Interactivity Framework

Without additional training or knowledge gained from research, theory and documented best practices, developers design training based on the way they have been taught and most people have been taught: through teacher-directed methods (e.g., lectures followed by some type of practice).

As a result, when people create Web-based training, they typically transform lecture notes and slide show presentations into self-instructional text and graphics, which explains why most current forms of WBT continue to mimic correspondence mail models of distance education.

Instructional Strategies

It's difficult and maybe even unreasonable to expect developers to create effective learner-centered or problem-based training environments that apply innovative learning strategies when they may never have experienced one themselves.

So what are some research-based instructional strategies? The following outlines some of the more prevalent instructional strategies found in literature.

Sample outlines of research-based instructional strategies

Nine Events of Instruction	**Eight Events for Student-Center Learning**	**Jurisprudential Inquiry Model**
1. Gain Attention	1. Set Learning Challenge (Authentic Problem) for Class	1. Orientation to the Case
2. Inform Learner of Objective(s)	2. Negotiate Learning Goals and Objectives	2. Identifying the Issues
3. Stimulate Recall of Prior Knowledge	3. Negotiate Learning Strategy	3. Taking Positions
4. Present Stimulus Materials	4. Construct Knowledge	4. Exploring the Stance(s), Patterns of Argumentation
5. Provide Learning Guidance	5. Negotiate Performance Criteria	5. Refining and Qualifying the Positions
6. Elicit Performance	6. Assess Learning	6. Testing Factual Assumptions Behind Qualified Positions
7. Provide Feedback	7. Provide Feedback (Steps 1-6)	
8. Assess Performance	8. Communicate Results	
9. Enhance Retention and Transfer		

Simulation Model

1. Orientation
   - 1.1 Present topic of simulation
   - 1.2 Explain simulation
   - 1.3 Give overview
2. Participant Training
   - 2.1 Set-up scenario
   - 2.2 Assign roles
   - 2.3 Hold abbreviated practice
3. Simulation Operations
   - 3.1 Conduct activity
   - 3.2 Feedback and evaluation
   - 3.3 Clarify misconceptions
   - 3.4 Continue simulation
4. Participant Debriefing
   - 4.1 Summarize events
   - 4.2 Summarize difficulties
   - 4.3 Analyze process
   - 4.4 Compare to the real world
   - 4.5 Appraise and redesign the simulation

Direct Training Model

1. Orientation
   - 1.1 Establish lesson content
   - 1.2 Review previous learning
   - 1.3 Establish lesson objectives
   - 1.4 Establish lesson procedures
2. Presentation
   - 2.1 Explain new concept or skill
   - 2.2 Provide visual representation
   - 2.3 Check for understanding
3. Structured Practice
   - 3.1 Lead group through practice
   - 3.2 Students respond
   - 3.3 Provide corrective feedback
4. Guided Practice
   - 4.1 Practice semi-independently
   - 4.2 Circulate, monitor practice
   - 4.3 Provide feedback
5. Independent Practice
   - 5.1 Practice independently
   - 5.2 Provide delayed feedback

Experiential Training Model

1. Experience – Immerse learner in "authentic" experience.
2. Publish – Talking or writing about experience. Sharing thoughts and feelings.
3. Process – Debrief: Interpret published information, defining patterns, discrepancies and overall dynamics.
4. Internalize – Private process, learner reflects on lessons learned and requirements for future learning.
5. Generalize – Develop hypotheses, form generalizations and reach conclusions.
6. Apply – Use information and knowledge gained from lesson to make decisions and solve problems.

Inquiry Training Model

1. Confrontation with the Problem
   - 1.1 Explain inquiry procedures
   - 1.2 Present discrepant event
2. Data Gathering - Verification
   - 2.1 Verify nature of objects and conditions
   - 2.2 Verify the occurrence of the problem situation
3. Data Gathering - Experimentation
   - 3.1 Isolate relevant variables
   - 3.2 Hypothesize and test casual relationships
4. Organizing, Formulating and Explaining - Formulate rules or explanations
5. Analysis of inquiry process - Analyze inquiry strategy and develop more effective ones.

Inductive Thinking Model

1. Concept Formation
   - 1.1 Enumeration and listing
   - 1.2 Grouping
   - 1.3 Labeling, Categorizing
2. Interpretation of Data
   - 2.1 Identify critical relationships
   - 2.2 Explore relationships
   - 2.3 Make inferences
3. Application of Principles
   - 3.1 Predicting consequences
   - 3.2 Explaining predictions
   - 3.3 Verifying predictions

Problem-Based Learning Model

1. Starting a New Problem
   - 1.1 Set problem
   - 1.2 Describe requirements
   - 1.4 Assign tasks
   - 1.5 Reason through the problem
   - 1.6 Commitment to outcome
   - 1.7 Shape issues and assignment
   - 1.8 Identify resource
   - 1.9 Schedule follow-up
2. Problem Follow-Up
   - 2.1 Resources used
   - 2.2 Reassess the problem
3. Performance Presentation(s)
4. After Conclusion of Problem
   - 4.1 Knowledge abstraction and summary
   - 4.2 Self-evaluation

*The "events" listed under each instructional strategy above can be considered an interaction.

For a brief description of each of the strategies in the previous table, please see "**Instructional Strategies Grounded in Theory and Research**".

Systematic Design Process

To take the information above one step further, we must apply it to a systematic design process.

The key to designing effective WBT is to:

1. **select a research-based instructional strategy** based on the training objectives and your epistemological beliefs;
2. operationalize, or **describe how each event** associated with your selected strategy **will be applied** during training;
3. **determine the type of interactions** that will be used to facilitate each event; and
4. **select the delivery tool** (e.g., chat, email, bulletin board system, whiteboard, Web page) that will be used to support each event based on the nature of the interaction.

To create effective WBT, these four steps should be applied as an integral part of a systematic design process.

This four-step process for designing and sequencing key on–line interactions should be applied during the final two stages of design (i.e., during the development of the instructional strategy and the selection of media).

Creation of an instructional treatment plan illustrates this concept.

Sample instructional treatment plan

Event	Event Description	Interaction	Web Media
1. Gain Attention	Description of how training will gain learners attention	Learner–Instructor	Bulletin Board System
2. Inform Learners of Objectives	Description of how training will inform learners of objectives	Learner–Content	Web Page
3. Stimulate Recall of Prior Knowledge	Description of how training will stimulate recall	Learner–Content	Web Page
4. Present Stimulus	Description of how training will present stimulus information	Learner–Content	Web Page
5. Provide Learning Guidance	Description of how training will provide learning guidance	Learner–	Chat

Event	Event Description	Interaction	Web Media
		Instructor	
6. Elicit Performance	Description of how training will elicit learner performance	Learner–Content	Learner Web Page
7. Provide Feedback	Description of how training will provide feedback	Learner–Instructor	Whiteboard
8. Assessment Performance	Description of how training will assess learner performance	Learner–Content	Web Page
9. Enhance Retention and Transfer	Description of how training will enhance retention and transfer	Learner–Instructor	BBS

Notice this plan illustrates a treatment of the instructional strategy titled "Nine Events of Instruction" from the previous table.

For each logical cluster of training objectives, you should generate an instructional treatment as illustrated above.

Here's how the table applies the four steps of systematic design:

1. In the first column, you **list the instructional events associated with the instructional strategy** you selected for your training module (in this example, Gagne's nine events of instruction).

2. In the second column, you **provide a description** of how you would actually operationalize each event (e.g., how would you gain and sustain learners' attention, how would you present learners with the instructional objective, how would you stimulate the recall prior knowledge).

3. In the third column, you should **determine the type of interaction** that will be used to facilitate each event. For example, you may want the instructor to gain and sustain learners' attention at the beginning of the training module. Then you may inform learners of the training objectives by listing them in the initial part of the content information.

4. After determining the type of interaction that will be used to facilitate each event, your task is to **determine the media tool** in the fourth column that best supports the nature of the interaction.

By completing the instructional treatment plan, you can design and sequence key online interactions, as well as select the tools used to support each interaction based on a combination of practical experience, theory and research.

Information taken from "Learner-Instruction Interactions as a Framework for Web-Based Training Development" by Atsusi Hirumi, Ph.D and Kathryn Ley, Ph.D., University of Houston–Clear Lake.