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Performance Technology Skills in Business: Implications for Preparation

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ABSTRACT

What to teach Performance Technologists should be derived out of an analysis of desired performance. Despite a general agreement on the definition of Performance Technology, desired performance currently varies in business and consulting organizations. This paper reports the results of a survey of 23 organizations regarding current performance of Performance Technologists and current preparation of people for the role. It suggests a three-stage model for preparing Performance Technologists.

Premise

A fundamental premise of Performance Technology is: *Any intervention should be based on the analysis of desired POST-intervention performance.* Thus, a specification of the preparation *(an intervention)* of Performance Technologists for working in the business/industry world should be derived out of an analysis of what a Performance Technologist should produce and do *(performance)* on the job.

The above is a given, if we intend to practice what we preach. And we must, if we expect Performance Technology to have credibility. (Is the Surgeon General's office smoke-free? Does Mager have objectives for his courses?)

Acknowledging the hint of righteousness of the premise, this paper will address three main issues:

1) What on-the-job performance is suggested by the definition of Performance Technology?

2) What is the current performance and current preparation of Performance Technologists working in business settings?

3) What are the implications for preparation of Performance Technologists?

Though the three main questions above are straightforward enough, there are several difficulties in answering them in a straightforward manner. Historically, there has not been universal agreement on a definition of Performance Technology (Harless, 1992). This has precipitated differential behavior among practitioners even though they might all refer to themselves as Performance Technologists (Hutchison, 1989). For example, if Performance Technology is defined narrowly as finding and treating knowledge/skills/information needs, then the practitioner will tend to deal only with the design of the training/edu-

cation level of intervention. If the definition is wider in scope, then the Technologist will tend to engage in analysis and design of a wide range of interventions. In other words, two persons might call themselves Performance Technologists, but one *behaves* as an Instructional Technologist.

Performance Technology is, to some degree, a synthesis of older, converging disciplines whose assumptions, biases, and processes are carried over to it. This is particularly true of Instructional Technology. The early formulators of our field were also major players in that field (Dean, 1994; Gilbert, 1988; Harless, 1988; Rummler, 1988). The tenets of the emerging field, Performance Technology, however, require us to admit to the strong possibility that our original specialty is not applicable to a given situation, perhaps most situations.

Few business organizations have the formal position title *Performance Technologist* or similar titles such as *Performance Consultant.* This results in a very small sample to study, forcing us to have to hypothesize what accomplished performance might be.

For the purposes of this study

1) The wide-scope definition of Performance Technology put forth in the book *Handbook of Human Performance Technology* (Stolovitch and Keeps, 1992) was adopted, with slight modification:

> An engineering approach to attaining desired accomplishment from human performers by determining gaps in performance and designing cost-effective and efficient interventions.

2) The desired general performance of a Performance Technologist was defined using two principle sources: *Handbook of Human Performance Technology* (Stolovitch & Keeps, 1992) and *The Performance Quality Improvement System* (Harless, 1990). These two works are themselves based on a large body of research and experience, and give detailed guidelines in accordance with the wide-scope definition above.

3) Twenty-three organizations that are Advocates/Patrons/Sustainers of the International Society for Performance Improvement were surveyed regarding: their definitions of Performance Technology, the actual performance of Technologists within their organizations, and their current resources for preparing Performance Technologists. Because of their strong affiliation with ISPI, we assumed these organizations were more likely than others to have the formal job title *Performance Technologist / Consultant / Engineer,* and perhaps were more likely to behave in accordance with the wide-scope definition adopted. The validity of this assumption is discussed later in this paper.

Study Issue #1: Desired Performance of Performance Technologists in Business

The definition of Performance Technology above suggests that the *process* of Performance Technology includes not only analysis (determining gaps in performance), but DESIGN as well (designing cost-effective and efficient interventions). This is important because a common, narrow interpretation of Performance Technology is that it consists only of analysis, variously called

Front-End Analysis, Needs Assessment, and/or Performance Analysis. That is, narrowly defined, Performance Technology is limited to performance description and analysis of "problems" to determine which intervention(s) is/are applicable.

The wide-scope definition of Performance Technology suggests the Performance Technologist should also design or assist specialists in the design of all needed interventions, not just those belonging to the training/education/information class of intervention. This is important because the prevalent interpretation (misinterpretation?) of Performance Technology is that it deals with the design of the elements in the training/education/information class ONLY, and thus excludes DESIGN of interventions such as work process re-engineering, feedback, compensation, employee selection, and so forth.

Given the wide-scope definition, a macro description of the *process* of a Performance Technologist is depicted in Figure 1. One should note the author's meanings of terms (Harless, 1990) in context of the general process described and in the context of business/industry:

Performance. The accomplishments and behaviors of a human that are valuable to achievement of business goals. *Example:* Contribute to profits (business goal) by producing sales (accomplishment) by prospecting, demonstrating benefits and features, overcoming objections, closing the sale (behavior).

Interventions. Specific changes put into place to influence human performance. *Examples:* Re-engineer work process; provide feedback; give job aids; reassign personnel; redesign work environment; change compensation; empower workers; remove hazards; give better access to inputs; modify equipment; change appraisal method; reduce workload; increase workload; change accountability; coach; mentor; give formal instruction.

Design. Formulation of the specific makeup and intended operation of interventions. *Examples:* Decide job aid format; specify and sequence courses in a curriculum; specify personnel selection methodology; specify frequency of feedback; design delivery mechanism; specify level of simulation in practice; specify work teams' relationships; specify access to inputs; specify method for more control over pace of work.

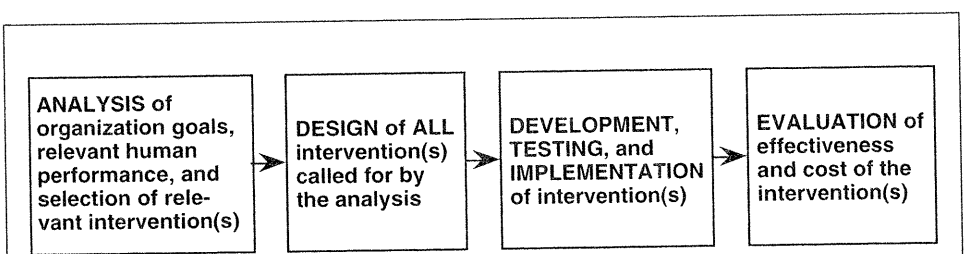

Figure 1. Macro description of the Performance Technologist's process.

Figure 2. The categories of intervention of the Performance Technologist.

Development. Production of outputs called for by the design. *Examples:* Write job descriptions; construct feedback instrument; write CBT exercises; purchase new tools; rearrange work environment; prepare help screens; write instructor guides.

Evaluation. Assessment of the degree of performance improvement that results from intervention(s) and determination of the value produced compared to cost.

A large number of specific interventions are possible as result of the Analysis phase of a Performance Technologist's process. In fact, by the wide-scope definition of Performance Technology, "interventions" would encompass everything that could be used deliberately to influence the performance of workers.

For ease of discussion we synthesize, somewhat artificially, the many specific interventions into four main categories: Personnel Selection/Assignment; Skills/Knowledge/Information; Environment; and Motivation/Incentive/Affect.

Though the four major categories are not necessarily discrete (for example, an Environmental intervention might have a *motivational* EFFECT on the employees), the "universe" of the Performance Technologist is illustrated by Figure 2.

The diagram in Figure 2 suggests that Performance Technologists deal with all four subsets. It does not suggest that any one subset is sought to the exclusion of the others. It does not suggest one is emphasized more than another. This challenges the common statement: TRAINING Needs Assessment is the first phase of Performance Technology.

More appropriately, then, the diagram suggests an early phase of Per-

formance Technology is PERFORMANCE Needs Assessment—what the author calls Front-End Analysis (Harless, 1970).

Performance Technologists in the business arena might also be called upon to deal with anticipated (new) performance required by policy changes, new equipment, new business goals and the like. This is opposed to the usually discussed situation in which the Performance Technologist is dealing with apparent deficits in current performance—requiring Diagnostic Front-End Analysis.

The process of a Performance Technologist, then, is shown in Figure 3 in more detail. The process suggests Front-End Analysis is an "intervention-specifying" mechanism; there are alternate paths a Performance Technologist could then follow, depending on the findings in Front-End Analysis.

Given the wide-scope definition of Performance Technology and the suggested multi-pathed general process; and, given the definition of performance as *the accomplishments and behaviors that are valuable to achievement of business goals,* we can then pose the desired, unconstrained performance of the Performance Technologist in terms of accomplishments and behaviors.

At the most general level, the overall target *accomplishment* of the job, Performance Technologist, is: *Improved worthy performance of employees, based on a process of analysis, design, development, testing, and implementation of cost-effective interventions.* Though other roles in the organization contribute to this end, and though the Performance Technologist might be constrained in many situations, the bottom line job-goal cannot be stated otherwise.

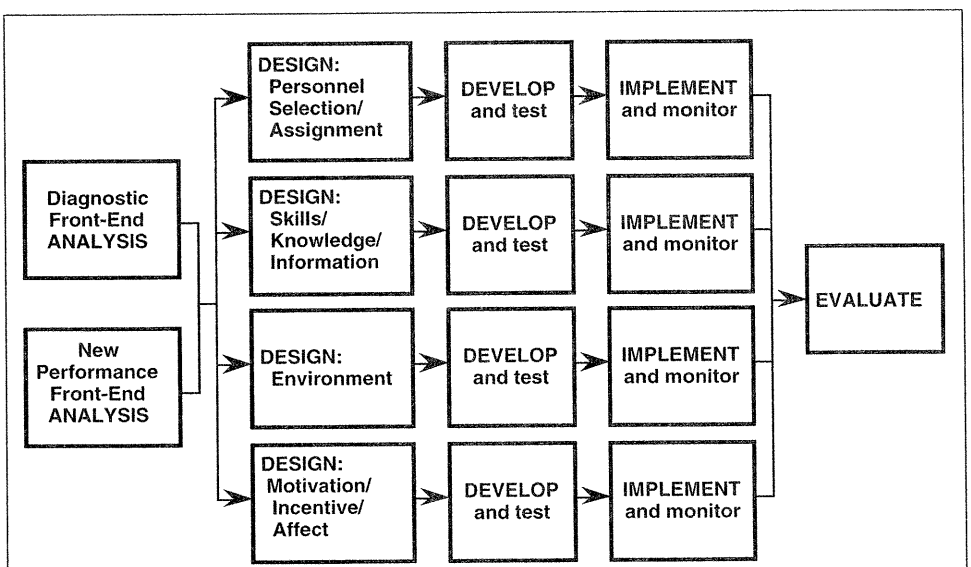

Figure 3. Detail of the Performance Technologist's process.

Given the overall job-level accomplishment and the desired process, we can then suggest the more specific accomplishments of a Performance Technologist produced enroute to achievement of the overall accomplishment:

- Recommendations concerning needed performance improvement projects derived from analysis of the organization needing human performance improvement.
- If applicable, description of new performance required to achieve a new business goal, and recommendations of new interventions needed, based on New Performance Front-End Analysis.
- If applicable, recommendations for intervention(s) needed to remediate existing deficiencies in performance, based on Diagnostic Front-End Analysis.
- Specifications for design and development of the intervention(s) called for by the Front-End Analysis.
- Design of specific personnel selection/assignment interventions, and/or skills/knowledge/information interventions, and/or environment interventions, and/or motivation/incentive/affect interventions.
- Development, testing, and implementation of specific elements of personnel selection/assignment, and/or skills/knowledge/information, and/or environment, and/or motivation/incentive/affect designs.
- Data on cost-effectiveness of interventions.

Given the major accomplishments above, we can then pose the *behaviors* required to produce each accomplishment. Examples of key behaviors relevant to each accomplishment are provided in Table 1.

Study Issue #2: Current Performance of Performance Technologists

What is the state-of-the-technology as defined and practiced by business organizations who have embraced some approximation of the Performance Technology process? To address this question, the author speculated that the organizations most likely to consider themselves practitioners (to varying degrees) of Performance Technology would be the Advocates/Patrons/Sustainers of the International Society for Performance Improvement.

Twenty-three organizations responded to a survey instrument prepared to address some of the issues in this paper. Fourteen of the organizations surveyed are in-house departments of business/industry companies. Nine are consulting/contracting firms.

Though the *name* of an organization does not always indicate a true picture of the goals and functions of the group, it is interesting to note that seven of the fourteen in-house capabilities carry the word performance in their designation:

- Human Performance Enhancement
- Performance Systems
- Performance Support
- Performance Support & Training
- Performance Design
- Performance & Organizational Support
- Performance Technology

Table 1
Relevant Behaviors for PT Accomplishments

ACCOMPLISHMENT:	Examples of relevant BEHAVIORS:
Recommendation of needed performance improvement projects from analysis of organization	- Diagram organization and work units in terms of inputs-processes-outputs - Collect data from receivers of organization's outputs - Form and prioritize performance-improvement projects
Description of new performance and interventions, based on New Performance FEA	- Specify new organization accomplishment - Specify new accomplishments to be produced and criteria - Specify new behavior to be performed and criteria - Determine the interventions needed to support the new performance
Recommendation of intervention(s) to remediate deficiencies, based on Diagnostic FEA	- Define deficiency in current organization accomplishment - Define deficiency(ies) in human accomplishment - Define deficiencies in behavior - Determine cause(s) of deficiencies - Specify intervention(s) indicated
Specifications for design and development of interventions called for by FEA	- Determine specific alternatives within each intervention class - Specify design criteria for each intervention - Specify development criteria for each intervention - Develop action plan for design, development, testing, and implementation
A design for each specific intervention	- Specify selection criteria, based on performance description - Make recruitment and selection recommendations - Design instruction - Design job aids - Design/redesign work processes - Design/redesign physical conditions of the work - Design/redesign policy/management/work time aspects - Design/redesign feedback/compensation/recognition aspects
Development, testing, implementation of specific elements called for by the design	- Write job descriptions - Prepare candidate assessment and selection materials - Prepare job aids - Prepare instructional and practice materials - Conduct developmental and validation tests - Prepare workplace configurations - Prepare ambiance-improvement configurations - Prepare feedback instruments - Prepare policy documents - Prepare work allocation documents - Monitor implementation of interventions
Data on cost-effectiveness of interventions	- Specify effectiveness and cost measures - Determine performance baseline - Collect data on actual effectiveness and cost

*This material extracted from the Performance Quality Improvement System, Copyright Harless Performance Guild, Inc. 1990

Five of the fourteen carry the name of an *intervention* in the title (e.g., Education, CBT, Training Department, or Education & Training). Others of the fourteen have more generic names such as "Staff Development." Though the sample is small and intentionally selected for probable bias toward Performance Technology, do the organization names indicate a movement toward Performance Technology? This is supported by the number of respondents reporting that their organization is "trying to develop in the direction of" a full Performance Technology capability, though they noted a current emphasis on the skills/knowledge/ information class of intervention.

Earlier in this paper it was stated that, historically, there has been lack of agreement on a definition of Performance Technology. This was NOT supported by the results of the survey of the twenty-three, intentionally biased sample of Advocates/Patrons/Sustainers (See Table 2.).

Choice C in Table 2 is the wide-scope definition adopted for this paper from *Handbook of Human Performance Technology,* and is consistent with the definition in *The Performance Quality Improvement System.* It seems these groups generally

Table 2
Respondents' Choice of Definitions of PT

Which comes closest to your organization's definition of PERFORMANCE TECHNOLOGY?	In-house groups (N=14)	Consulting firms (N=9)	Total (N=23)
A. Providing solutions to instructional needs via technological interventions such as video-tape, computer-based instruction, interactive video	0	0	0
B. Design, development, implementation, and evaluation of performance-based instruction	1	0	1
C. An engineering approach to attaining desired accomplishments from human performers by determining gaps in performance and designing cost-effective and efficient interventions	10	8	18
D. An engineering approach to finding gaps in human performance and developing skill/knowledge/information types of interventions	3	1	4

Table 3
Organizations' Use of Wide-Scope Performance Technology Behaviors

Check behavior/task your organization actually DOES:	In-house (N=13)*	Consulting (N=9)	Total (N=22)
A. Interview clients to discuss possible performance needs (present and/or in the future).	13	9	22
B. Interview/observe master performer and/or SME to determine desired performance.	13	9	22
C. Determine present and/or future gaps/deficiencies in human performance.	13	9	22
D. Determine if an instructional/job aid type of intervention is indicated.	13	9	22
E. Determine if a NON-instructional/job aid type of intervention is indicated.	12	9	21
F. Design instructional/job aid interventions.	13	9	22
G. Design/redesign work processes.	3	6	9
H. Design/redesign work environments.	3	3	6
I. Design/redesign employee selection methods.	5	4	9
J. Design/redesign feedback methods.	7	7	14
K. Design/redesign compensation/ benefits methods.	2	0	2
L. Design/redesign employee recognition methods.	5	3	8
M. Assist in implementation of instructional/job aid interventions.	12	9	21
N. Assist in implementation of non-instructional/job aid interventions.	9	6	15
O. Perform follow-up evaluation of interventions.	12	9	21

* One respondent's instrument was omitted for this item.

agree on what Performance Technology *should* be.

Another indicator of a movement toward Performance Technology capability might be the presence of a formal job title. Five of the fourteen in-house organizations and three of the nine consulting organizations have positions titled "Performance Technologist/Consultant/Analyst."

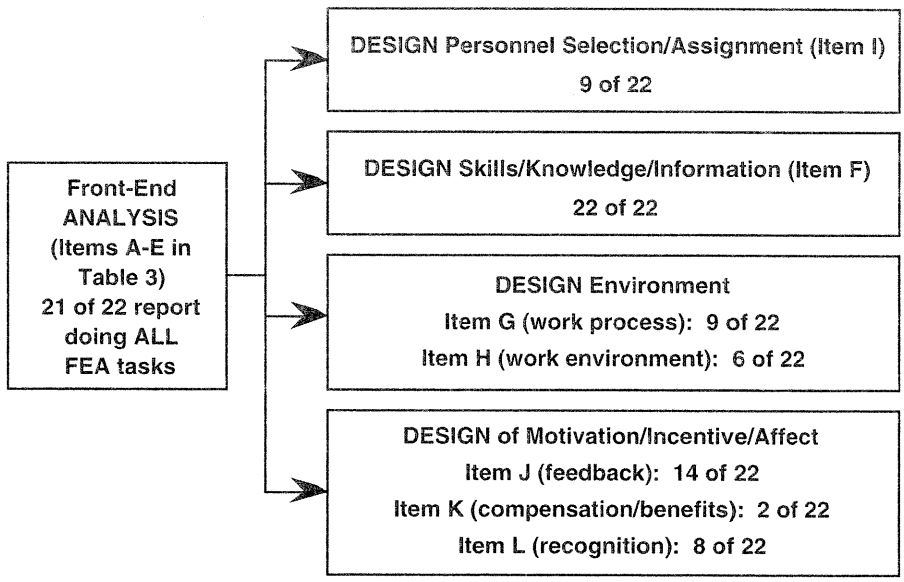

Figure 4. Respondents' use of Front-End Analysis and design tasks.

It seems that although most agree on a definition of Performance Technology, this has not yet precipitated wholesale formal recognition of the role even among the biased sample.

Though having one third (8 out of 23) organizations adopt some form of the job title *Performance Technologist* might not be regarded as "wholesale recognition of the role," when compared to the International Society of Performance Improvement membership as a whole, the picture is different. Out of a random sample of 500 ISPI members listed in the Membership Directory, 12 persons listed their title as some form of Performance Technologist. (There were, however, scores of titles such as "Consultant," "Director," and "Principle," which could represent people who *behave* as Performance Technologists.)

The heart of the survey attempted to obtain a snapshot (Table 3) of what organizations actually DO relative to our description of the "model" performance of a Performance Technologist. The survey presented 15 sets of behaviors intended to cover the range of possible activities of a Performance Technologist as defined by synthesis of the two main sources for this paper (Harless, 1990; Stolovitch and Keeps, 1992).

Figure 4 roughly relates the survey results to the detailed process of Performance Technology depicted in Table 3.

Only one organization, a consulting/contracting firm, reported not doing all FEA tasks. One organization, an in-house group, reported being "involved" in all tasks, but used specialists for actual design and development.

The survey asked: *What are the three or four more important "general skills" or "competencies" you think your Performance Technologists / Consultants / Analysts need?*

A long list of responses was received. Even though the question was open ended, 15 of the 23 mentioned *written communication,* 12 listed *oral communication;* 7 wanted *analytical ability*, 6 suggested *interviewing skills;* and 6 *consulting skills.* (Some of the more colorful items mentioned were: *Common sense; how to play the corporate game; resilience; perceptual objectivity.)*

We asked the 23 organizations surveyed about how their people currently become prepared to carry out their role. The two most frequently selected sources were *College / university courses* and *Coaching / mentoring.* These items were, however, selected on only 5 of the 22 instruments.

Study Issue #3: Implications for Preparation of Performance Technologists

The implications for preparing Performance Technologists are not crystal clear. If WHAT to teach/coach/job aid Performance Technologists is contingent on what performance is NOW expected, then the content of the preparation activities (college curriculum, vendor courses, coaching interactions, etc.) would involve preparing them how to do these things:

- Front-End Analysis
- Design, development, and testing of *skills / knowledge / information* interventions

Table 4
Most Common Sources of Skills and Knowledge for Persons Involved in PT Work

Please check the TWO more common sources of skills/knowledge of persons in your organization.	In-house group (N=2x13=26)*	Consulting (N=2x9=18)	Total (N=44)
A. Formal courses developed in-house	0	2	2
B. Formal courses from vendors/consultants	5	2	7
C. College/university courses	5	5	10
D. Coaching/mentoring by other staff members	8	6	14
E. Reading books, articles in the field	3	1	4
F. Attending professional conferences such as ISPI	3	2	5
G. Other: (Describe) *Trial and error*	1	0	1

* One organization checked all choices and was not counted for this item.

- Implementation of *skills / knowledge / information* interventions
- Follow-up evaluation
- And perhaps, "a little something about" the design and development of NON-skills/knowledge/information interventions such as work process design and feedback.

If, however, the current signs pointing to the evolution to a true Performance Technology capability in organizations are real, then the preparation must involve all or most of the performances described earlier in this paper and must be compatible with the wide-scope definition of Performance Technology. That is, a wide-scope Performance Technology capability would seek preparation sources that give Performance Technologists competence to do:

- Organization Analysis
- Front-End Analysis
- Design, develop, test, implement: Personnel Selection *and* Skills/Knowledge/Information *and* Environment *and* Motivation/Incentive/Affect interventions
- Evaluation of worth of interventions

Table 5
Evolutionary Progression for Preparation of Performance Technologists

Organization's GOAL:	Performance Technologist's PREPARATION:
Stage 1: *To produce relevant, cost-effective skills / knowledge / information interventions to influence valuable human performance*	- Organization Analysis - Front-End Analysis - Design, development, testing, implementation of S/K/I interventions - Evaluation of S/K/I interventions
Stage 2: *To provide assistance in influencing worthy human performance by assisting in producing all relevant interventions*	- Organization Analysis - Front-End Analysis - Assistance and monitoring the design, development, testing, and implementation of any intervention - Evaluation of performance improvement
Stage 3: *To produce worthy performance of employees, based on a process of analysis, design, development, testing, and implementation of cost-effective interventions*	- Organization Analysis - Front-End Analysis - Design, development, testing, implementation of any intervention - Evaluation of performance improvement

Perhaps an intermediate step would be to prepare the emerging Performance Technologists to ASSIST and monitor specialists in the design and development of interventions such as design/redesign of work environments, compensation/benefits, employee selection and the like. In this role, the Performance Technologist would be sort of an "ombudsman" for the human performance, if not the prime architect and builder.

Thus, the author conceives an evolutionary progression (Table 5) for preparation of Performance Technologists that tracks with the evolution of an organization's HPT capability.

A Final Note...

Given the description of desired performance (accomplishments and relevant behavior), one is tempted to somehow synthesize the behaviors into sets such as "generic skills" or "competencies"—for example, *analytical skills, design skills, research skills, problem solving, decision making, critical thinking,* and the like. Or similarly, specify "subject-matter-like" entities such as *principles of evaluation, communication theory, change agentry.*

I resisted this temptation because of my conviction that preparation (training, coaching, mentoring, job aiding) should be PERFORMANCE-BASED (Harless, 1987). In other words, the *content* of the preparation intervention should match as closely as is practical what the Performance Technologist should *produce* and *do*. In still other words, as a target, the Performance Technologist should be prepared to: Perform New Performance and Diagnostic Front-End Analyses; actually design a range of interventions, actually write job aids, actually determine performance baselines, and so forth.

There is a great deal of difference in probability of transfer between teaching Performance Technologists "analytical skills" versus "how to analyze human performance problems," and between teaching "principles of evaluation" versus "how to measure worth of performance interventions." This assumes, of course, that the goal of the *preparation* intervention is the *transfer* of skills/knowledge/information to the job situation. What else could the goal be?

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