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**S**elf-directed learning is one of the most useful concepts in training. It's also one of the most confusing. It's useful because it can be effective in circumstances under which other training designs are inadequate. (See the box, "When To Consider Self-Directed Learning," on page 32, for some examples.) It's confusing because opinions differ as to what SDL is and how companies should design and implement it. • Self-directed learning covers a range of activities, from reading a book to using the newest hypertext multimedia program. It occurs in learning centers, on the job, after work, at the local community center, and even in the classroom—though the last is usually unintentional. • Academics suggest that the term SDL encompasses a wide range of applications. Simple SDL systems allow learners to choose

**THIS PRIMER ON  
SELF-DIRECTED  
LEARNING  
INCLUDES A  
STEP-BY-STEP  
PROCESS  
FOR DEVELOPING  
EFFECTIVE SDL  
PACKAGES.**

# Developing Self-Directed Learning

BY GEORGE M. PISKURICH



### When To Consider Self-Directed Learning

Self-directed learning can be a particularly useful strategy in the following situations:

- ▶ when large employee populations have diverse training requirements
- ▶ when employees need individualized development
- ▶ when the same learning must take place concurrently at multiple training sites
- ▶ when a high degree of consistency is needed in training
- ▶ when high turnover rates require continuous training.

from two or three ways to cover a particular concept. But SDL also refers to applications that give people a great deal of autonomy in choosing what material they will learn and how they will learn it.

Self-directed learning goes by many names. Some practitioners consider such terms as individualized instruction, student-centered learning, prescriptive learning, and even computer-based training to be synonymous with SDL.

But basically, self-directed learning is a training design in which trainees work at their own paces, without the aid of an instructor, to master predetermined material.

Let's analyze that definition. The term "training design" implies that SDL is only one of all possible approaches to dealing with a training need. Other alternatives might be classroom programs, mentoring, or OJT. A practitioner generally makes

### The Four Cornerstones of SDL

The following four elements are crucial to an effective SDL program. Ignoring even one of them will practically guarantee that your SDL packages will be ineffective:

- ▶ job analysis
- ▶ trainee-centered objectives
- ▶ "verbiage," or the specific content of the training
- ▶ criterion-based evaluation.

the choice to use SDL only after an analysis of the situation the training should address.

The definition speaks of mastering predetermined material. The word "master" implies that some evaluation criteria will be applied after a learner has completed SDL. Trainees must reach a certain level of expertise as a result of the learning. "Predetermined material" refers to the learning content. The designer determines the material to be covered, probably in conjunction with one or more subject matter experts.

The phrase "without the aid of an instructor" means exactly that. An instructor is neither needed nor desirable for effective SDL. And trainees work at their own paces, though probably within limitations that are set by the day-to-day requirements of the company and the work environment.

### Analysis for SDL

To create self-directed learning opportunities, follow the basic instructional-systems design approach. A few simple modifications allow for the development of SDL "packages." These packages, whether paper-and-pencil, video based, or computerized, are the primary development products for self-directed learning.

Four different analysis procedures are vital to the process:

- ▶ job analysis
- ▶ implementation analysis
- ▶ format analysis
- ▶ facilitator analysis.

**Job analysis.** The first step in this process is to review your job analysis. If you have to ask, "What job analysis?" you already have a problem. A proper job analysis is the foundation for developing your SDL package. If you skip the job-analysis step, your SDL package simply will not work.

A solid job analysis is one of the most important elements of SDL development. In fact, it is the first cornerstone of the process. See the box, "The Four Cornerstones of SDL" for the whole list.

The exact process you use for your job analysis is not important for SDL. The product of that process is a complete listing of all the tasks that must be mastered for the topic that

### Choosing an SDL Implementation Process: Learning Centers or Distributed Implementation?

Your package is complete. Now it is time to implement your self-directed learning plan, through the strategy you determined during your implementation analysis. In that analysis, you chose from two basic SDL implementation strategies—the learning-center approach and distributed implementation.

#### The self-directed learning center.

Learning centers are called many things, including resource center, individualized instruction center, learning laboratory, and training facility. The term "learning center" is also used to denote a process that goes well beyond simple self-directed learning. But for our purposes, we will define a learning center as a specified location where SDL packages are stored and used.

A learning center for self-directed learning can be of any size or shape. You can locate it in a basement or a closet, and make it as simple as a room with a table or as complex as a simulator in a nuclear plant. But two basic characteristics make it a learning center:

- ▶ Its primary purpose is to be a site where self-directed learning occurs.
- ▶ An easily accessible facilitator is on duty when the center is in operation.

This second characteristic doesn't necessarily mean that the center must have its own staff. It does mean that when the center is open, a person must be available whose first responsibility is to staff it.

The terms "primary" and "first" in the preceding paragraphs are important. Both the learning center and the facilitator may fill other roles. Neither has to be exclusively dedicated to your SDL packages. But if an SDL need arises, it should take precedence for the facilitator and the site.

The main advantage of using a learning center is its physical presence. Because it's there, with your packages in it, trainees can take



advantage of the materials you've created when they are ready to learn. Because it is there, SDL developers can use its strengths in their package designs. Such strengths might include the following:

- ▶ particular equipment that you know is available, so you can format a package in the most effective way for that equipment
- ▶ a central location that all of the trainees can access and that you can control
- ▶ growing trainee comfort in going to the site to use your packages
- ▶ a qualified facilitator.

You can't overrate the advantage of having a knowledgeable facilitator available when you are designing your packages and developing materials. He or she can help start the trainees off properly, watch for problems, provide equipment, evaluate, and perform a multitude of other tasks that might be necessary to the success of your packages. The facilitator will also help you control your SDL process more closely, which is another advantage of a learning center.

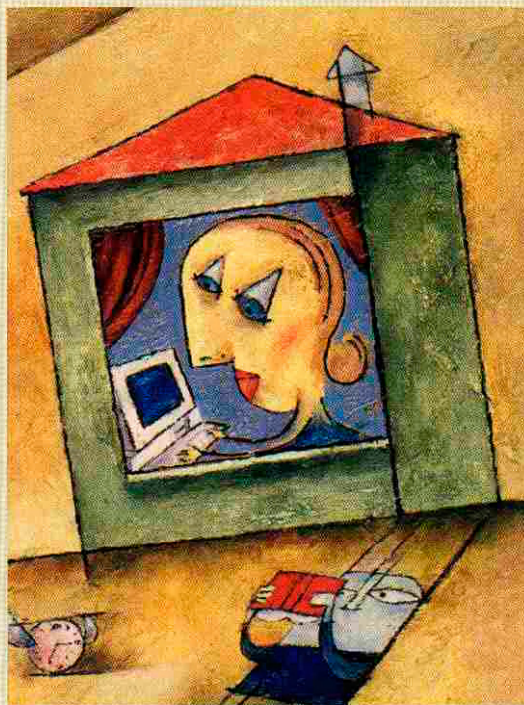
Disadvantages of the learning-center approach include the expense and the time involved in setting up the center, the salary cost of the facilitator, and a learning center's lack of flexibility for practice of on-the-job performance.

When developing a learning center, you also need to consider such factors as budget, furniture and equipment, control of trainee flow, hours of operation, publicity, and evaluation of the center's effectiveness.

**Distributed SDL implementation.** The other major implementation strategy for self-directed learning is distributed implementation. It is often characterized by multiple sites. But distributed SDL implementation is better distinguished by where it takes place, or by who is responsible for it, than by the number of

locations it takes place in. It is possible for a company with a single location—for instance, a hospital—to need a distributed-implementation strategy.

Various factors influence the need to use distributed implementation for your SDL packages. The first one is elementary. Simply ask yourself if you have, or will have, an actual learning center. If the answer is no, you can't effectively use a learning-center implementation strategy.



But be careful! We've noted that there are many different forms of learning centers, ranging from whole buildings to closets. If you have a learning center—no matter how underfunded or understaffed—and you've put your packages there, then you are using a learning-center approach to implementation. Even if people take your programs from that center to work on at home, it's not a distributed implementation. On the other hand, if you plan to ship your programs out from a centralized location to sites that are not learning centers, you'll probably have to use a distributed-implementation approach.

A more subtle indicator of the need for distributed implementation relates to what you need to design into your self-directed learning packages. If your self-directed learning activities include practice in a work environment, you're probably going to need a distributed-implementation system.

Work-environment practice—you might stretch the point a bit by calling it on-the-job training—usually needs to be done on the job. This means that your packages are not used in a training center. Instead, they are used in the store, on the manufacturing floor, in the office, or wherever the job is done. Your packages and your implementation approach must be designed to take these less-formalized training settings into account.

A third indicator is your training population. If the self-directed learning must go to people on the job, then you will have a distributed implementation. This might be determined by the number of trainees you need to train, the distances you have to cover, the time span in which the training must occur, turnover considerations, or finances.

Factors to watch for in a distributed approach to the implementation of self-directed learning include costs and logistics, control measures that ensure that people complete the training, and evaluation of the SDL packages' effectiveness.

There is no single reason for choosing one SDL implementation approach over the other. As with the development of your SDL packages, you should do a careful analysis of all the factors. Ask yourself and your subject matter experts the proper questions.

Most importantly, take nothing for granted. Wait until all the facts are in before making your decision, and then be flexible enough to change it if necessary.



will be covered in your package. Use any accepted job-analysis process to come up with that list. (For some job-analysis strategies, read "Be a Better Job Analyst," *Info-Line* 8903; contact ASTD Customer Service, 703/683-8100, to order.)

**Implementation analysis.** After you have finished the job analysis, you'll need to determine the best method for implementing your SDL package. For SDL, your choice of implementation process directly determines the package-development process.

SDL uses two basic implementation processes:

- ▶ the learning center
- ▶ distributed implementation.

If the company has a learning center or is planning one, you'll probably design your packages to be used there. If you don't have a center, your packages will probably be used on the job; design and develop them with that in mind. This choice is known as distributed implementation.

For more details on both options, see the box, "Choosing an SDL Implementation Process," on pages 32 and 33.

**Format analysis.** What kind of media will your completed SDL package use? The format can be anything from paper-and-pencil booklets to the newest in digital video. The choice depends largely on what media resources you have available and how much equipment and talent you can afford to buy.

For example, you may want to use computer-based training. But what if you plan to send the package to 300 work sites, and only half have computers? In that case, you should probably consider a different format, unless you can afford to buy computers.

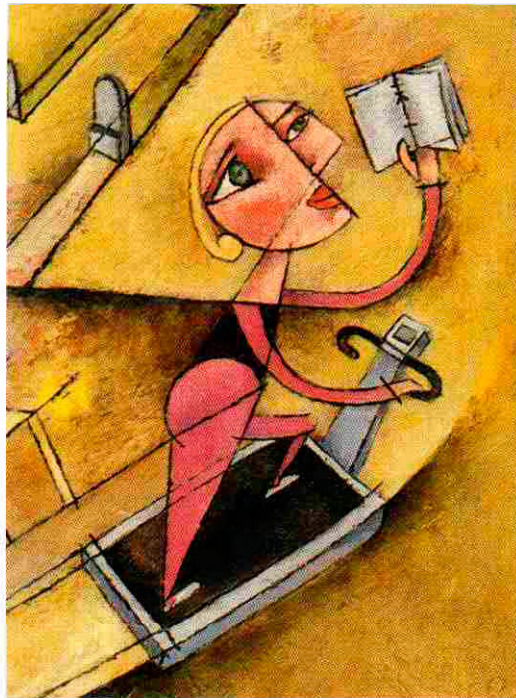
That may seem elementary, but some developers neglect it. Many good SDL packages have failed because the playback hardware was not available at the site of the training. Lack of required hardware negates a prime advantage of SDL—availability when the trainee needs it.

"Revision necessities" may affect your choice of media formats as well. For example, before you decide that interactive video is the

only logical approach for your SDL package, you should give revisions some serious thought. Consider how often you may have to revise your program and how much it's going to cost each time you do. You might change your mind about it being the most logical approach.

**Facilitator analysis.** The last analysis to perform before developing your package is a facilitator analysis. In this process, you determine who will facilitate your SDL packages—either in the learning center, or at the work sites.

The facilitators' skills, abilities, and



particularly their time and motivation will affect your learning design. For example, say you plan for facilitators to evaluate trainee performance at the end of an SDL package. If the supervisors you've chosen to be facilitators are too busy to do the job properly, they might skip the evaluations. And your package would be an incomplete learning experience.

### Creating an SDL package

After making the decisions required throughout the analysis phases, you can start in on developing the actual package. Seven elements are integral to the development of an effective SDL package:

- ▶ trainee-centered objectives

- ▶ the "verbiage," or package contents
- ▶ the arrangement of material into manageable "chunks" of information
- ▶ addition of the chosen medium
- ▶ packaging and revisions
- ▶ trainee evaluation
- ▶ pilot tests.

**Objectives.** Learning objectives take the place of the classroom instructor. Objectives guide your trainees through the package by indicating what skills they must master and what information is the most important. They are trainee-centered, and they include sub-objectives.

The learning objectives are critical; they form the second cornerstone of self-directed learning. In fact, slighting this step causes more SDL packages to fail than does any other factor.

As the package developer you should always keep in mind that no instructor will be available during the SDL process to explain the material in your package. Instead, the objectives will provide your trainees with that guidance. So you must take the time to make sure the objectives and sub-objectives cover all of the tasks in your analysis—using accurate, descriptive verbs so that trainees understand exactly what is expected of them.

The objectives should follow a logical sequence. And the package should repeat them often enough so that trainees will key in on them.

When your objectives are done, review them. Have a subject matter expert and another training designer review them, as well. Make sure they are completely clear, concise, and useful. Once they are in the trainee's hands, they will make or break your SDL package.

**"Verbiage."** Your next task is to develop the material for the "verbiage," or the contents of your package. If you've chosen a print medium, the product of this step will be the words that the trainees will read or hear to help them to master the objectives. If your package will use video, your content is the script; if you're using CBT, it is the material that will appear on the screens. Use



your objectives as a guide to writing the material.

The content is the third cornerstone of self-directed learning. It must relate directly to your objectives, and it must cover them in enough detail to allow trainees to achieve mastery.

You may be able to write the package yourself, or you may need an SME to perform this function. Either way, you start with objectives that are based on a job analysis. If your objectives are good, writing directly from them should be the easiest part of the entire process.

**“Chunking.”** The next step is to take your objectives and “verbiage” and “chunk” them. Begin by dividing the material you have developed into small, digestible pieces that will be easier for trainees to absorb. Then separate them with review and practice activities. Chunks have various names—such as modules, units, chapters, parts, or sections—depending on the SDL system you are developing and the medium you have selected.

The smallest chunks relate directly to the trainee’s learning, so they should be developed with the most consideration and planning. The larger chunks often become self-evident. For example, if you’ve carefully divided material for a manual into 16 chapters, you might find that those 16 chapters fall naturally into four larger sections, with four chapters in each section.

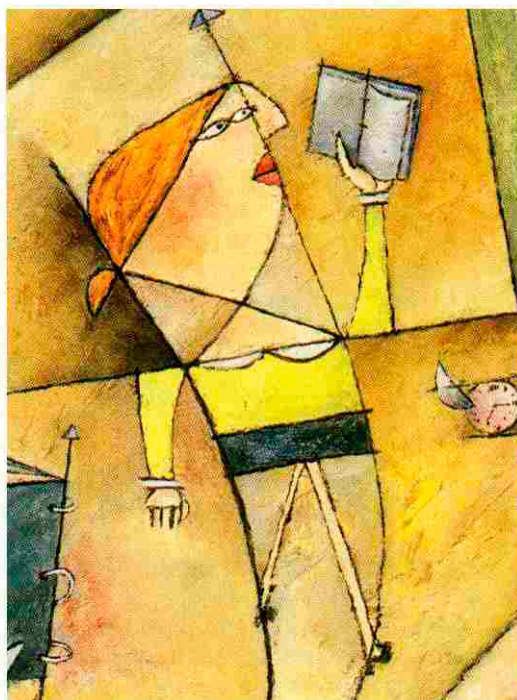
A good rule of thumb is that your smallest chunk should normally contain from three to five objectives worth of information.

A chunk usually begins with a restatement of the objectives it will cover. Then it gives trainees directions on how to go about the learning, and ends with some form of separator that provides a summary or review. Often this includes a self-test in which the trainees answer questions and then check their own answers. There might also be some type of skills practice, if the objectives are performance based.

**The media.** With your chunking done,

you now need to produce your material in the media format you’ve chosen.

If you’re using a simple paper-and-pencil format, you need to plan how your booklet will look. Plenty of white space is a must to make for easy reading. Graphics are also important. Special techniques such as blocking, shading, creating borders, and varying the font sizes all add to the readability and effectiveness of your package. To accomplish these effects, you may want to consider buying a good desktop-pub-



lishing program, a high-resolution laser printer, and a digital scanner—or contracting with a firm that has the appropriate equipment and expertise.

If you’re using video as your format, you’ll need to develop the visuals and sound tracks. You may think that you can ignore the suggestions given above for printed media, but you can’t. Nonprinted media often require companion print segments, with objectives, instructions, activities, and evaluation measures.

Computer formats provide their own print component, in the form of a computer screen. The rules and techniques of good print formatting apply to screens as well as pages.

And if you’re adding video or digital effects to CBT, the rules of basic graphics and video production apply, as well.

**Packaging and revision considerations.** One of the final steps in producing a print package is binding. The type of binding you choose depends on your budget, the look you’re after, and, most importantly, your program’s need for revision.

For example, if you have to make a lot of copies that will need frequent revisions, inexpensive kinds of binding might make the most sense.

Staples and hot glue are some inexpensive forms; on the other hand, they look cheap and are not as durable as some other bindings. For programs that will require a lot of single-page revisions, a ring binder, though initially expensive, may save money and be more practical in the long run.

**Trainee evaluation.** At this stage in package development, you need to plan an approach to evaluating your training. Develop tests for SDL so that each question relates directly back to an objective, and guarantee that the answer is covered in the material you developed from that objective.

Knowledge objectives demand knowledge questions that expressly ask about the behaviors identified by the objectives’ verbs. Performance objectives require evaluations of a learner’s performance of tasks taught through the training. The evaluation techniques must measure the trainees’ ability to accomplish the tasks that were delineated by the objective and presented in the “verbiage.” This “criterion referencing” of trainee evaluation questions is the fourth and final cornerstone in the development of a good SDL package.

SDL test questions and evaluations are not formulated to trick the trainee. They are not developed to uncover those certain intangibles that a “really good” test question can discern. The questions are written directly from the objectives, and the answers are in the “verbiage.” There is no hidden meaning, no trick questions, and no fishing for the right



answer. The information is all there, right in front of the trainees, so they can find it, learn it, and prove they know it.

Criterion referencing is also the reason that self-directed learning can be considered a mastery process, as the definition of SDL states. Trainees know what's expected, can find it in an efficient manner, and are evaluated on that and that alone. That is what makes it possible for them to master the materials on their own, and at relatively high levels. Eighty-five percent mastery on a good SDL package is common, and 95 percent is not unusual.

Once you have developed your questions, you need to have them reviewed. For best results, have each question reviewed at least twice. The first review should consider how well the question relates to its objective and whether it is well written. The second review should be done by an SME, whose task is to make sure learners can find the answers in the material—and that the questions and answers are accurate.

**Pilot tests.** Plan for a third and final review of your evaluation questions, to determine if the trainees themselves can answer them accurately. This review is part of the piloting process you should run before you distribute any SDL package.

Choose subjects for your pilot carefully. They should be as closely matched as possible to your target trainees in knowledge and learning characteristics. If trainees must go through your package on the job, then you will have to take the SDL to the pilot trainees, as well. Otherwise, you can run it in your own environment.

Observe how the trainees work through your package and where they have problems. Afterward, ask them questions based on your observations. Analyze their answers to the test questions to determine what they missed and why. Now revise your package as indicated, and it will be ready for distribution to the target learners.

The pilot test is the final check of your package, and it is as important as the four development cornerstones. Ignore it because of time or other resource constraints, and you

### Resources on Self-Directed Learning

Try the following books and articles for more information on self-directed learning.

- ▶ John H. Cox, "A New Look at Learner-Controlled Instruction." *Training & Development Journal*, March, 1982.
- ▶ M. Hammond and R. Collins, *Self-Directed Learning: Critical Practice*. New York: Nichols/GP Publishing, 1991.
- ▶ R. Hiemstra and B. Sisco, *Individualizing Instruction*. San Francisco: Jossey-Bass, 1990.
- ▶ Malcolm Knowles, "How Do You Get People To Be Self-Directed Learners?" *Training & Development Journal*, May, 1980.
- ▶ George Piskurich, "Preparing the Learner for Self-Directed Learning." H. Long and Associates: *Journal of the 5th Annual Symposium on Self-Directed Learning*.
- ▶ George Piskurich, *Self-Directed Learning: Design, Development, and Implementation*. San Francisco: Jossey-Bass, 1993.

risk producing packages that the trainees cannot use effectively.

### Package or system evaluation

Another kind of evaluation you need to perform is evaluation of the package itself—or the system, if you have a group of packages. This kind of evaluation occurs after the packages are in use, and can be broken down into five parameters:

- ▶ sufficiency
- ▶ usability
- ▶ currency
- ▶ compliance
- ▶ effectiveness.

**Sufficiency.** The first parameter is sufficiency. In other words, is all the information the trainee needs to complete the objectives available in the package? Your pilot and other reviews should have caught most of the problems in this area. But if you ask learners who have completed the SDL package—and, more importantly, who have then used the information back on the job—you may find areas that still need augmentation.

This parameter takes on more

importance in an SDL system than in a single package. Evaluating the sufficiency of an SDL system can show you if you have created all of the packages needed to completely train someone to perform a particular job.

**Usability.** The second parameter is usability. This kind of evaluation tries to determine whether packages are as easy to use as possible. Once again you will need to ask the users—and the facilitators—for this information.

**Currency.** The third evaluation parameter is currency. In other words, is the information in your package up-to-date? For this you need to talk to SMEs; have them review the package to spot changes that may have occurred since it was distributed.

**Compliance.** The fourth parameter is compliance. Are the packages actually being used as they were designed to do the training? Once again, facilitators and users are the people to ask. But to do a really good job in this area, the best method is personal observation.

**Effectiveness.** The final parameter is effectiveness. The basic question to answer: Did the trainees master the objectives? You have already developed evaluation measures to assess this as part of the trainee evaluation. To evaluate the package, you need only collect the data from the trainee evaluations and analyze it.

If you follow the SDL development steps carefully and analyze all the factors, your chances of success will escalate. The outcome is an effective training design in which learners work at their own pace, without the aid of an instructor, to master predetermined material. In other words, you will have successfully created a vehicle for self-directed learning. ■

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