expected to reflect on a course topic and maintain blog journal • Students may critically assess their peers' ideas through a discussion forum	• Students expected to work in groups may be advised to IM as support for getting to know one another • Instructor wants to present concepts from the literature in a simplified way by giving an online lecture using videoconferencing

Source: Hrastinski (2008)

Note that the blend of activities includes different roles for both instructor and learner, and that synchronous learning includes more verbal engagement while asynchronous activities are more text driven and production based. Social, cognitive and teaching presence will be part of both synchronous learning (whether in person or online) and asynchronous learning.

Besides the practical implications described above and the additional learning involved in the expanded use of technology itself, research provides evidence that the blend of synchronous and asynchronous learning increases the quality of student–student and student–teacher interactions, encourages expanded and increased student engagement, and may improve learning outcomes (Hastie, Hung, Chen and Kinshuk, 2010).

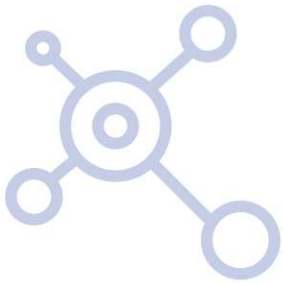
However, there are pedagogical advantages and disadvantages to both types of activities. Some learners like synchronous learning because in-person and/or face-to-face instruction provides a human connection still unavailable with just voice or text interaction. For others, asynchronous online learning environments provide more thinking and reflection time, allowing for greater precision and direct responses to complex questions. By deliberately including supports for these multiple activities, well-designed blended learning opportunities increase the likelihood that all learners will benefit to a greater or lesser extent from all types of learning activities, making the development of learning competence a further outcome of blended learning.

The Community of Inquiry theoretical framework can guide, support and direct your design of blended teaching and learning activities. The framework is particularly valuable here because it places at its core the active presence of a teacher working toward the active cognitive and social presence of all the participants. Unlike the lecturer transmitting accepted knowledge in traditional face-to-face teaching (the sage on the stage), or the role of instructor in traditional distance education (a guide on the side), the teacher in a blended environment is collaboratively present in designing, facilitating and directing the educational experience.

The chart in Figure 7.1, adapted from Vaughan, Cleveland-Innes and Garrison (2013), provides examples for creating a learning climate in your blended design.

ACTIVITY	DESCRIPTION
INTRODUCTORY LETTER OR VIDEO CLIP	Consider composing a letter or creating a YouTube video clip that welcomes students, briefly describes your teaching philosophy and suggests the role you envision for students in the course. This letter or video clip can then be posted to an introductory discussion forum in a learning management system, where students can comment on your introduction and also introduce themselves.
POWERFUL LEARNING EXPERIENCE DISCUSSION	On the first day of class, engage your students in an exercise where they each reflect back on an event that was a very powerful learning experience for them — it might or might not have been school related. Have the students first individually record their reflections and then form small groups to share their learning experiences and discuss why they were powerful. Debrief as a whole class about what makes learning experiences powerful, and relate the discussion to the blended teaching and learning approaches that you have envisioned for your course.
LEARNING PREFERENCES INVENTORY	Ask students to take a learning preferences inventory (a number of them can be found on the Internet) and to reflect on their individual results. Ask them to answer: "What specific learning strategies and study behaviours will help me succeed in this course?" Individual written reflections can be turned in, posted to a discussion forum or shared in small groups.
DISCUSSION WITH PREVIOUS STUDENTS	Invite a couple of students from a previous class to attend the introductory face-to-face session or to join an online discussion to talk about the nature of the course as they experienced it. They can share study approaches they found helpful and generally give suggestions about how best to take advantage of the blended learning environment to succeed in the course.

Figure 7.1. Activities in blended learning



CONCLUSION

Effective blended learning requires the careful planning of both synchronous and asynchronous activities. In this chapter, we have reviewed both forms of learning, paying particular attention to the practical and pedagogical implications of each.

We saw that synchronous activities, where participants learn together by doing the same thing at the same time, offer a degree of human connection, engagement and immediacy that is difficult to achieve through asynchronous learning, but they also have significant practical implications that can limit their flexibility or accessibility. We further saw that asynchronous activities, where students learn together but at separate times and in

separate locations, may feel more isolating for learners; conversely, they can allow learners to achieve deeper reflection and greater precision when confronted with complex problems.

To find the right balance of synchronous and asynchronous activities for your own blended learning course or programme, keep the learner at the centre of your decisions, including the additional technological demands and support that may be required. The Community of Inquiry framework provides a particularly valuable guide for designing integrated blended learning experiences that include social, cognitive and teaching presences for your learners.

With this chapter on activities for your blended learning course or programme, our journey through the design and implementation of blended learning is almost complete. In our next chapter, we will look at the evaluation of your design, including a review of all the design steps we have taken so far.

REFLECTION QUESTIONS

1. Online learning now can be face to face and in real time. What do you think are the main challenges of online synchronous activities?

2. Consider the similarities and differences between meeting face to face in person and face to face online. In your current education environment, how will you balance these two face-to-face opportunities in your blended course design?

3. How do you currently create a good learning climate in your courses? How will this change in a blended design?

Resources for Further Reading

To consider synchronous and asynchronous learning in the context of digital education broadly, we recommend a recent book by Dr. Tony Bates. It is an excellent reference, freely available via the Internet:

Bates, T. (2015). *Teaching in the digital age*. BC Open Textbooks. Retrieved from https://opentextbc.ca/teachinginadigitalage/

CHAPTER 8: Evaluating Successful Blended Learning



Introduction

This chapter will explore various dimensions of evaluation in reference to blended learning. Drawing in all that you have learned so far in this guidebook, it will give you a framework not only to evaluate your particular blended learning course or programme but also to weigh the pros and cons of different learning designs, identify key principles and gradually develop your own personal teaching philosophy for blended learning.

Models for Evaluating the Design and Delivery of Blended Learning

Although blended learning is now part of the narrative in education almost everywhere, it can still be a challenge to define and describe the concept. Many who are looking at or already working with blended models are doing so with little support or training. Requirements for engaging processes and quality outcomes are often not obvious to administrators, faculty, instructors or students.

Further, expertise in technology implementation, instructional design, teaching models and learning theory must be developed or accessed. Four general factors must be represented in the design and evaluation of blended learning:

- the pattern of delivery mode, which sequences and combines in-person or face-to-face engagement with independent and collaborative online social and cognitive activities;
- the materials, technology and media used;

- the use of varying pedagogical models, representing unique teaching patterns and learner actions, such as inquiry-based, constructivism, behaviourism, experiential and others; and
- the temporality of synchronous and asynchronous methods.

The quality of a blended learning course or programme must be assessed, with appropriate guidelines representing the granular practices and outcomes of blending many different teaching and learning opportunities.

This comprehensive guide is an attempt to help navigate this complex challenge and begin to understand the components of blended learning, its benefits and value, and the required design processes. While blended learning is really nothing more than employing a variety of media and methods to provide a mix of online and face-to-face learning, it can become a very difficult process to select from the range of possible combinations of elements, sequences and pacings. Once a blended learning design is in place, formative evaluation (continuous during the course or programme) and summative evaluation (at the conclusion of the course or programme) must be a seminal part of the quality assurance process.

In considering the quality of blended learning, it is helpful to look at the use of online environments and what they offer education. For quality online learning, certain requirements must be present as key parts of any blended environment; these requirements can also be extended to synchronous or in-person activities as the more traditional part of the blend.

Online learning can:

- increase access;
- foster equity in the learning environment, as it is colour and gender blind and class neutral;
- create affordable, convenient learning opportunities, and
- develop expanded learning skills for students related to self-direction, self-regulation and collaboration.

Online opportunities can provide quality education to an expanded audience previously left out of exclusive and often costly, geographically bound, place-based education. Blended learning, as a further development of online learning, should strive to create these same benefits for learners through both its online and in-person, face-to-face components.

With such a range of possible factors for assessing quality and improvement, how then do we evaluate our blended learning courses and programmes? Quality assessment rubrics for blended learning have yet to be well-researched and implemented, and a significant, widely accepted instrument to evaluate blended learning quality is still unavailable. According to Smythe (2017), "the means to evaluate its effectiveness is frequently lacking since there are a relatively limited range of tools and methods that support staff in designing blended learning curricula" (p. 854). Creating such an instrument is a major undertaking; blended learning incorporates and integrates traditional and online delivery methods, making it much more complex than unimodal delivery. This guidebook is one step towards this larger goal, and although evaluation rubrics normally follow curriculum processes, here we offer you advice and templating suggestions for blended learning evaluation.

In our search for rubrics to recommend, we looked for a tool that included "aspects not obvious to instructors or learners, such as instructional design, course development, and the use of technology" (Smythe, 2017, p. 855). Some early tools and rubrics are available and in use, with varying levels of sophistication in measurement and concepts. In other words, opportunities to measure blended learning quality also vary in quality! We recommend reviewing the tools suggested below, looking for others to add to your knowledge base, and then considering developing rubrics and concept maps for your own use.

Blended Course Learnability Evaluation Checklist

The Blended Course Learnability Evaluation Checklist,[31] developed by the Commonwealth of Learning, can be used to measure the quality of a blended course or as a guide during course development. This tool is divided into six sections, all evaluating the key aspects of a blended course as identified by this guide. This tool can be used as a design template or as an evaluation tool after design and implementation.

Using Community of Inquiry Indicators to Assess Presence in Blended Learning

Earlier in this guide, we reviewed the Community of Inquiry theoretical framework. The framework offers pedagogical guidance for designers, instructors and students interested in collaborative, constructivist learning environments to foster deep learning. The main model includes three presences, as indicated in Table 8.1. Each presence also has sub-elements or characteristics that indicate when a participant is present.

Emotional presence has been suggested as a fourth presence. More research is underway to test the place of emotions in this theoretical framework. However, early indicators are that emotions play an important part in the design and evaluation of blended learning. The preliminary definition of emotional presence is "the outward expression of emotion, affect, and feeling by individuals and among individuals in a community of inquiry, as they relate to and interact with the learning technology, course content, students, and the instructor" (Cleveland-Innes & Campbell, 2012, p. 289). This aspect of the learning environment must be considered in person and online, synchronously and asynchronously.

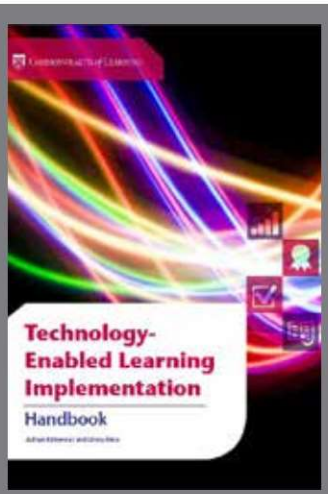
[31] http://oasis.col.org/handle/11599/2941

Table 8.1. Evaluation indicators for blended learning in the CoI framework

	ELEMENTS	INDICATORS
SOCIAL PRESENCE	Open communication	Learning climate/risk-free expression
	Group cohesion	Group identity/collaboration
	Personal expression	Self-projection
COGNITIVE PRESENCE	Triggering event	Sense of puzzlement
	Exploration	Information exchange
	Integration	Connecting ideas
	Resolution	Applying new ideas
TEACHING PRESENCE	Design and organisation	Setting curriculum and methods
	Facilitating discourse	Shaping constructive exchange
	Direct instruction	Focusing and resolving issues
EMOTIONAL PRESENCE	Affective expression	Emotional language
	Conflict acceptance	Positive and negative emotions
		Responses to emotional expression

A survey instrument has been developed to support evaluation through the Community of Inquiry theoretical framework. This survey is taken from the instructor's point of view and measures the extent to which these four presences are evident in a blended course of study. The item indicators in the survey instrument can be used not only during and after a course to test the activities with respect to each presence, but also during the design phase. See Appendix 1 for a list of indicators, and consider which learning activities could be offered for each element to become "present" during the course.

The Technology-Enabled Learning Handbook,[32] published by the Commonwealth of Learning, provides a tool to analyse institutional preparedness for TEL (in Appendix 3, section C). It covers policy, strategic planning, IT support, technology availability, content, documentation, organisational culture, leadership, training, and availability of champions, where you can score your current situation on a scale of 1–5: 1 = strongly disagree or does not exist; 2 = disagree or only marginally demonstrates existence; 3 = neither agree nor disagree or existence or otherwise is difficult to explain; 4 = agree or it does exist; 5 = strongly agree or it definitely exists and is well established. The sum of the score in all the criteria can be interpreted using Appendix 4 of the Handbook.



[32] http://oasis.col.org/handle/11599/2363

Preparing for Evaluating Blended Learning Design

Adapted from Weimer's (2002) *Learner-Centered Teaching*, the following principles of student-centred learning will help guide your evaluation of your blended learning designs:

- Student-centred learning shifts the balance of classroom power from teacher to student, thus fostering active learning and engagement among peers.
- Student-centred learning enables critical thinking and is a means to develop knowledge rather than a collection of facts, by building upon and challenging prior learning.
- Student-centred learning situates the teacher as facilitator and contributor rather than authoritarian and director of knowledge.
- Student-centred learning returns the responsibility for learning to the students, so they are able to discover their strengths and weaknesses and take part in directing their own knowledge gain.
- Student-centred learning employs effective assessment to promote learning and inform future practice.

You may also find the work of Cleveland-Innes and Emes (2005) helpful when considering a learner-centred curriculum.

As identified in the introductory video of this chapter, we suggest you create your blended learning design and look back and ask whether you've followed through on the ideas, principles and models identified in this guidebook. Have you considered the roles of the learner and the teacher, technology, content, learner support and institution, as outlined by the CABLS framework? Have you ensured an effective blend of social, cognitive, teaching and emotional presence as described by the Community of Inquiry framework? In other words, ask yourself objectively whether your design meets your original intentions for creating a blended learning course or programme.

Make sure to review the key factors for creating successful blended learning, especially the importance of supporting both teachers and learners as they adapt to new roles and methods for teaching and learning in a blended environment. Again, you can evaluate using these questions: Have you created the necessary conditions for effective blended learning, including a learning environment that supports open communication and trust, reflection and discourse, a sense of community and purposeful inquiry? Have you created opportunities for learners to collaborate, and have you adequately prepared them for this form of learning?

Finally, when implementing technology for synchronous and asynchronous online learning, remember that assessment tools to measure achievement of outcomes can also be supported through technology. Assessments of student learning and of your blended learning model's impact will together provide useful evidence for continuous improvement in your blended learning design.

CONCLUSION

In this chapter, we reviewed a selection of toolkits and rubrics, as well as the Community of Inquiry survey instrument, as useful tools for conducting evaluations of your own blended learning course or programme. We also considered a number of key questions and principles for creating effective, student-centred learning. You are now prepared not only to design effective blended learning, but also to demonstrate its effectiveness through reliable and appropriate evaluation.

It is important to show the worth of an education intervention. We know that blended learning works when planned and delivered well, but administrators and managers of blended learning will need evidence of this. However, evaluation also provides us with a valuable opportunity to reflect, revise and improve that which did not work well, and we recommend that you look at evaluation through the lens of "continuous improvement" and make the process your own.

You have now reached the end of the *Guide to Blended Learning*!

Throughout this guide, we have emphasised the wide variety of potential blended learning designs and provided you with frameworks, models, tips and examples to help you structure a blended learning course or programme to meet your students' needs in your own learning context. As with any design process, developing effective blended learning is not about following a particular recipe but about combining key principles with your own experience, reflection and critical judgement.

We also hope to have inspired you with a vision of the open, learner-centred education possible through blended learning. Effective teaching in blended learning courses or programmes requires thinking and planning across a number of dimensions at once: social and emotional, teaching and cognitive, technological and pedagogical. Again, the Community of Inquiry theoretical framework can guide you in considering the full range of these dimensions. We encourage you now to reflect on your own personal teaching philosophy and ask yourself how it applies or can be adapted to teaching in blended learning environments.

We wish you the best on your journey as a blended learning developer, designer and instructor.

REFLECTION QUESTIONS

Now that you have come to the end of this guide, we hope you have enjoyed it and also developed a blended course. If so, you can use the following to prepare a reflective essay on your experiences:

Step 1: Describe

Describe your experience of designing and delivering blended learning. Objectively answer the following prompts to describe the activities:

- What did you do?
- Why did you do it? What was the perceived advantage of the design planned?
- What happened as a result of the design?
- How did the course progress?
- What were the unique features of the course that you introduced?

Step 2: Examine

Critique your experiences of teaching a blended course. Use the following prompts to write your response:

- What new things happened in this course that you had not experienced before?
- Why do you think these were special and important for student learning?
- How did your students react to the blended course?
- What could you have done better?
- Did the course go as planned?
- What challenges arose during the course, and how did you approach solving them?

Step 3: Learning

Use your responses to the prompts in steps 1 and 2 of this reflection template to create a thoughtful essay wherein you articulate what you have learned from the experience. Each of the following questions should be addressed in your essay:

- What did you learn from this experience?
- How did you learn it?
- Why does it matter to you as a teacher?

- How does this experience relate to the institutional mission and vision?
- What might/should further be done in the light of your experiences?

Resources for Further Reading

Blended Learning Toolkit[33]

The Blended Learning Toolkit was created by the University of Central Florida (UCF) and the American Association of State Colleges and Universities with funding from Next Generation Learning Challenges. UCF is well known for its excellent work in the research and practice of education innovation and provides the toolkit as an open educational resource under a Creative Commons Attribution-NonCommercial-ShareAlike licence.

The section on Evaluation Resources[34] is particularly valuable, offering a number of resources to evaluate impact, including the impact of blended learning on courses, programmes and institutions themselves. Valid and reliable survey instruments are offered for use with students and instructors at no cost.

Note that this toolkit provides other valuable supports for starting your blended learning practice. See the Do-It-Yourself templates[35] and Blended Learning Stories[36] from educators and institutions to support and inspire your work.

Blended Learning Course Quality Rubric[37]

This rubric was created by staff at the University of Ottawa, in Canada. One key benefit of this rubric is the comprehensive coverage of required aspects of blended learning. Course design, learner support and resources, use of technology, course organisation and content presentation are some of the topics covered by this rubric.

[33] https://blended.online.ucf.edu

[34] https://blended.online.ucf.edu/evaluation-resources

[35] https://blended.online.ucf.edu/blendkit-course-diy-project-tasks

[36] https://blended.online.ucf.edu/blendkit-course-stories

[37] https://tlss.uottawa.ca/site/files/docs/TLSS/blended_funding/2017/TLSSQARubric.pdf

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APPENDIX 1. Community of Inquiry Blended Learning Evaluation

SP: Social Presence **CP:** Cognitive Presence **TP:** Teaching Presence **EP:** Emotional Presence

	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE	
1. Students in my course can describe ways to test and apply the knowledge learned.	1	2	3	4	5	**CP:** *Resolution*
2. My actions reinforce the development of a sense of community among course participants.	1	2	3	4	5	**TP:** *Facilitation*
3. Students in my course are motivated to explore content-related questions.	1	2	3	4	5	**CP:** *Triggering Event*
4. Course activities pique students' curiosity.	1	2	3	4	5	**CP:** *Triggering Event*
5. I acknowledge emotion expressed by the students in my course.	1	2	3	4	5	**EP:** *(Teaching Presence)*
6. I clearly communicate important due dates/time frames for learning activities.	1	2	3	4	5	**TP:** *Design and Organisation*
7. Students in my course are able to form distinct impressions of some other course participants.	1	2	3	4	5	**SP:** *Personal Expression*
8. I clearly communicate important course goals.	1	2	3	4	5	**TP:** *Design and Organisation*
9. I provide feedback in a timely fashion.	1	2	3	4	5	**TP:** *Direct Instruction*
10. I provide feedback that helps students understand their strengths and weaknesses relative to the course goals and objectives.	1	2	3	4	5	**TP:** *Direct Instruction*

	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE	
11. I help to identify areas of agreement and disagreement on course topics in a way that helps students to learn.	1	2	3	4	5	**TP:** *Facilitation*
12. Students feel comfortable disagreeing with other course participants while still maintaining a sense of trust.	1	2	3	4	5	**SP:** *Group Cohesion*
13. Reflection on course content and discussions helps students understand fundamental concept.	1	2	3	4	5	**CP:** *Integration*
14. Expressing emotion in relation to sharing ideas is acceptable in my course.	1	2	3	4	5	**EP:** *(Cognitive Presence)*
15. Online discussions are facilitated in a way that is valuable for helping students appreciate different perspectives.	1	2	3	4	5	**CP:** *Exploration*
16. I encourage course participants to explore new concepts in my course.	1	2	3	4	5	**TP:** *Facilitation*
17. I clearly communicate important course topics.	1	2	3	4	5	**TP:** *Design and Organisation*
18. Combining new information helps students answer questions raised in course activities.	1	2	3	4	5	**CP:** *Integration*
19. Brainstorming and finding relevant information help students resolve content-related questions.	1	2	3	4	5	**CP:** *Exploration*
20. In my role as instructor, I demonstrate emotion in my presentations and/or when facilitating discussions, online or face to face.	1	2	3	4	5	**EP:** *(Teaching Presence)*

	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE	
21. Learning activities help students construct explanations/solutions.	1	2	3	4	5	**CP:** *Integration*
22. Students feel their point of view is acknowledged by other course participants.	1	2	3	4	5	**SP:** *Group Cohesion*
23. Students in my course feel comfortable taking on the role of teacher when the opportunity arises.	1	2	3	4	5	**TP:** *Facilitation*
24. Students utilise a variety of information sources to explore problems posed in my course.	1	2	3	4	5	**CP:** *Exploration*
25. I keep course participants engaged and participating in productive dialogue.	1	2	3	4	5	**TP:** *Facilitation*
26. Students feel comfortable interacting with other course participants.	1	2	3	4	5	**SP:** *Open Communication*
27. I provide clear instructions on how to participate in course learning activities.	1	2	3	4	5	**TP:** *Design and Organisation*
28. I find myself responding emotionally about ideas or learning activities in my course.	1	2	3	4	5	**EP:** *(Cognitive Presence)*
29. Getting to know other course participants gives students a sense of belonging in my course.	1	2	3	4	5	**SP:** *Personal Expression*
30. Students feel comfortable conversing online or face to face in my course.	1	2	3	4	5	**SP:** *Open Communication*
31. Online or web-based communication is an excellent medium for interaction with and among my students.	1	2	3	4	5	**SP:** *Personal Expression*

	STRONGLY DISAGREE	DISAGREE	NEUTRAL	AGREE	STRONGLY AGREE	
32. Problems posed increase student interest in course content.	1	2	3	4	5	**CP:** *Triggering Event*
33. Students feel comfortable expressing emotion through the online medium or in the face-to-face classroom.	1	2	3	4	5	**EP:** *(Social Presence)*
34. I help to focus discussion on relevant issues in a way that helps students to learn.	1	2	3	4	5	**TP:** *Direct Instruction*
35. Students can apply the knowledge created in my course to their work or other non-class-related activities.	1	2	3	4	5	**CP:** *Exploration*
36. Students feel comfortable participating in course discussions.	1	2	3	4	5	**SP:** *Open Communication*
37. Students develop solutions to relevant problems that can be applied in practice.	1	2	3	4	5	**CP:** *Resolution*
38. I am helpful in guiding the class towards understanding course topics in a way that helps students clarify their thinking.	1	2	3	4	5	**TP:** *Facilitation*
39. Online or face-to-face discussions can help students to develop a sense of collaboration.	1	2	3	4	5	**SP:** *Group Cohesion*
40. Emotion is expressed, online or face to face, among the students in my course.	1	2	3	4	5	**EP:** *(Social Presence)*

APPENDIX 2. COL's Blended Learning Design Template

Programme: _____

Course title: _____

Course facilitator: _____

Course description: {Write a brief description of the course in about 200 words.}_____

_____

Learning objectives: The learners in this course are expected to be able to: {Using action verbs, provide a bulleted list of what the students will be able to do after going through this course.}

_____

Course structure:

Course Structure by Unit	Learning Outcomes	Assessments: F2F/Moodle-enabled	Learning Activities: F2F/Moodle-enabled	Learning Content: F2F/Moodle-enabled		Facilitating Online
				Self-created/ Web Resources	Supportive OER with TASL Attribution	
Unit 1	LO 1 LO 2 LO 3 LO 4	FA 1 (LO 1) FA 2 (LO 1) SA 1 (LO 1 & 2) FA 3 LO 3 FA 4 LO 4 SA 2 (LO 3 & 4)				
Unit 2						
Unit 3						
Unit 4						
Unit 5						

Notes:

1. Learning outcomes: Statements that specify what learners will be able to do as a result of learning
2. Assessments: Formative assessment (FA), Summative Assessment (SA), Peer Assessment or Self-assessment and Tools (MCQ, essay-type questions, project work, etc.)
3. Learning activities: active learning, collaborative learning, constructive learning, social learning
4. Learning content: Print – textbooks, downloadable PDF/PPT/Word documents; Multimedia – lecture videos, animations, images, YouTube/Vimeo/Khan Academy videos, OER, etc.
5. Facilitating online:
   a) Create a course introductory video (about this course, learning outcomes, course outline, learning activities and assessments, grading policy, expected participation) and a unit introductory video, if required.
   b) Share course handout/session plan/academic plan.
   c) Send introductory email to students one week prior to course start date with pre-course preparatory activities.
   d) Share your contact details and times, channels of communication and turnaround times for grading assignments and responding to students' queries.
   e) Provide contact details of technical support staff for troubleshooting login issues.
   f) Create FAQ on how to access and navigate the course site and learning resources, and how to submit learning activities and assessments.
   g) Send weekly email communication to students to wrap up a unit/topic and introduce the next unit/topic.
   h) Engage learners in interaction with peers and faculty, either synchronous or asynchronous.
   i) Provide learning support through discussion forums. Create forums for:
      - introductions
      - course announcements (to establish online course presence)
      - posting general queries and seeking learning support (encourage students to provide peer support)
      - posting learning reflections (encourage students to rate their peers' reflections)
   j) Engage learners in self-reflection, knowledge sharing and co-creation, recognising learners' contributions with badges.
   k) Track student progress — course participation, completion of activities and assessments — and alert non-participants.
   l) Create rubrics for maintaining transparency in grading.
   m) Provide timely and constructive feedback/feed-forward to improve learning.
   n) Seek students' feedback on course and self.

(Source: The first version of this template was prepared by Dr Indira Koneru.)

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LEARNING FOR SUSTAINABLE DEVELOPMENT