Chapter 5

Instructional Systems Design for Blended eLearning

Overview of ISD Approaches
To fully realize the benefits of blending learning, performance, and knowledge, a rich infrastructure and quality content are not enough; a solid Instructional Systems Design (ISD) that is effective for intended audiences is also imperative. And, in fact, ISD is expanding in many organizations as performance and knowledge are being integrated into the traditional “objectivist” models that have pervaded existing eLearning and CBT courseware to date. In this chapter, we’ll explore some of the theories and methods that can be applied to Blended eLearning ISD designs, as well as examples of marketplace tools that can assist with the implementation of solid and appropriate ISD objectives. Understanding the goal of the training and the final outcome is critical to achieving the expected results from a learning program, no matter what ISD approaches or theories may be behind it. But first we need to look at the traditional objectivist model of instructional development before delving into other complementary theories.

Traditional ISD has followed several models that have proven highly effective for teaching and learning in a variety of disciplines, both in the classroom and online. Models such as the “Component Display Theory” from David Merrill, the “Criterion Reference Model” from Robert Mager, and “Goal-Based Scenarios” from Roger Schank have all shaped the traditional design models most commonly found in CBT and asynchronous WBT.
However, content developers will find that as they begin to blend delivery methods, a variety of learning modalities are also available, and here several learning models may be blended, just as courseware delivery models are often blended. This issue becomes even more complex as we begin to add models that go beyond training and instruction into core knowledge and performance models that sometimes do not even look or feel like training. Plus elements of change management and performance support can and often do shape and influence the overall curriculum design for an individual module, course, or an entire series of courses. Knowledge management can shape the baseline archiving and retrieval of information that can be put into a learning context. Below is one proprietary example of how these theories might come together to form a practical model that begins to expand into the areas of blended learning, performance, and knowledge.

Case Study: The RWD Technologies®
Total Performance Support Model

![Total Performance Support Model](image)

Prepare Me
- Needs analysis
- Objectives
- Development plan
- Resources

Tell Me
- Conceptual models in procedures
- Knowledge learning outcomes
- Knowledge models

Show Me
- Instructor presentations
- Collect feedback and demonstrate
- On-the-job coaching

Let Me
- Classroom-based exercises
- Computer-based exercises

Help Me
- Job aids, online help, models
- Online performance support

Courtesy of RWD Technologies®
Prepare Me
Prepare me corresponds to the change management and awareness activities in the learning process. This can take on the change communication (e-mail, newsletters, change management activities) and pre-work before a learning event.

Tell Me
The actual learning event usually starts with an introduction to concepts and information. This can take the form of in-class presentations, distance learning sessions, or computer-based overviews. Some of these concepts might have been introduced in pre-work, but reinforcement is necessary to promote full understanding and to provide enough baseline knowledge for the learner to understand what they will see and do.

Show Me
For adult learners, it is not enough to tell them something without context. Showing it to them, particularly if it is a process or procedure, is the next logical step in understanding. Demonstrations can be performed in the classroom, on video, or online through simulation, screen recording, or movie files. Sometimes the simpler solution of one-on-one coaching and personal demonstration can be even more effective in promoting understanding. For most people, it is still not enough to just see a process or task performed and be expected to know it. It must also be practiced.

Let Me
Performing the task provides the practical, hands-on activity needed to perform a task effectively. Sometimes this is on live systems or involves the actual process in conjunction with a mentor or personal instructor. In the context of eLearning, it is often in the form of simulations, scenarios, or practical exercises. Computer-based (or web-based) practice can be particularly effective because of the personalized timeframe that can be devoted by each person until he or she feels that they have attained an appropriate level of mastery. Once mastery has been achieved, it is necessary to maintain the newly gained skill.

Help Me
If a skill is not used right away, it is easily lost. To maintain, or reinforce, knowledge and skills, ongoing performance support can be provided. For example, job aids (online or paper-based), help desk, online help,
collaboration tools, and online performance support modules can all enhance performance, even if details of a process or skill are not remembered in their entirety. The following example shows the interventions in a logical path of action, with sample deliverables.

**Recommended Learning Path And Deliverables**

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<th>Prepare Me</th>
<th>Tell Me</th>
<th>Show Me</th>
<th>On the Job</th>
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<td>- Personalized learning modules</td>
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<td>- Conceptual presentations in the classroom/Centre</td>
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| - Online performance support in the field: Phone 1-800-
  toll-free 24-7 |

Courtesy of RWD Technologies®

This is just one example of a learning model or approach that has the flexibility to accommodate learning, performance, and knowledge solutions. Based on the needs of the learner, the environment, and the type of information, a blend of more than one model might be more appropriate. The following section outlines some of these models and provides examples of how they can be used whether independently or added into an existing learning plan and approach.
Additional ISD Theories that Can Actualize Blended eLearning

Adult Learning Theory
Patricia Cross is credited with presenting a viable, heuristics-based model on how to provide effective instruction for adults. She promotes the following four core principles:

1. Adult learning programs should capitalize on the experience of participants.
2. Adult learning programs should adapt to the aging limitations of the participants.
3. Adults should be challenged to move to increasingly advanced stages of personal development.
4. Adults should have as much choice as possible in the availability and organization of learning programs.

These principles can be applied to blended learning by providing a self-service approach to learning and providing many activities that allow learners to build upon their previous experience, or contribute to a group in a collaborative fashion. The self-paced, self-service model is particularly appealing in light of the fourth guideline. Giving responsibility for the learning activity and changing the locus of control to the learner, rather than an external force (like an instructor) can make way for other theories that are closely tied to the adult learning theory from Cross.

Andragogy
Closely tied to the Adult Learning Theory is Malcolm Knowles' “Andragogy” model. This model is also an attempt to describe the principles of how adults learn, rather than how children learn (which is generally referred to as pedagogy). The core tenants of this philosophy are as follows:
1. Adults need to be involved in the planning and evaluation of their instruction.

2. Experience (including mistakes) provides the basis for learning activities.

3. Adults are most interested in learning subjects that have immediate relevance to their job or personal life.

4. Adult learning is problem-centered rather than content-oriented.

The practical implications for this model include the need for self-service that is goal-based and allows for a certain amount of planning of learning activities in relationship to larger goals like career planning and measured skill tracking (certifications, matriculations). Online access to human capital development in management (HCDM) information can be a primary motivator for adults.

Additionally, experiential learning can be achieved in the blended model through the use of role-playing and simulations that allow the learner to take a problem-oriented approach and also to provide real-world relevance. Allowing for mistakes and trial and error can also help reinforce learning. A simulation of a software product’s operation can keep these mistakes from having costly impact to systems or the business processes they support.

Goal-Based Scenarios
Another great thinker and practitioner in this area is Roger Schank of Northwestern University and Cognitive Arts, Inc. Among his many theories is the idea that the best learning is often through a scenario that has a specific goal attached. If the scenario is realistic to the final outcome, a significant effect can be the full immersion of the learner into a required role leading to the expected outcomes.
This process turns the normal "show, do, test" process upside down. The beginning is a realization of an activity that will test the learner, and a series of activities that must be done. If they can be performed without assistance, great. Most likely, a learner will need to resort to gathering additional information, or having someone provide corrective feedback to show the learner how to perform a task.

An excellent example is found in a Cognitive Arts web-based training course for Columbia University. In the course, the learner assumes the role of a caseworker who must manage the individual profiles of students, observe their behavior, and report back to management and parents about the activity observed and its implications. Soft-skills are integrated with the actual task-based activities that must be accomplished to provide a very compelling experiential learning module that represents the Goal-Based Scenario model.

Constructivism for Learners Who Are Familiar with a Knowledge Domain
Not all learning starts from a zero knowledge base. As learners progress in their careers or given disciplines, they generally have a great deal of prior knowledge to draw from. This can help learners follow a discovery learning model where more "trust" can be placed on the individual to find the information he or she might need. Let's look at several theories that support this overall concept.

Constructivism
Basing new ideas and exploration of knowledge on existing knowledge is a core tenant of Bruner's Constructivist Theory. The process is sometimes called discovery learning. Constructivism as an approach is most effective when there is a high-context culture that has previous knowledge, or analysis skills to derive a final result from a hypothesized approach. The
experimental nature of this approach makes it ideal for research-oriented knowledge domains and the sciences.

It is also possible to address the needs of a sophisticated audience that is a subset of a larger group, with less experience. Providing an alternate method for accessing information (perhaps contained in a course) can give advanced learners quicker access to needed information. As an example, a simple search engine that allows the learner to “jump” right to the section of interest could help promote ongoing performance support and also appeal to those people with enough experience to know what they need and to go out and find it. The ability to have the learner participate in the process saves valuable time by making their base need the innate, unspoken learning objective. The online testing or validation is the timely, and accurate discovery of the required information. This approach is more closely tied to concepts and knowledge than performance-oriented practices.

**Cognitive Flexibility Model**
A companion theory that is often lumped under constructivism is Rand Spiro’s Cognitive Flexibility Theory. Many experts and subject matter experts learn best using this learning theory. The reason is that it was built with complex, ill-structured domains of knowledge in mind. Examples include fast-changing fields like medicine and high tech as well as aerospace. Often times this theory manifests itself as a concept map that can be viewed from many different starting points, depending on the experience of the learner and what she is looking for. The model is often for ongoing knowledge exchange.

Examples like Google’s relevancy rating system and the GroupLens collaborative filter for Amazon’s book “recommender” allow for relevancy ratings based on previous history from an individual’s profile as well as the preferences of others with similar profiles and buying characteristics. While these tools are seldom thought of as learning resources, they are perfect examples of tools that help people who already know something about
the knowledge domain and can use that context, combined with dynamic information that the computer calculates, to derive a result in a very timely fashion.

For most practical purposes, online rating systems, concept maps as a navigation structure, and advanced search and retrieval capabilities in complex knowledge domains are the main examples of this theory in action. Collaboration can also play a role in assisting with the personalization of the singular learning/discovery event.

**Collaboration Models**

Further study of collaboration leads to several other theories and activities of early practitioners. There are many tools to help facilitate collaboration, but without a good theoretical base and practical approaches to back up the technology portion, most systems will sit dormant. First and foremost, there must be a compelling reason to collaborate for it to be effective. Contrived collaboration is easily seen through and impossible to maintain. Going back to a credible research base can help solidify the need and approach.

**The “Cooperative” Learning Theory**

Drs. David and Roger Johnson of the University of Minnesota have spent years developing a sophisticated, validated model for cooperative learning. Some of their core tenants are as follows:

It is only under certain conditions that cooperative efforts might be expected to be more productive than competitive and individualistic efforts. Those conditions are as follows:

- Clearly perceived positive interdependence
- Considerable promotive (face-to-face) interaction
- Clearly perceived individual accountability and personal responsibility to achieve the group’s goals
• Frequent use of the relevant interpersonal and small-group skills
• Frequent and regular group processing of current functioning to improve the group’s future effectiveness

All healthy cooperative relationships have these five basic elements present. This is true of peer tutoring, partner learning, peer mediation, adult work groups, families, and other cooperative relationships. This conceptual ‘yardstick’ should define any cooperative relationship.

Examples like these abound regardless of the technology used, but discussion-boards, instant messaging, peer2peer systems as well as e-mail, instant messaging, and voice and video conferencing have all proven effective in promoting these conditions. Facilitated asynchronous and synchronous learning both benefit from and enhance or validate this theory.

Communities of Practice
Etienne Wenger is perhaps the best-known advocate of communities of practice in the digital age. He writes, “Since the beginning of history, human beings have formed communities that accumulate collective learning into social practices—communities of practice. Tribes are an early example. More recent instances include the guilds of the Middle Ages that took on the stewardship of a trade, and scientific communities that collectively define what counts as valid knowledge in a specific area of investigation.” These communities can be brought to life through modern technologies that help span time and distance to bring people together to share, even if they would not normally have access to each other’s knowledge or interaction.

Rena Palloff and Keith Pratt also contribute significantly to communities of practice in their excellent books Building Learning Communities in Cyberspace and Lessons from the Cyberspace Classroom: The Realities of Online Teaching. While much of the information focuses on communities in academic
environments, key heuristics as well as their findings have
direct application in corporate and general learning
environments.

Communities of practice can be incorporated into a core
curriculum that consists of self-paced, asynchronous web-based
training. This augmentation has proven to increase retention
and connection with the course of study. It can also be used to
build an ongoing base of information that goes beyond the core
information found in the "canned" materials. Group activities
can serve to unite people and form bonds that transcend
technology and provide additional avenues for learning from
experts, peers, and distributed practitioners.

Developing Content for Combined
Learning Models
There is no one correct theory that can be applied across
the board to give you the correct outcomes within your blended
solution. The previous section has provided you with a core
model and additional models that have proven effective in
certain contexts. The following sections will provide you with
details about the development tools that can be used to develop
modules, courses, curriculum, performance elements, and
knowledge assets.

As an example, regardless of the tool used, a course might
have several contexts for entering and navigating through the
content. If you can design for this using an appropriate tool, you
can save significant time and money in the development of
materials that can meet a variety of audience needs. One
instance was a laboratory safety course that had to meet the
needs of summer intern lab technicians and researchers who
had been working in labs all their lives. There was a compliance
test at the end of the training. To meet the needs of both groups,
two separate domains were created, within one learning
environment, with one core base of information. The first model
was very objective-oriented and guided the learner through