Introduction to Instructional System Design

Why Instructional System Design?

Besides Instructional System Design (ISD), there are several traditional systematic approaches to training such as Performance-Based Training (PBT) and Criterion Referenced Instruction (CRI). These approaches have some common elements:

- ***Competency Based (Job Related):*** The learners are required to master a Skill, Knowledge, or Attitude (SKA). The training focuses on the job by having the learners achieve the criteria or standards necessary for proper task performance.
- ***Sequential:*** Lessons are logically and sequentially integrated.
- ***Tracked:*** A tracking system is established that allows changes and updates to the training materials to be performed efficiently.
- ***Evaluated:*** Evaluation and corrective action allows continuous improvement and maintenance of training information that reflects current status and conditions.

So, why ISD? Simply stated, this process provides a means for sound decision making to determine the who, what, when, where, why, and how of training. The concept of a system approach to training is based on obtaining an overall view of the training process. It is characterized by an orderly process for gathering and analyzing collective and individual performance requirements, and by the ability to respond to identified training needs. The application of a systems approach to training insures that training programs and the required support materials are continually developed in an effective and efficient manner to match the variety of needs in an ever rapidly changing environment. ISD is often called SAT (System Approach to Training) or ADDIE (Analysis, Design, Development, Implement, Evaluate).

Systems and Processes

A system is defined as a set of concepts or parts that must work together to perform a particular function. An organization is a system or a collection of systems. Every job in an organization is used by a system to produce a product or service. The product or service is the means by which an organization supports itself.

There are four inputs necessary in every system to produce a product or service:

- ***People:*** The workers making up a group and linked by a common activity.
- ***Material:*** The raw products which go into the system.
- ***Technology:*** The technique for achieving a practical purpose or goal.
- ***Time:*** The measured period during which an action or process begins and ends.

Every system must also have at least one output in order to survive. The output can be a material product, such as a television or computer software; or a service, such as a protection agency or an insurance policy. The output of a particular system in an organization may be the final product, a service sold to its customers, or a product or service to aid or enhance the organization in its goal to produce a marketable product or service.
An example of a system might be a production team (*people*) who transform electronic components, cases, parts, etc. (*materials*) into computers by working on an production line (*technology*), and completing each production run within a given deadline (*time*). The final products (*output*) are then used in the organization to sell to its customers. Someone developed this system by:

1. Analysing what was required by the organization.
2. Designing the system to meet the needs of the organization.
3. Developing the system using the outputs of the analysis and design phase.
4. Implementing it.
5. Evaluating the project throughout its creation and implementation.

This process could have been an haphazard creation, which generally waste time and money; a planned action; or a combination of both. A Systems Approach to Training is a planned creation of a training program. It is a development program that uses step-by-step processes to solve problems.
A large company may have several systems, which are generally broken down into departments or groups, while a small company may only have one system. All of these systems have three basic functions:

- **Input:** Something must be going into the system, otherwise, it is a mysterious sphere where products or services mystically radiate from it. The basic inputs of a system are material, people, technology, and time. Training is mostly concerned where people and technology meet.
- **Process:** Some type of work must be accomplished in the system. This work is the technology performed that changes the material input into the systems output. Look for the means to help workers master and apply the unique technology governing their tasks.
- **Output:** A desired service or product must be produced. If there is no output, then it is a black hole where things go in, but nothing emerges. The goal in training is to allow the workers to use the available technology efficiently and effectively to produce the desired product or service.

Processes

A process is a planned series of actions that advances a material or procedure from one stage of completion to the next within a system. A system generally has several processes in

it. Like a system, it also has an input and an output. In the system example given above, a couple of processes within the computer production system might be:

- The circuit-board assembly team (*people*) who solders electronic parts (*materials*) onto circuit boards by working on a specialized production line (*technology*), and completing each production run within a given deadline (*time*). The final products (*output*) are then used by other members of the production team in the assembly of a computer.
- An inspection team (*people*) who test each computer (*materials*) by using specialized test equipment and software (*technology*), and completing each production run within a given deadline (*time*). The computers are then passed on to the packing team who boxes and palletizes them.

Notice that in these examples there is always a customer and a supplier. These can either be internal or external. Parts are received from vendors and then moved from various stages throughout the production line. The final process would be the completed computers going from the warehouse or showroom to outside customers (the sales process). Lets look at a training department, which can also be viewed as a system:

- **Input:** People who need to acquire skills.
- **Process:** Learning takes place within the system
- **Output:** Trained people.

Some of the process which take place in a training department would include:

- **Registration:** people who want to learn -> registration forms completed -> people who are now registered for class.
- **Development:** training need -> develop courseware -> a training program.
- Computer Training Class -> students who need to learn MS Word -> learning program -> trained employees.

Being able to break an organization into systems and process will help you in your training development. By identify a process within a system; you will be able to concentrate on a small chunk of a very large piece. For example, when you are analyzing a job, you break it into duties, tasks, and steps to make your task more manageable.