

Dynamic Job/Task Analysis A New Twist on an Old Tool



The Gaian Group

It seems that every time two or more training types get together, the words job/task analysis are eventually spoken. With the current emphasis on quality, training and education have been receiving a great deal more attention. As with any other focus area in business, accountability and value added quickly becomes important to the effort. This increased awareness is leading to a growing commitment to “do training right.” Training professionals have been trained for years in the methodology required to “do training right.” When asked what that is, they will produce some model of Instructional System Design. Any of these will have variations of the Job/Task Analysis (J/TA). The J/TA is a time tested and proven method of deriving instructional objectives and curriculum from a complex set of behaviors. Its utility was proven in the military and has

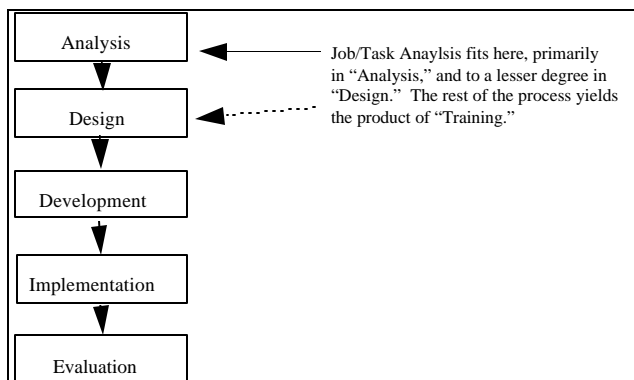


Figure 1 - The "ADDIE" Model of ISD

been used successfully in all aspects of business and industry since then. The J/TA is simply the best methods for deriving instructional objectives and

developing training programs from existing work.

It is easy to fixate on a single use of a tool. Most Instructional System Design (ISD) models use the Job/Task Analysis (JTA) as a step in the development of training programs. Therefore, one would ordinarily only think of doing a task analysis when in the process of course development. It is at this point that the linear natures of most ISD models become evident; the model is simply a means to an end, a way to create Training Programs where there were none. In this case, job/task analysis (process) is usually the secondary focus, and completion of the training program (product) is primary.

This is a shortcoming of job/task analysis. Anyone who has ever engaged in a full-blown J/TA on a complex work setting knows that it is a big job. The analysis becomes a tremendous burden to all but the largest training groups. Afterwards, the accumulation of data often leaves the significant buried in the trivial. Depending upon the quality of the coding and job prioritization (hopefully done before data accumulation), some of the value of the analysis may be lost in the frenzy of “lumping” that occurs in order to get on with course development. This “invisible” step in course development, deriving core competencies and instructional objectives from the task analyses, requires a great degree of synthesis that does not show up well on most

project tracking sheets. Also, it is easy to lose significant tidbits that arise during the analysis. The J/TA's uncover much more than instructional objectives.

In the days preceding a global marketplace and tremendous economic pressure from abroad, American industry and business could afford the luxury of time, tradition and stability, product lines and the work associated with them did not change for years. When change did occur, it was deliberate and slow. Today the workplace changes on a daily basis. The future will not be one of large, long running training programs that are offered with limited expectation of value. The ability to learn and change in short periods of time must be structured into organizations.

All of the tools of a J/TA are still appropriate in today's world. A shift in the paradigm surrounding the use of the tools and application of a different model, and therefore different expectations, will keep this tool in hand into the next century.

Dynamic Job/Task Analysis

Rather than using a J/TA exclusively as a linear tool to arrive at a single end, it can also be thought of as a permanent process that arrives at a multitude of different outcomes. This incorporates the idea of Continuous Process Improvement. When trainers are first trained in ISD, their typical first reaction is to be completely overwhelmed by the prospect of applying these skills in their own workplace. They begin casting a jaundiced eye at their existing programs, and phrases like "we need to

start all over from scratch” creep into their vocabulary. However, replacing all training programs in a large manufacturing complex using ISD is something akin to moving a mountain with a teaspoon. That is why the most commonly offered advice from those conducting ISD training is “Don’t!” Unless you can successfully complete your first analysis and ensuing designs in a reasonably short amount of time, don’t try. Start small and build on successes.

Most individuals work processes (person/machine - person/process) that you will encounter in mature organizations are operating in statistical control. (What a loaded statement!). A training program for entry-level employees is intended to quickly bring new hires into the control ranges of the work location. The best initial training programs will result in new employees reaching the highest level of competence on the most important skills in the shortest amount of time. After initial training and its subsequent practice, the employees begin to stabilize around their personal levels of competence. They might be excellent or mediocre, but they will be more or less in control. At this point, the “window of opportunity” for initial training has effectively closed. One of the fundamental assumptions for ISD is that the majority of the target population cannot already do the job for which they are to be trained, otherwise, why should we be training them? But what do you do when a large part of your target population is already doing this job?

The trainer now has to shift expectations for improving the workforce. One can no longer hope to make large gains in performance on a large number of skills as in the case for initial training. The focus must now be on improving consistency and predictability. People functioning in a day-to-day routine must be viewed as an essentially stable process. All analysis must include a focus on how to improve the relationship between the workers and their environment. Now the linear nature of ISD makes it an ineffective tool to use on a daily basis. One must shift to a dynamic model that recognizes the stability of work and the certainty of change in the organization.

Basic assumptions of a dynamic task analysis:

- *A reasonably accurate statement of business values and intents exists and is available to the analyst(s).* It is absolutely critical that all work analysis be viewed from a perspective of work elimination, work improvement, and outcome alignment.
- *The system is operating in a dynamic environment (Type IV disturbed reactive).* The system has a high need to adapt in short time frames. This means that learning times are very short and must be linked to meaningful data in the environment.
- *Some parts of the system are not dynamic and have high degrees of similarity.*
No matter how dynamic the operating environment, there will still be parts of the

system that are not changing rapidly as a result. This is the leverage of the model, and it assumes that the people who are already operating those elements are doing so reasonably well, and that the skill requirements for operation are not changing quickly. These similarities also offer a great opportunity for transfer of learning AND for transfer of analysis.

- *Work for work's sake exists.* When people begin doing their work in a workforce, the business reasons for what they do begin to fade, and the work itself becomes its own purpose.
- *The analyst is part of the system and intends to do on-going work.* This model is not intended to operate stand-alone, but as a part of an on-going effort to continuously improve a work setting. Its effects will operational differently as time progresses and the system evolves.

If the above-mentioned preconditions are not met, this analysis cannot be used.

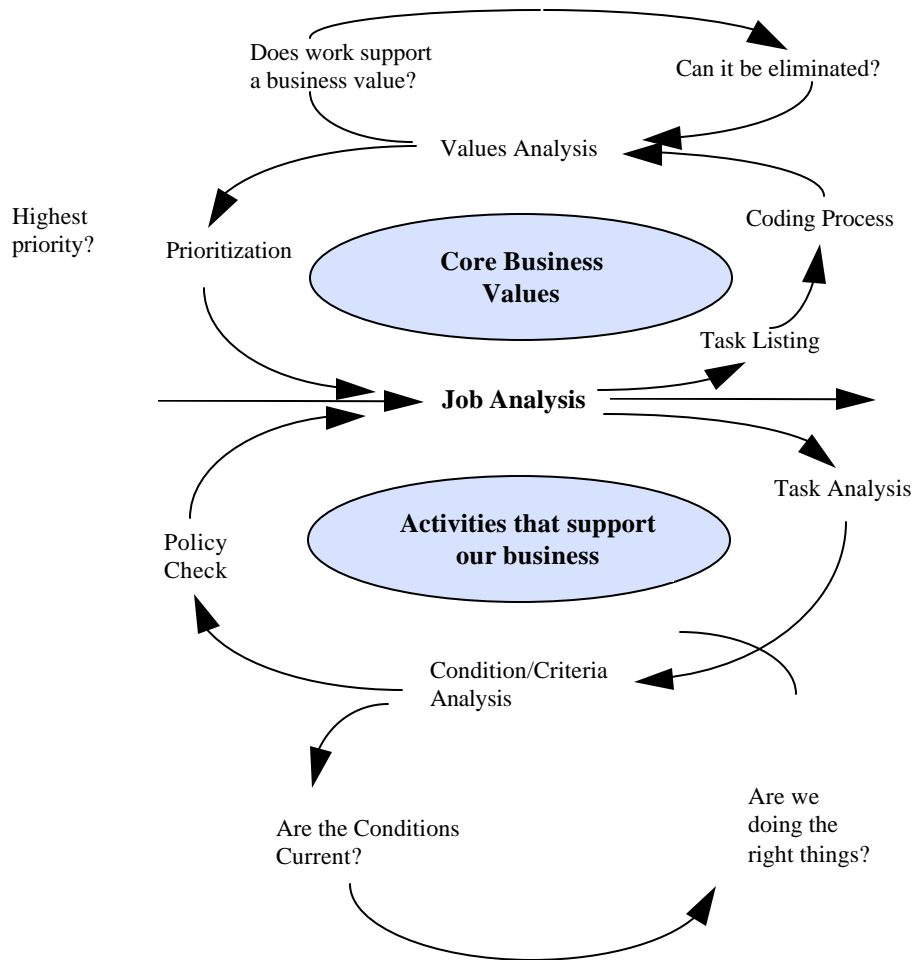


Figure 2 - Dynamic JTA

Differences in traditional and dynamic.

Traditional

- The J/TA is a process that leads to a product. It is particularly useful to the off-site trainer or vendor whose job is to come into an organization, analyze, and deliver training.
- It is an invisible process that is a means to an end.
- J/TA's begin shortly after the decision is made to train and ends before formal program development.
- Traditional models build improvement into the presentation of training.
- Traditional models use analysis to sift through the work and get down to the essential business of training, and not clutter the training with incidental and trivial items.
- J/TA's on work units are large and take a long time.
- J/TA's are a time capsule with a limited utility factor. The understanding of the workplace is highest immediately after the analysis is completed. In a large organization formal training can take months or even years to complete. Each successive class takes a small step away from the initial validity of the analysis.
- The J/TA tends to focus on the tasks of an operation rather than the purpose of the operation.

Dynamic

- The J/TA does not have a clear beginning or end. It exists on a continuum. The process exists through a series of “micro” analyses. It is particularly useful to the on-site trainer who “lives” with the organization.
- A dynamic J/TA seldom culminates in formal training. In a stable, existing organization, the employees are going to have a fairly common set of skills and knowledge. Expect the J/TA to generate procedures, policies, job aids, and checklists. Expect the least common result of a careful analysis to be training.
- A dynamic model builds improvement into the workplace.
- The principal product of the dynamic model is understanding the system and improved work processes.
- The result of this process is to continuously remove variation and redefine expectations on an ongoing basis.
- A dynamic J/TA continuously builds upon and changes itself.

In the dynamic model, the expectation is to improve work routines through understanding, as opposed to a traditional approach of improving work through training.¹ The task analysis now has an additional dimension: It must seek out the

¹ Don't get me wrong. Training is absolutely essential to work processes. I am simply stating that it is not always the most appropriate method of improving work.

variation and strange things that occur in an organization and prompt the appropriate questions.

Here's how to proceed:

1. Do a task listing of all available work.

- Use small group methods such as a focus group to quickly generate listings. Carefully select your groups, bearing in mind natural divisions in the work group. NOTE: The better this group's reputation in the workplace, the more readily the analysis will be accepted.
- Work off a large wall and post each task on index cards.
- Use different size and color cards to indicate headings for groups of related activities.
- Group all tasks under related tasks. Look for job families in which there is a high degree of similarity in the work. This is an important step, so go slow here to go fast later. This analysis assumes that there is a great deal of work that is accomplished in essentially the same manner, using the same tools, techniques, and skills as all other related work. A job family approach enables you to do far fewer task analyses later.

2. Rank and prioritize

- Evaluate each task as to its relation to the overall business values. Think about whether this activity can be directly linked to the accomplishment of the value, and if so, how well does it work? Look for opportunities to eliminate or modify work in the process.
 - Prioritize the activity by things that matter to the organization. Typical criteria are difficulty, criticality, frequency of use (or disuse), and consequences of error.
 - Rank job families under categories of stability. Do these skills have a high obsolescence rate? Do the procedures change rapidly and require rapid deployment of change? Items with low obsolescence rates have a low priority in this model. Most of these items should be addressed procedurally or through criterion based skills demonstration.
3. Begin task analysis. These analyses follow a fairly traditional format with a few exceptions of focus.
- Group as many similar tasks into one analysis as possible. Do one major analysis, and focus on differences in the listing of tasks.
 - Be sure to focus on the conditions under which the tasks are performed.
 - Include an environmental scan during every analysis. Why are things being done as they are? How does policy and practice influence the

accomplishment of this task? Keep an active eye towards policy that needs to be revised or eliminated.

Some other tips for your analysis:

Don't forget creative tension.

A task analysis is an opportunity to change the culture by the questions you ask and the expectations you set. Be careful! They must be firmly grounded in reality! Use primary business values, profitability targets, etc. to tie your expectations to your analysis. The target population of your analysis will be keenly aware of how well they match.

Don't forget the environment. (Separate from conditions)

The environment is an essential portion of the task analysis. We speak of a person/machine interface, however, there is a cultural overlay that impacts the performance. Rules, policies, contracts, and personal fears are only a few of the very real "invisible" constraints on how any job is done. A good practice is to incorporate policy review into the validation step of an analysis. Quite often there are steps omitted from the performance of a job that are required due to safety or environmental policies. Equally plausible is the "dumb step," an action that does not contribute to the

performance of the job but is done to satisfy policy. A review should not be limited to whether policy is being followed or not. It should also ensure that policy is supporting the work.

Decisions

Task Analysis is often a simple listing of psychomotor activities. Be sure to note decisions that must be made during the job. (Careful! You can't always see them!) A decision will invoke at least two sets of behaviors: If you miss the decision, you miss a branch of your analysis. Also, it is important to capture the cognitive domains required as a basis for the decision.

The effect of measurement.

It is essential that analysis of a system be done in such a manner as to minimize the impact of measurement. The act of measurement in itself changes behavior. Be aware of this and structure according to the culture of the environment.

Expect different outcomes when analyzing a process rather than a task.

Continuous operations (particularly person/process) are very difficult to assess. When a job function is to maintain an on-going operation, task analysis becomes more of a set of rules and decisions. Task analysis is intended for discrete events.

Pay attention to personal preferences in task accomplishment.

Task analysis can be a blessing and a curse for rotating shift operations. It may be difficult or impossible to get to the right mix of SME's off shift at the same time.

Rotating shifts usually have high degrees of variation from shift to shift. This increases the odds that some shifts will not agree with your analysis if it did not have their input.

However, the reward for using a dynamic model is standardization and removal of the variation between these shifts.

Listen for "Danger Words"

"This is how I do it."

In any organization where several people do the same job at different times, there can be relative certainty that there is variation in the way different people perform the same job. Most employees in stable workplaces not only know how they do a job, but how others do the same job. These words should trigger a series of questions, something along the lines of "why, why, why, why, why." The answers to these

questions will probably lead you to do something other than what you set out to do.

“Why is this done differently? Are there different circumstances under which the same job is performed? Are there different expectations for performance? What is the consequence of the difference?”

“You asked whom how to do it?”

The selection of a Subject Matter Expert is one of the most important steps of analysis. It really does not matter how knowledgeable your SME actually is if he does not have the confidence of his peers. Personal credibility is a difficult thing to assess, but it should be considered before spending large amounts of time doing analysis that might not be accepted. Training or education cannot be imposed upon one's psyche. The learner must grant the trainer psychological permission to bring in new thoughts and ideas. The “affective filter” is always there, be careful not to strengthen it.

“We usually do this at night, but I'll show you now while the light is good,” or “Let me show you on this piece of equipment, the others are too ‘hot and noisy’ (or insert your own adverse conditions) to work around if you don't have to.”

Work is choreographed routine between man and machine. When conditions change, so does the routine. It is very easy (and often tempting) to overlook the

adverse conditions under which people often work. The analysis must include the range of conditions (or worst case) in order to be accurate.

A Job/Task Analysis is part of a designer's toolkit. It can be applied in a number of models. It has been used somewhat synonymously with Instructional System Design. However, one of ISD's basic assumptions is a stable work process and changing work force. The analysis, once completed, is good for a number of years and will serve to train any number of entry or new employees.

What happens when the workforce is stable and the work processes are not? In that case, ISD is not the most appropriate model. In many cases, work processes will have already changed by the time the analysis is complete. Additionally, a stable workforce is probably already in statistical control, and will not benefit as greatly from extensive analysis as entry workers.

The needs of a stable workforce are different. They need adequate work definition, improved processes, and standardized procedures and expectations. ISD, at its best, will duplicate the world, as it is when the analysis is performed.

A traditional use of job/task analysis in ISD is most appropriate for determining objectives and methods for initial training. In a situation where turnover is high and training intervals are short, one cannot afford not to develop their training using the linear

job/task analysis of ISD. When there is a relatively stable workforce with long service employees and few new hires a linear model may not be the best method. The challenge for the training professional is to know which tool to use when.

So what's the point?

Add value to the organization. How? Gain profound knowledge and understanding. Analyze something every day. Take the results of the analysis, capture the cognitive and psychometric states associated with it, and offer suggestions for improvement. With time, you will build a comprehensive definition of skills and knowledge unique to your workplace. This gives you a solid curriculum for entry employees and for introducing new technology to the workplace. Additionally, you build the organization's ability to learn and change. The ultimate challenge of any organization for the future will be to learn about itself faster than the competition can.