CHAPTER ONE

THE R2D2 MODEL

Read, Reflect, Display, and Do

The Web of Learning

Given that you have decided to read at least part of this book, chances are you have explored online learning and become enthralled by its tools, resources, and overall educational potential. Other times you probably have experienced extensive frustration and hesitation. As we mentioned in the Preface to this book, we have named the place you have entered many times "the Web of Learning." We use this phrase in an attempt to help online educators, learners, and policymakers focus on what is available or potentially available online for *learning* instead of on the technologies. Within the Web of Learning metaphor, educational professionals can begin to design models and frameworks that can clarify and simplify online educational possibilities. Our hope is that more innovative, engaging, and exciting pedagogy will ensue.

The Web of Learning contains a plethora of educationally relevant and continually evolving resources, tools, and learning materials, many of which are increasingly open and free to the world. What will you find there? Without too much digging, you will discover online games, virtual worlds, simulations, online conferences or professional meetings, podcasts (typically, online audio files that can be downloaded or listened to) on nearly any topic imaginable, community-developed resources such as wikis, cultural and historical information, links to museums, libraries, and learning resource centers spanning the

planet, and countless visual records of human history. Any of these resources and materials can be embedded in online courses and programs.

But many educators are stymied when they enter the Web of Learning, and rightfully so. There seems to be an endless number of learning portals and resources relevant to one's courses, a growing number of tools that one can utilize within a course, and thousands of resources that might find their way into online course activities. With so many instructional opportunities, technology tools, and e-learning resources and materials inundating instructors today, it is not surprising that many simply choose to ignore the Web of Learning or use it in the most minimal way possible. To help those who are hesitant or resistant, we offer more than 100 ideas for employing the Web of Learning in fully online and blended courses. And we provide a model or framework for reflecting on and organizing or compartmentalizing such activities.

The Need for a Comprehensive Online Teaching Model

As noted in the Preface, there is a mounting need to address diverse learning preferences and various generations of learners. It is clear that e-learning tools and learning approaches within the Web of Learning hold exciting possibilities for personalizing the learning experience of young and old, visual as well as verbal learners, and digitally inexperienced as well as digitally savvy online learners. Unfortunately, currently popular online learning courseware of most any stripe or name (that is, course management systems [CMSs], learning management systems [LMSs], virtual learning environments [VLEs], and so on) is severely limited in the means to address the diverse needs of online learners. As most online instructors and students realize, typical online courses rely heavily on text-based assignments and intensive online readings. Course materials, including syllabi, handouts, PowerPoint presentations, assignments, and online discussion activities, are primarily available in written text (though, as Chapters Six and Seven make evident, there has been a recent shifting toward augmenting or perhaps even transforming such activities with visual learning enhancements).

In any online environment today, communications either among students or between students and instructors—the heart and soul of online learning (especially in higher education)—are mostly achieved through written formats such as e-mails, discussion boards, and text chats. The lack of visual tools such as graphics, charts, diagrams, and the like challenges learners who would prefer visuals of some type to help with their conceptualizations, manipulations, and memorizations. Reflective learners may also find text-based readings less engaging, since they tend to prefer to learn through various forms of observation and deep pondering. Likewise, those who resonate with hands-on activities and

real-world applications would most likely anxiously look for the same experiences in their online learning tasks and activities. Suffice to say, most online courses, no matter what the discipline, topic, audience, or work sector, are limited in scope and fail to take advantage of the abundant educational opportunities in the Web of Learning.

The Read, Reflect, Display, and Do Model

For educational progress, it is vital to make sense of this mammoth Web of Learning. The Read, Reflect, Display, and Do (R2D2) model was designed specifically for addressing varied student learning preferences, diverse backgrounds and experiences, and generational differences. Some students may excel with tasks that are visual, while others might prefer hearing the words or reading from electronic or paper-based texts. Still others might want to jump in and try things out for themselves. And some individuals might be happy reflecting on expert models or their own learning journeys. Of course, most often the learning materials and activities are not as discrete as this but instead involve a combination of such approaches (for example, an activity might be both visually intense and hands-on). R2D2 can help there too!

Throughout this book there are dozens of detailed activities and examples related to the four phases of R2D2 along with suggestions on how they might be used with different types of learners and situations. Our primary goal is to divvy up the Web of Learning so that educators, trainers, teachers, tutors, mentors, freelance lecturers, and instructional designers across educational sectors will actively employ it in their own instruction, and not avoid it at all costs. Baby steps, as Bill Murray repeated to himself over and over in the movie *What About Bob?,* are perhaps what many hesitant or resistant educators need. Using pieces of the R2D2 framework is akin to taking baby steps into this extremely daunting yet enticing Web of Learning. At the same time, it can foster giant leaps for those wishing to take more extensive risks in their online teaching activities.

R2D2 arrives in an age that is overflowing with educational transitions. These transitions include the movement from lecture-dominated classes and lockstep or predefined content to the use of learner-controlled hypermedia and exploratory events. In effect, it is a revolution across educational settings, from teacher-centered content and delivery of such content to learner-enabled and learner-centered learning. There is a simultaneous shift from the primary use of face-to-face (FTF) instruction across educational settings and events to one that blends two or more delivery formats while providing a plethora of learning options. There is also an associated transformation, then, from teaching

or training only learners whom you can see and physically interact with to teaching anyone located anywhere on this planet (and beyond, of course); with R2D2 your students might go where no online learner has gone before.

As you explore this book, consider it part of a personal pilgrimage into what you can do online in the Web of Learning. This book is purposefully not laced with prescriptions, though we do offer ample suggestions, caveats, and guidelines. As such, it is perhaps most suited to those in the online teaching and learning trenches who are looking for ways to make sense of this somewhat forbidding online world. Nevertheless, this journey into the Web of Learning is meant for everyone. Use what you can and modify, ignore, or discard the rest. Safe journeys!

On the Road to R2D2

As indicated, there are four phases—Read, Reflect, Display, and Do—within the R2D2 model. Based on the work of many educators who have explored individual differences in learning and associated learning preferences and styles (for example, Kolb, 1984; Fleming & Mills, 1992; McCarthy, 1987), Table 1.1 provides details on the four phases of R2D2, including instructional activities that link to each area and various types of learners: auditory, verbal, reflective, observational, visual, kinesthetic, and tactile. However, nearly every activity discussed in this book addresses, at least in a small way, more than one phase and learning preference or style. Our classifications, therefore, are meant to indicate which aspect is primarily, though not solely, being addressed. If instructors, trainers, and instructional designers involved in distance learning initiatives take these four types of learning preferences into account when designing and delivering online and other forms of distance learning courses, they should experience higher levels of success.

Despite its applicability to instructional designers and the online course design process, R2D2 is not an instructional design model; instead, it is a framework for the design of online learning environments and activities. It is a lens that might be positioned over the top of one's instructional design approaches. The focus is on what instructors can enable learners to do, not necessarily what sequence of steps or procedures to embed within a training event or course.
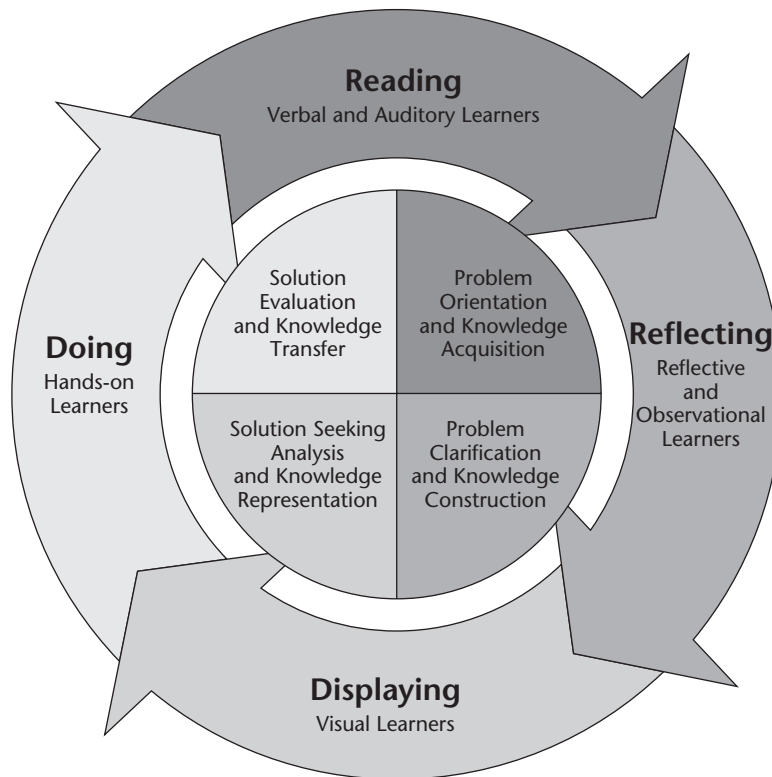
As evident in Figure 1.1, the R2D2 model aligns well with various learning style and multiple intelligence measures. In particular, it draws on ideas from Kolb's (1984) learning cycle, McCarthy's 4MAT system (1987), and the VARK (that is, visual, aural, read/write, and kinesthetic) learning style model of Fleming and Mills (1992). Like 4MAT, VARK, and many other learning style or preferences schemes, the R2D2 model proposes an integration of

TABLE 1.1.   LEARNING PREFERENCES, ACTIVITIES, AND TECHNOLOGIES IN R2D2.

Phase and Type of Learner	Learning Preferences and Activities	Sample Technology Resources and Tools
1. Read: Auditory and verbal learners	Auditory and verbal learners prefer words, sounds, and spoken or written explanations.	Podcasts, online PDF documents, sound or audio files, PowerPoint presentations, online portals, course announcements, help systems, FAQs, Webquests, online newsletters, e-books, and online journals
2. Reflect: Reflective and observational learners	Reflective and observational learners prefer to reflect, observe, view, and watch learning; they make careful judgments and view things from different perspectives, including reflection, self-testing, review, and reflective summary writing.	Blogs, synchronous chats, online exams, writing aids, electronic portfolios, asynchronous discussion, reflective writing tools, online review and self-testing aids, expert videos or performances
3. Display: Visual learners	Visual learners prefer diagrams, concept maps, flowcharts, timelines, pictures, films, and demonstrations.	Concept mapping and timeline tools, interactive news, videostreamed content, online videos, virtual field trips and tours, animations, whiteboards, videoconferencing, online videos, interactive news media, online charts and graphs and visualizations tools, video blogs (that is, vblogs), vodcasts
4. Do: Tactile and kinesthetic learners	Tactile and kinesthetic learners prefer role play, dramatization, cooperative games, simulations, scenarios, creative movement and dance, multisensory activities, manipulatives, and hands-on projects.	Simulations, online games, wikis, digital storytelling and movie making, real-time cases, video scenarios, survey research, continuous stories, groupware and collaborative tools, role play and debate tools

four types of learning activities: (1) reading, (2) reflecting (including reflective writing), (3) displaying, and (4) doing. Clearly, by targeting auditory or verbal, reflective, visual, and kinesthetic learners, R2D2 is highly similar to the VARK method. However, the R2D2 method places more emphasis on reflective activities by emphasizing writing processes and activities in the second phase of the

FIGURE 1.1. PHASES OF R2D2.

Reading
Verbal and Auditory Learners

Reflecting
Reflective
and
Observational
Learners

Doing
Hands-on
Learners

Displaying
Visual Learners

Solution
Evaluation
and Knowledge
Transfer

Problem
Orientation
and Knowledge
Acquisition

Solution Seeking
Analysis
and Knowledge
Representation

Problem
Clarification
and Knowledge
Construction

model rather than grouping them with reading, as the VARK model does. In addition, the R2D2 model has a special focus on the application of emerging learning technologies in fully online learning and blended learning.

As shown in Figure 1.1, the first phase of R2D2 (reading) relates primarily to methods to help learners acquire knowledge through such tasks as online readings, e-learning explorations, and listening to podcasted lectures. As such, it addresses verbal and auditory learners. The second phase of the model (reflecting) focuses on reflective activities such as online blogs, reflective writing, and self-check or review activities and self-testing examinations. In the third phase (displaying), visual representations of the content are highlighted with activities such as virtual tours, timelines, animations, and concept maps. The fourth

phase of the model (doing) emphasizes what learners can do with the content in hands-on activities, including simulations, scenarios, and real-time cases. When thoughtfully designed and effectively delivered, content and activities created from the R2D2 perspective are more engaging and enriching for learners.

At its core, the R2D2 model is a starting point to help online instructors understand the assorted backgrounds of online learners and become better equipped to address their diversity. Such a model can be used to appeal to the wide-ranging preferences of online learners of varied generations and different levels of Internet familiarity. It also affords users a means to apply the widely available and often free technology tools and resources in many types of online learning activities.

R2D2 may also work well for problem-based learning or in a problem-solving process in general. As indicated in Figure 1.1, the four phases of the R2D2 model introduce a variety of learning activities for the different problem-solving stages, from initial accumulation of knowledge (that is, reading) to reflecting on such knowledge (that is, reflection) to visually showing what one has learned (that is, displaying) to trying out that new knowledge (that is, doing). For example, readings address problem orientation and knowledge acquisition, whereas reflections help with problem clarification and knowledge construction. In addition, activities for displaying learning would be particularly powerful for knowledge representation of the problem or situation as well as solution seeking and analysis. Finally, the doing phase aligns well with solution evaluation and knowledge transfer in the problem-solving process.

Also worth mentioning is the dynamic nature of the model, as events occurring in different phases of the model impact other phases and may cause the learner to revisit steps already deemed completed. As a nonlinear model, R2D2 suggests a dynamic approach to online learning and encourages instructors, designers, and learners to select diverse learning activities strategically from different phases and to incorporate them in various sequences to better address learners' different needs and preferences.

While the journals and research literature devoted to e-learning continue to increase at dizzying rates, there exists a severe lack of practical models such as R2D2 that can help instructors, trainers, instructional designers, and other educational professionals with easy-to-apply learning activities that result in effective and enjoyable online learning.

As will become clear in reading this book, the R2D2 model reaches beyond any given CMS or Web-based learning platform or system. Given the infinite resources available within the Web of Learning, courses designed using this model or framework could offer online learners massive and captivating opportunities for reading, reflecting, displaying, and doing.

Linking the Phases of R2D2 to Human Problem Solving

While the chapters of this book detail four distinct phases to the R2D2 model—Read, Reflect, Display, and Do—we admit that nearly any instructional activity or approach attempted within the Web of Learning will undoubtedly involve more than one phase. Our four-part classification scheme is simply meant to indicate which aspect of learning is primarily being addressed. If online educators and trainers take these four types of learning and associated learning activities into account when designing and delivering their courses, they would likely experience higher success rates. And, as shown in Table 1.2, they might also use them to foster learner problem solving and the overall human problem-solving process.

The R2D2 model may serve as a framework to guide the design and implementation of a comprehensive problem-solving or problem-based learning environment. In fact, the four phases of R2D2 also represent different phases and steps inherent in human problem solving. For example, a problem-solving process may start with precursory reading activities to help students understand the nature of the problem or make sense of what the problem really

TABLE 1.2.   SAMPLE USE OF R2D2 FOR LEARNER PROBLEM SOLVING.

Problem-Solving Stages	Major Tasks	R2D2 Phase and Activities
Problem statement or definition	Define the task or problem	Reading
	Identify information needed to complete the task	
	Sort and filter through information, find relevant information and data	
	Listen to what experts have to say on a certain topic	
Finding paths to solutions	Brainstorm possible sources	Reading
	Evaluate the possible sources to determine priorities	Reflecting
		Writing
		Participating
Locate, access, organize, and apply information or resources to solve problems	Locate, access (read, listen to, or watch) resources and information	Reading
		Reflecting
	Synthesize information to solve problems	Displaying
		Doing
Evaluate solutions	Use and evaluate effectiveness of solutions	Doing
		Reflecting

is (that is, Phase 1: Reading). Next, the learner might move to Phase 2 with reflective activities to assist in further clarification of the problem and sort out possible problem-solving paths (Phase 2: Reflecting). Third, such a learner might then proceed to tasks involving information organization, analysis, synthesis, and representation (Phase 3: Displaying). Finally, this problem-solving cycle ends with the evaluation and use of the data that the learner has gathered and sifted through (Phase 4: Doing). While these are perhaps the most logical steps, as noted later in the chapter, it is conceivable that the problem-solving process as well as the use of the R2D2 model could unfold in the exact opposite direction.

Phase 1 of the R2D2 model is pithily and purposely labeled as "Reading." In reality, however, it involves much more than simply reading text-based materials. We believe that it is the most comprehensive and complex of the four phases. As noted in Table 1.2, the "reading phase" is the exploration, fact-finding, and knowledge acquisition stage of the learning process. You need new knowledge and ideas in order to have something to reflect upon (that is, R2D2 Phase 2), to visualize and organize (Phase 3), and to apply your learning and make it meaningful (Phase 4). Instead of overloading and boring students with written texts, Phase 1 of the model introduces a wide range of learning activities and experiences to help learners acquire knowledge, including the use of podcasting, synchronous conferencing, instant messaging, and other content-rich events and activities. It is the stage of learning meant to intrigue and engage learners in the learning process, not to bore them or cause them to promptly file out.

Phase 2 of the R2D2 model emphasizes learners' reflective processes, speaking to reflective or observational learners who learn and problem solve from watching or observing others as well as thoughtfully deliberating on expert models and examples. While closely related to Phase 1 reading activities, Phase 2 pays special attention to activities and events that stimulate personal reflection through collaboration and virtual group activities, self-questioning, reflective writing and prompting, and intense and interactive challenges.

Phase 3 of the model, displaying one's learning, is geared to visual learners. This phase of problem solving aims to help online learners not only to understand the content being taught but also to further build their own knowledge base with strategies such as concept mapping, visualization, and advance organizers.

Finally, the "Doing" phase, Phase 4 of the R2D2 model, addresses the crucial need for hands-on experiences in online learning environments, which is probably the weakest link of current e-learning phenomena. The doing phase guides instructors to utilize widely available online resources and technologies for various learning activities. These activities not only meet the expectations of those doers, but, as noted in Table 1.2, also promote knowledge application, problem solving, and other higher-order thinking skills in general.

TABLE 1.3.   LEARNING ACTIVITIES IN EACH PHASE OF R2D2.

Reading	Reflecting	Displaying	Doing
1. Online Scavenger Hunt	26. Post Model Answers	51. Anchored Instruction with Online Video	76. Web-Based Survey Research
2. Web Tours and Safaris	27. Reuse Chat Transcripts	52. Explore and Share Online Museums and Libraries	77. Video Scenario Learning
3. WebQuest	28. Workplace, Internship, or Job Reflections	53. Concept Mapping Key Information	78. Content Review Games
4. Guided Readings	29. Field and Lab Observations	54. Videostreamed Lectures and Presentations	79. Online Review and Practice Exercises
5. Discovery Readings	30. Self-Check Quizzes and Exams	55. Videostreamed Conferences and Events	80. Mock Trial or Fictional Situations
6. Foreign Language Reading Activities and Online News	31. Online Discussion Forums and Group Discussions	56. Interactive News and Documentaries	81. Online Role Play of Personalities
7. FAQ and Course Announcement Feedback	32. Online Portal Explorations and Reflections	57. Interactive Online Performances	82. Action Research
8. Question-and-Answer Sessions with Instructor	33. Lurker, Browser, or Observer in Online Groups	58. Design Evaluation	83. Interactive Fiction and Continuous Stories
9. Online Expert Chats	34. Podcast Tours	59. Design Generation	84. Real-Time Cases
10. Online Synchronous Testing	35. Personal Blogs	60. Design Reviews and Expert Commentary	85. Course Resource Wiki Site
11. Synchronous or Virtual Classroom Instructor Presentations	36. Collaborative or Team Blogs	61. Online Timeline Explorations and Safaris	86. Wikibook Projects
12. Online Webinars	37. Online Resource Libraries	62. Virtual Tours	87. Online Glossary and Resource Links Projects
13. Public Tutorials, Wizards, and Help Systems	38. Social Networking Linkages	63. Visual Web Resource Explorations	88. On-Demand and Workflow Learning

14. Expert Lectures and Commentary
15. An Online Podcast Lecture or Podcast Show
16. Audio Dramas
17. Posting Video-Based Explanations and Demonstrations
18. Online Sound or Music Training
19. Online Literature Readings
20. Online Poetry Readings
21. Posting Webliographies or Web Resources
22. Text Messaging Course Notes and Content
23. Text Messaging Course Reminders and Activities
24. Online Language Lessons
25. E-Book and Wikibook Reports and Critiques

39. Online Role Play Reflections
40. Synchronous and Asynchronous Discussion Combinations
41. Self-Check Reflection Activities
42. Electronic Portfolios
43. Individual Reflection Papers
44. Team or Group Reflective Writing Tasks
45. Super-Summaries, Portfolio Reflections, and Personal Philosophy Papers
46. Online Cases, Situations, and Vignettes
47. Satellite Discussion or Special Interest Groups
48. Small-Group Case Creations and Analyses
49. Small-Group Exam Question Challenges
50. Reaction or Position Papers

64. Animations
65. Advance Organizers: Models, Flowcharts, Diagrams, Systems, and Illustrations
66. Virtual Field Trips
67. Video Modeling and Professional Development
68. Movie Reviews for Professional Development
69. Whiteboard Demonstrations
70. Online Visualization Tools
71. Video Blogs and Adventure Learning
72. Charts and Graph Tools
73. Mashups of Google Maps
74. Broadcast Events
75. Online Multimedia and Visually Rich Cases

89. Digital Storytelling
90. Online Documentation of Internship, Field Placement, and Practicum Knowledge Applications and Experiences
91. Authentic Data Analysis
92. Online Science Labs and Simulations
93. Simulation Games
94. Simulations and Games for Higher-Level Skills
95. Client Consulting and Experiential Learning
96. Online Tutoring and Mentoring
97. Cross-Class Product Development and Creativity
98. Cross-Class Content Discussions, Analyses, Competitions, and Evaluations
99. Learner Podcast Activities, Events, and Shows
100. Design Course Web Site

Summary of Activities for R2D2

Chapters Two through Nine of this book elaborate on each phase of the model, with more details on their theoretical foundations as well as dozens of practical applications and examples. Table 1.3 summarizes the twenty-five activities related to each phase of R2D2 that we outline in Chapters Three, Five, Seven, and Nine. We recommend you use this table as a guide for your reading of the remainder of the book. Perhaps check off or circle the strategies that interest you or that you have already attempted. Then come back to this table as you read different sections of this book.

Later in the book, Chapter Ten expands upon this list by including other factors such as time intensity, cost, risk, and duration of the activity. In fact, Chapter Ten reassembles the ideas from the previous eight chapters and therefore, offers opportunities to contemplate the overall framework and power of the R2D2 model. At that time, you might ruminate on whether we met your expectations in designing a model that addresses the learning-related preferences of the highly diverse learners of this planet.

Further Thoughts on R2D2

Reading, Reflecting, Displaying, and Doing: these are the entry points for the R2D2 model. Each activity addresses a particular learning preference and type of learning. The phases may be applied independently in a lesson if a certain preference is dominant among the targeted learners as well as when a particular type of learning is believed to be the most appropriate. More practically, when attempting to address a diverse student body (or global workforce), instructors may choose activities from more than one of these phases and create a range of e-learning tasks and events for their online courses.

An online activity deemed applicable to a particular discipline, educational group, or age level can often be used substantively within another educational sector or population. With the appropriate modifications, tweaking, and guidelines, most, if not all, of the 100+ strategies described in this book can be applied to any population of learners, educational level, or training setting or situation. At the same time, they must fit with your goals and objectives. Some may require extensive modification before they are useful in your particular setting.

While R2D2 is not an instructional design model, it certainly could be applied as a practical guide for instructors in their efforts to prepare engaging learning materials and activities. For example, an instructor of an online graduate course or a teacher in a virtual high school could put together a lesson

plan by selecting and integrating some activities from each of the four phases. Such purposeful decision making would help make sure that varied learner preferences and needs are addressed with appropriate activities and methods. In such cases, these varied learning activities may be carried out in different orders as appropriate. The R2D2 model is not a linear model; thus the learning events do not necessarily sequence from reading to reflecting and then move on to displaying and still later doing.

With continued innovations in educational technologies as well as in technologies not meant for education but that quickly find use there—witness the explosion of educational uses for the iPod—it is conceivable that only a few of the activities in this book will remain viable a decade from now. Tomorrow, next week, and during the many weeks and months that follow, there will be a flurry of ideas from many sources to enhance, extend, and transform the ideas presented here. Without a doubt, the Web of Learning, or its successor, will continue to sprout new learning paths and opportunities. For those concerned with online course quality and effectiveness, it is imperative to be on the lookout for such opportunities. They will appear in a speech that you did not intend to attend, in a footnote of a research paper you stumble upon, in a newsletter from a famous training guru, or in an e-mail or Web log (blog) from a professional organization. Creative pedagogical uses of the Web of Learning can spring up from anywhere. Raise your antennae! It would be fantastic if, in teaching or training online, you discovered one or two, a few dozen, or even hundreds of ideas we have not touched on here; with the R2D2 model, you now have a classification scheme in which to organize these ideas and reflect on their use.

Some Final Words

The activities in this book are instructional templates or guides, not prescriptions. Think creatively with them. Say "Yes" or "Perhaps" before discounting or thinking "No way" to any of them. Hold off initial judgments or inner voices trying to convince you that this would never work or does not apply to me or my learners. Trust us, they can work nearly anywhere. So give it a go!

If you use any of the online resources or materials related to the 100+ activities that we describe in this book in your courses, training events, or publications, please write to the copyright owner of such materials for permission to use them. Copyright law requires that permission be requested to reproduce copyrighted materials. There are benefits, too, from contacting the original

designers of the online resources or materials, since they may have important updates or extensions to share. In addition, they likely will be ecstatic that someone is making use of some of their ideas. When this occurs, expanding networks will form that will focus on sharing educational resources and pushing educational opportunities for the learners of this planet in a positive direction. Keep pushing!