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NOTE: The multiple rectangular boxes and subsequent text, below, represent indispensable steps that must be taken in sequence (read from bottom to top) in this first (and, ultimately, each) of the five Phases, also completed in sequence. The process outlined (partially, here; and in full, in our *ISD* book) is Cavalier's interpretation of the award-winning Navy version: less controls items and more practical helps. However, the Navy version is "translated" in the *Common Sense ISD* book from military jargon into plain business English.

If you follow the instructions in *Common Sense ISD*, then you can't do your program wrong, because each of the boxes is cross-referenced in the book, if necessary, so as to direct you to Appendix material and/or to stipulate the required material that will (in sum) deliver the results that you need and stipulate up-front and can measure later. These stipulations guarantee that you will fulfill your own requirements!

The Appendix of the Cavalier book (about 100 pages in addition to the ISD how-to text) is made of up examples of materials (both his own and military originals) that show how easy it is for you to do-it-yourself! Given this workable background, you can actually do-it-yourself or be better prepared to supervise an outside consulting source competently. That preparation can catch potential errors and save money, too, by eliminating unnecessary (paid) sideline work.

It's become fashionable in recent years for paid consultants and manufactured magazine "experts" to denigrate ISD (Instructional Systems Development, in military parlance; and Instructional Systems Design, in most business usage). The two are much the same, but commercial variations sometimes seek short-cuts that can damage ISD.

However, this author believes that the ability for you to do-it-yourself is the most objectionable feature of ISD in the minds of those objectors! Dr M. David Merrill is considered to be the dean of the field; the title page of his key published article on the subject appears at his name on this site under a named button. In a more recent article, Dr Merrill has commented (and is also quoted on this site, in "Parting Thoughts" from his magazine feature--first page shown under his name button) as being in favor of such advance design.

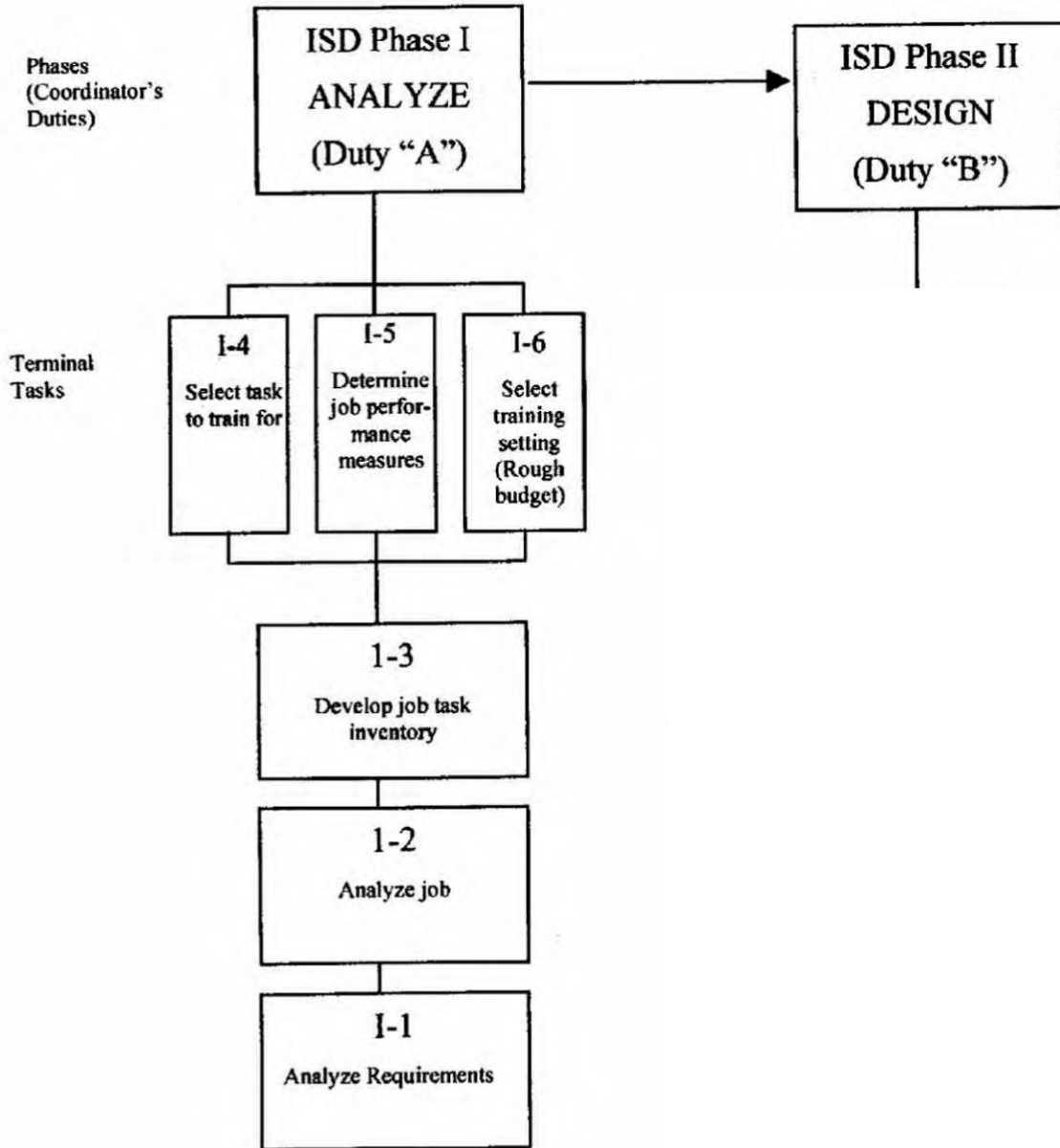
Several years ago, a *Training* magazine story (written from a consultant's viewpoint that denigrated ISD) was subsequently retracted by that magazine because its user/readers blamed any programming problems onto the designer, not the ISD design system! That magazine then established a panel of user/readers to evaluate such stories in advance. See this and other instances of the training field's (not industry's) backtracking on old industry disinformation in the "Parting Thoughts" segment, on the "Titles" page, at the asterisk below the *Common Sense ISD* cover photo.

Convinced?

Yes, ISD is slower than guesswork and approximations based on half-asked or half-baked information. On the other hand, ISD can guarantee you a valid program when completed. Considering that you cannot remake any error-strewn or failed program easily or within a brief time frame, or without delaying a subsequent program, any additional time that's invested early (in order to complete ISD steps properly and fully) is program insurance for you and your organization.

Have you heard the old truism that covers this situation perfectly? "Why is there never time to do it right but always time to do it over?"

HIERARCHY CHART FOR



NOTE: Hierarchy Chart is keyed to ISD structure of Part II; would be prepared during Phase II, Task 6. It can also be read as an outline for the job of training project coordinator.

NOTE: Respective enabling tasks/steps not shown.

Key Purpose:

To analyze the actual job. The Analysis phase is based on job-derived information if the job already exists, or on the best appraisals by subject-area experts if the job is yet to be created. In addition to identifying the duty areas and tasks of which the job is comprised, this phase requires that a) the specific tasks to be trained-for now be selected, and b) that an appropriate training setting be specified.

Overview:

Because all further decisions are dependent on job performance factors, the importance of an accurate, factual, current Analysis cannot be over stressed. The biggest single barrier to the proper fulfillment of this phase of the ISD process is human nature: the temptation to save time and energy by cutting corners, like guessing and borrowing. If the job to be trained-for is not precisely described by your data in hand, then you could produce a program that addresses those flawed data adequately but yet does not produce adequate performance on the current job. That shortcoming in assessment is commonplace in the training world—avoid it!

Even if you have previously performed a given job, do not attempt to analyze it from ancient memory. The methods, circumstances, and equipment have probably all changed over the years. Always conduct fresh interviews with job incumbents, their supervisors, and/or subject-matter (or subject-area or topic) experts before beginning the analysis duty.

When selecting tasks to be trained-for, honor the actual priorities of need (guidelines provided by ISD); avoid choosing easier tasks or tasks already adequately served by valid, existing materials. Make all selections objectively, and plan to adapt any valid existing materials much later, but only IF they prove to be still valid.

When you have completed this Phase adequately, you will have a perfect global understanding of the job to be trained-for, and educated opinion about how that training can most effectively be approached, and the data needed to back up your recommendations on how to proceed.

On this understanding are predicated all your future attempts to obtain executive support, budget appropriations, and the cooperation of peers and other employees who are or will be affected.

If your analyses are competently executed, your ultimate program will produce the desired, described results. Count on it!

Tasks to be completed in Phase I:

One: Analyze the Requirements

Two: Analyze the Job

Three: Develop the Job Task Inventory

Four: Select the Tasks to Train-for

Five: Determine the Job Performance Measures

Six: Select the Training Setting

I-1

Task One: Analyze the Requirements:

The job on which you are preparing to focus might or might not exist. That depends on the window of opportunity that you found in your marketing approaches to the Distribution channel and end users and/or the community. But existing job or not, one or more of those concepts needs to be examined to determine its applicability to your perceived advantage, whether in production, marketing, customer service, or elsewhere.

If none of the program ideas or problem-solving approaches is clearly superior to the others as a marketable program, you might wish to analyze several of the most likely. However, because the Analysis process is intensive and time-consuming, it's wise to narrow the field of candidate programs as soon as possible.

For the balance of this Phase and the entire ISD process, then, unless otherwise stipulated, the term *the job* will refer to your key training concept, whether it applied to an existing or newly-created job, an existing or newly-created training program, or an internal or external (community-based) project.

Generally your internal program will relate to a duty area or specific task to be improved. Zero in on your target task(s) when considering the overall job. (Details under I-2-1.) Of course there's no way to know what external projects might be worthwhile until you've compared community needs with your organization's potentials and budgets.

So the primary step in the Analysis Phase is to determine the scope and extent of the need for training. What are the parameters? Why is training needed or desirable? What shortcomings have been identified in existing programs/services/products? If a new product or service is at the core, how best can you maximize the benefits delivered and received? If you are "covering" a competitor's programs, what substantial improvement can you introduce? What new ability on the part of the graduated trainee would justify his/her training? How proficient should that trainee be under what circumstances when he/she first appears on the job?

When you have answered the sense of those types of questions, you will have identified the job tasks to be analyzed.

It's reasonable to expect that some of the interpretations and assumption that you make early in the programming process will later prove inadequate or wrong. Therefore, be sure not to get hung up on early ideas and choices. Be flexible for as long as possible. However, there are enough checks and redundancies built into the ISD process (called *iteration*) to give you not only the opportunity but also the clear signals to make adjustments, if and when needed.

If you stay alert to the possibility that change or improvement could come at any stage of the process, you will be honoring the iterative nature of ISD.

Problems, if there are any, would most likely be generated by the discrepancy between the need to be precise in the analysis of the job despite the imprecisions and extrapolations on which many worthwhile marketing programs are based. Programs regarding actual products usually are easier because the parameters are already finite.

Obviously you will have maximum control if company employees make up the bulk of your trainee or instructor population—which might or might not translate into adequate control.

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Always target a workable capability range. You have the right and even the obligation to exclude the incompetent or marginal performers early by selective invitation or formal entrance exam or stated prerequisites for entry.

The component least amenable to compromise is expertise. You must be, or have access to, an expert in the job or subject-area. That expert's authority is the sole justification to undertake a training program. Complete the following "Preliminary Needs/Discrepancy Analysis Guide" before taking any further actions.

Preliminary Needs/Discrepancy Analysis Guide

1. Job Title and Department: description of function..
2. What must the trainee be able to do after training?
Describe fully the a) behaviors or performance; b) conditions; c) standards.
3. Primary training domain: cognitive or dexterity or affective or combination? Specify.
4. Description of needs or discrepancy or problem identified. Function _____.
 - a) how noticed?
 - b) by whom (malfunction) noticed?
 - c) frequency of recurrence:
 - d) degree of seriousness:
 - e) cost of ignoring:
 - f) potential solution: ___ to be determined; ___ already establishes: describe:
 - g) other departments affected:
 - h) comments:
5. Resulting instructional program should be:
 - a) new: a) job; b) duty; c) task.
 - b) revision of existing training program because:
 - ___ job or task has changed, given:
 - ___ product/service is modified so that:
 - ___ job performance by incumbents is inadequate, as indicated by:
 - ___ (internal) (external) job audit reveals:
 - ___ other; specify:
6. Related courses and materials (books, manuals, films, computer tutorials, etc.) that might be useful or adaptable (do NOT attempt to analyze at this point:

Type:	Title:	Source:
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7. Supporting documents (syllabi, lesson or session plans, manufacturer's specifications, engineering drawings, etc.):
8. Experts or authorities on this subject-matter area (other than professional trainers or job incumbents):
9. Job Performance Measures, if identified (predictive task tests of essential performance capability):
10. Degree of job proficiency required:
 - ___ absolute mastery: ___ on the job; ___ via training course; or
 - ___ practical command: ___ on the job; ___ via training course; or
 - ___ general familiarity: ___ on the job; ___ via training course.

11. If full proficiency is not possible or practical in this training course, how will the trainees' skills be augmented on the job?

12. Proposed Jury of Experts (selected from among authorities, subject-matter experts, job incumbents, etc.) to make or approve decisions being made regarding job training for this project:

Name:	Function:
-------	-----------

13. Concise summary of program purpose, format, and marketing advantages:

14. Positive impact if new or revised program is undertaken:

15. Negative impact if new or revised program is not undertaken:

16. Schedule of significant events or dates if undertaken:

17. Financial requirement (high/low/optimum, if available):

Calendar for budget commitments (see Appendix A):

Anticipated ROI:

18. Proposed calendar for development, implementation, and audits:

19. Endorsement (of needs and/or intent to use) by parties affected:

NOTE: This completed form can become a preliminary project justification when seeking enabling authority and initial appropriations. Copyright ©2003, Richard Cavalier

I-2

Task Two: Analyze the Job:

An accurate picture of the actual or proposed job or task is the indispensable source document, and job incumbents (current job workers and their immediate supervisors) are the prime authorities on the day-to-day function of existing jobs. In some cases, there are technical experts as well who can be consulted—and must be consulted in the case of jobs being newly created.

Key question: Are you training-for the entire job, or for only one duty area's task(s) for that person/job?

All parties must be agreed on one point: *What are the criteria for adequate job performance in that job's duty or task area?* How, when, and under what circumstances will the adequacy be proved?

All the experts or authorities you assemble for job assessment, whether job incumbents or subject-matter experts, can be considered your Jury of Experts. They will identify and resolve discrepancies.

Although you will ultimately be shifting your focus to training objectives and methodology couched in training terminology, your early information about job performance will almost surely originate with individuals who have little or no training know-how, regardless of any advanced degrees or how many needed dexterity skills they have. Most persons know what they're doing but not necessarily how or why they're doing it.

Therefore you must be prepared to accept their information in whatever form they can best express it. It would be counter-productive to force all of them to learn training techniques and

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large blocks of terminology before they could communicate with you. Just be prepared to do the “translations” yourself.

The following Analysis segment contains several forms by which you can obtain information easily converted to your needs. Concentrate on the accuracy and validity of the raw data and opinions received—that’s where the safety of the program lies.

I-2-1

Task Two/Step One: Gather the Job Information:

Our information-gathering forms will help you to get past one of the major barriers to the communication of ideas—the inarticulation of the seeker. But no form can help you to avoid the single biggest trap in the communications arena—jargon. Idiosyncracies expressed in the exotic and highly specialized use of language might help given groups to separate insiders from outsiders and might in fact help to express involved concepts briefly among co-workers, but that comprehension does not travel well, and persons outside the user group will not understand. Without understanding, effective training is not possible.

When making your requests for information, ask that common English be used. Ask that they tell you what the job really is—not what it should be and not what they were once told by the Personnel Department that it should be. Most written job descriptions are probably somewhat out of date. Ask that, whenever more than one person performs a similar job/duty/task, the group cooperate on a single description. A consensus view will be the most accurate. Get the approval of the supervisor who oversees that group so that the consensus view is further validated before you begin to use it in your programming. Any unresolved discrepancies in peer viewpoint can help to identify actual or incipient problems; unresolved discrepancies probably mean that the supervisor will need to make changes in the job, and those changes can affect your incipient program. Settle the problems now and remain alert to useful cues from other directions.

Basic schematics for correlating job information:

Probably the most common schematic form for conveying relationships of bodies of information is the outline, whether Roman numeral or decimal style. Most executives use one style at least occasionally, and nearly all language-oriented jobs require its use frequently. They both say the same thing—so be comfortable in your choice. A skeleton outline appear at the end of this section. It has enough information entered to correlate this outline with the other schematics of the book while offering you an example based on an every-day familiarity—an employee/typist’s job.

Less articulate persons might be able to express concepts and relationships more easily in diagrammatic form than in words. The Job-to-Course Correlator coin diagram is presented as an example of how easily job tasks and steps can be correlated for reporting to you. So the job information can be presented in a way that’s useful to you without depending on language-oriented logic. Such visualized relationships are just as valid as the written outline format. Diagrammatic notations can always be amplified, if necessary, in later conversations. Ideas are what really matter—and ideas are mental concepts that language tries to approximate. Schematics can often approximate concepts as well or better than verbal descriptions will.

Anyone in business understands the duties and tasks that are comprised in the job of a secretary. To complicate our example, we have stipulated *legal secretary* in the coin diagram format of the “Course to Job Correlator” (see Appendix AA.)

Here’s how it works: The job of Legal Secretary (Personnel Departments and purists call all jobs *positions*) is made up of a cluster of duties, here set arbitrarily at six. Duties are generally labeled with letters. Notice that Duties D, E, and F are to some degree interrelated; and that relationship will later be reflected in time frames, to be discussed.

Consider Duty D–Typing: This is shown in a defensible breakout of tasks. The exact breakout is irrelevant because what’s important here is the fact that the diagram under Course IV–Typing (Duty D) is identical to the Course IV entry of the Roman numeral outline discussed. This is only an instance and example of the high degree of transferability of items that on their face seem to be discrete and incompatible. Don’t let irrelevancies overwhelm you.

It’s easy to correlate materials if your diagrams and outlines concentrate on ideas. Either form–Roman numeral or coin diagram–can be considered source documents regarding the job itself; and the next section–Phase II–will instruct you on how to convert all the basic documents, of whatever format, into training-oriented documents that you can act on.

In actuality, your sources might not provide documents that match so neatly, but the idea is valid. Just talk with the originator if clarification is needed and slot it according to your program’s Master Outline. Never guess at an interpretation. Guessing introduces a high potential for error into programming and outcome.

Structure your inquiries to associates accordingly. It is the later responsibility of the Jury of Experts to resolve discrepancies, spot inadequacies, and eliminate irrelevancies. Get the facts now, but deal with them later, when instructed to do so.

The two forms of schematics (coin drawing and Roman numeral outline versions of “Legal Secretary,” used in this Phase) relate to the content of the same program. Content is central, of course. But content outlines alone can’t reflect the time required for instruction; and so a descriptive calendar of events is needed. All three types of schematics can be found here.

The most common form of time-related schematic is probably the monthly calendar, with key dates entered with color or bold printing. For something as simple as a single event, no diagram is needed. However, a rough block calendar showing how a fifteen-week course (for instance) might be repeated three times within one calendar year (without horrendous conflict with holidays) appears in Appendix AA. It is keyed to a defensible breakout of the schematic data for Legal Secretary, if that’s set in a time frame. Notice the staggered beginning dates for various courses, as indicated by the Duty Areas’ identification letters.

But the time notations given in the block calendar have a more comprehensible relationship when delivered on a PERT Diagram, as is also located here. The Performance Evaluation and Review Technique (PERT) was developed by the US Navy with consultants and suppliers working on the Polaris submarine. PERT represents timed logic and identified optimum flows and bottlenecks in complex projects.

Notice that as Secretarial Courses V and VI are phased in after the first month, Course III soon phases out. Note also that when the Filing course switches from manual file to computer file, the latter coincides with the introduction of the Computer Literacy course.

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Although this calendar discussion is chronologically premature according to a strict ISD procedure (not strictly required until Phase III), it is logically related to the information now being gathered (“How long did it take you to learn this part of your job?” and probe: “To be able to do the job properly?” and “To be able to do the job easily to job specifications?”)

Try to develop a sense of program running time early in the process because that sense will aid you in viewing alternatives among methods and in making choices you can live with. Program content will ultimately dictate time, of course, but you need a feeling for how much material can be presented in a normal hour or week. There’s no sense whatever in scheduling an attempt to teach an entire encyclopedia in an hour, although you might easily teach familiarity with its Tables of Contents in that time.

Whatever your ratio of job incumbents to subject matter experts and/or verbal to schematic source documents, keep a sense of balance. Ask for everything you need, but not substantially more than you truly expect to need, or you’ll be buried in trivia. It’s easier and more effective and more efficient to go back for more information to a few people who have presented the start of something worthwhile.

When will you find the time to develop the diagrams and schematics for gathering job information? Well, all the schematics that appear in this section were developed from scratch as needed within a span of three days’ thinking (not three days’ labor); later, they were rendered in final (show-able) form in less than one hour each. Keep in mind that you should not be diagramming *their* jobs—you are presenting an example that they can follow in diagramming their own. . .and for all practical purposes, you can present the coin diagram given here as the example.

You’re about to embark on a time consuming project that will benefit from meticulous attention to detail. Spending time up front to organize your thoughts and to focus the viewpoints of other participants will pay dividends early and often.

I-2-2

Task Two/Step Two: Collect and Analyze Job-Related Technical Documents:

In addition to the descriptions and data on actual job performance already provided by subject-area experts, including job incumbents, consider any and all technical information and documentation that might have a direct bearing on either the job/task being trained-for or on the overall marketing program.

Collect all technical publications and relative technical memos relating to the job, to job-related problems, or to describe equipment used in the performance of this job. It’s easy to punch edges and place them in a ring binder to avoid file chaos later.

If the job entails the manufacture of parts or equipment, gather those documents also—especially anything published by other manufacturers for your guidance in using their products.

There are three important considerations when you begin to analyze: internal, external, and correlative. Could the organization’s own current plans for the product/service in question make the program itself obsolete or inadequate within a relatively brief time? If so, should that problem best be handled with an extremely flexible program or with an early course outline provided to managers, stating the “musts” of the topic? Outlines are easily changed. That option

assumes that the managers (or their choices of substitutes) know the material well and simply need to be guided into a consistent pattern of describing for teaching. On the ISD basis, that is not a safe assumption to make in every case, or you would not be having problems that need to be solved by a new training program.

Small modifications can sometimes work great changes on training approaches. Might any planned new products/services or new models of existing products make the training project irrelevant? If built-in obsolescence is part of your marketing strategy (cars, publications, films), consider your training pay-back period for the time and money invested before embarking on a major new program at all. It might be cheaper and wiser to deal with the problem for a short time longer than to try to dispose of it with training.

Training should never become the catch-all solution to every problem—nor its blame collector. A client manufacturer called us in to determine what was wrong with a training program that did not prevent wild overcharges to the company's original estimates for the cost of warranty service. A training audit consisting of a) paper outlines plus b) a few hours in various classes plus c) conversations with repair persons themselves together established that the training was adequate but that the engineering was deficient: Although there were \$2 repairs and \$200 repairs properly identified for the product, some of the actual field repairs were made to \$2 repair items located behind \$200 repair items, with the result that the home office warranty value and the charge-back-time value to the field office repair persons had huge discrepancies. This was not the fault of training! The problem was solved by minor product redesign—to bring the cheap repair items forward and place the more complex things in back. That simple discovery (but with a longer interim time span for implementing the engineering changes) solved the problem; it also ended the arguments between home office and field—immediately.

If part of your marketing strategy is based on perceived shortcomings in a competitive product or service, could a relatively minor correction or improvement by the competitor make your program irrelevant or obsolete? Assuming that the implementation of your program automatically identifies the competitor's weak spot and stimulates him to correct it, can he do so before you have realized the projected full benefits of your training program? If so, to what do you charge the lost expenses? Remember that there are other ways besides training by which to react to the competitors' weaknesses.

Similarly, if a community-based project is in planning, is the underlying problem significant, substantial, and likely to persist long enough to justify your involvement in the development process for the solution? Poverty, battered wives and children, emergency housing, and language classes for immigrants are among problems that won't be eliminated by next week.

Not related to the nature of your product? Yeah—right!

Finally, are all of the materials consistent with each other? Are the key points that were stressed by the job experts actually confirmed in the existing literature? If not, could general understanding, rather than specific training, be at fault? Perhaps most important to your own sense of confidence in the emerging new direction: Are the information and data being gathered still consistent with the program's original direction? If not, are your questions misguided or was the initial direction wrong? If there are any discrepancies of consequence, resolve them before proceeding with the ISD process.

Web note:

Next up: Task 2, Steps 3, 4, and 5; then Task 3, etc.

Author's note: With ESL, you can do-it-yourself or upgrade, so that you can supervise any consultant more effectively, if you prefer assistance.