Cousins but Not Twins: Instructional Design and Human Performance Technology in the Workplace

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Abstract

Instructional design (ID) and human performance technology (HPT) stem from a common origin in systems thinking and behavioral psychology, but today the two fields employ different research bases, system foci, and methods. To contrast these fields, this chapter presents an idealized and abstracted discussion that examines the theoretical origins of the two fields, briefly describes their similarities, and focuses on their differences in terms of analytical frameworks and methods. We conclude that contemporary practice in most contexts combines elements of ID and HPT, particularly when working in cross-functional teams seeking to improve organizational performance. Practitioners of ID are likely to encounter HPT in their work, and they may be called upon to serve as part of a cross-functional team using HPT as a common conceptual framework.

Keywords

Educational technology • Human performance technology • Instructional design • Instructional designer • Performance-based training • Training

Introduction

While they share commonalities, instructional design (ID) and human performance technology (HPT) employ different research bases, system foci, and methods. Practitioners of ID are likely to encounter HPT in their work, and they may be called upon to serve as part of a cross-functional team using HPT as a common conceptual framework. Some ID professionals have successfully broadened their careers to include both training interventions (using ID) and non-training interventions (using an HPT framework and drawing from other fields). The relationship between the two is sufficiently close that some professional preparation programs in ID also offer HPT electives and concentrations. Other programs focus on HPT, with additional coursework in ID. For all these reasons, it is probably a good idea for ID professionals to have at least some awareness of HPT.

To contrast these fields, this chapter presents an idealized and abstracted discussion that examines the theoretical origins of the two fields, briefly describes their similarities, and focuses on their differences in terms of frameworks and methods. The chapter concludes with a description of a "savvy instructional designer" that combines elements of ID and HPT. To avoid presenting idiosyncratic comparisons as generalities, the chapter employs widely cited ("classic") references that provide a representative view of each field. The authors encourage readers to consult these references for more thorough introductions to HPT.

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J.M. Spector et al. (eds.), *Handbook of Research on Educational Communications and Technology*,
DOI 10.1007/978-1-4614-3185-5_4,

Origins of ID and HPT

Historical accounts of the origins of systematic ID in the 1960s typically attribute its roots to a combination of the then-dominant behavioral learning psychology, combined with the metaphorical inspiration of general systems theory. This resulted in the endless variations of the analysis-design-develop-implement-evaluate (ADDIE) model (Molenda, 2003), which IDs came to accept as both

- An analytical framework for systems thinking and design in training and education
- A project management structure for development, implementation, and maintenance

Drawing on educational psychology, educational technology, instructional technology, communications, and related fields, IDs now create instruction for a broad variety of populations in different settings. IDs may support populations in educational settings in K-12 schools, colleges, and universities. IDs may also support workplace populations in business, government, military, and nonprofit settings. Aguinis and Kraiger (2009) define "training" as a systematic approach to learning with the goal of improving individual, team, and organizational effectiveness. They maintain that development refers to the acquisition of new knowledge or skills for purposes of personal growth. As it is difficult to determine where one ends and the other begins, this chapter uses the term "training" to describe any instruction occurring in the workplace. Because there is as yet little documented application of HPT in school settings, this chapter examines ID and HPT in workplace settings and excludes educational settings.

ID and HPT share a common analytical framework drawn from operations research and common origins in behavioral psychology (Definition & Terminology Committee of AECT 2007). Historical accounts of ID often fail to mention that similar efforts at systems thinking and systematic development were taking place in a wide range of fields over the same time. Of particular interest are American industrial training specialists and industrial psychologists, who found useful a similar, ADDIE-like framework for systematic analysis and intervention to improve human performance in organizations (for an early example, *see* Gilbert 1996a, 1996b). According to Rummler (2007), the roots of HPT arose in the 1960s, with publications appearing in the 1970s. These publications include the work of early theorists such as Mager and Pipe (1970), Rummler (1972), Harless (1973), and Gilbert (1996a, 1996b). In time, leaders active in what is now the International Society for Performance Improvement (ISPI) came to refer to the many variations of this framework collectively as HPT (Van Tiem et al. 2004). Practitioners now refer to HPT using a variety of terms, including "workplace learning and performance improvement" (Beich, 2008). In addition to behavioral psychology and disciplines related to ID, HPT draws on additional disciplines ranging from organizational development to process improvement. Unlike the research base supporting ID, empirical research in HPT is largely limited to reporting cases studies consisting of various performance improvement solutions.

Contrasting ID and HPT

In workplace environments, ID and HPT practitioners can share a variety of goals, frameworks, methods, and evaluation strategies while differing in subtle but important ways. Four commonalities are apparent:

- *Evidence-based practices* emerge from application of relevant research, observation (reflective practice), and other credible sources of evidence.
- *Goals, standards, codes of ethics* have been established, associated with respective professional organizations (ASTD, n.d.; ISPI, 2002a). For HPT, two professional organizations have developed formal professional certification programs. The ISPI program produces Certified Performance Technologists (CPTs) based on its standards (ISPI, 2002b). The program from the American Society for Training and Development (ASTD) produces Certified Professionals in Learning and Performance certification (CPLPs) based on its competency model (ASTD, 2008).
- *Systemic and systematic approaches* are common to both fields of practice although they vary in scope, as discussed below.
- *Formative, summative, confirmative evaluation* are considered standard practice in both fields, though with some differences in measurement strategy, as discussed below.

While these commonalities are important, there are also important differences in frameworks and many nuances of method. Table 4.1 summarizes the major contrasts between ID and HPT within the context of the workplace. This section describes each of these important differences.

Frameworks

Research Base

Molenda (2010) traces the evolution of ID theory from roots in behavioral learning theory and cognitive psychology, beginning with Bruner and continuing through the four successive editions of Gagne's *Conditions of Learning* (1985), and on to current cognitive learning theory. He points out that this work rapidly matured from an early focus using programmed instruction and computer-based learning to a more generalizable framework for a technology of teaching which could be instantiated effectively in any medium—even classrooms using nothing beyond the familiar lesson plan and standard curriculum materials.

Table 4.1 A comparison of ID and HPT frameworks and methods

		ID	HPT
Frameworks	Research base	• IDs employ behaviorist, cognitive and constructivist approaches, with behaviorism largely eclipsed • Evolution includes ID theory, methodology, and project management	• HPT practitioners employ largely behavioral approaches, with exceptions lying in the use of cognitive psychology in the area of performance support for knowledge work • Evolution influenced by both ID and other non-training fields
	Systems view	• Instructional systems comprised of learners, objectives, methods, and evaluation (Morrison et al., 2007)	• Performance systems comprised of interacting components operating at multiple levels: individual, team, organization, enterprise, and society • Performance systems may include instructional subsystems
Methods	Core processes	• IDs use different variations of the ADDIE model to create instructional systems • IDs may choose to use rapid prototyping and participative design to decrease development time while improving quality	• HPT practitioners use the HPT model to close gaps between actual and desired performance • Aside from the development of performance support systems and eLearning, HPT practitioners typically do not employ rapid prototyping
	Performance analysis	• Analysis in ID presumes an instructional solution to a given problem or opportunity • Analysis activities include the specification of broad learning goals, learner characteristics and workplace contexts, learning hierarchies, and job tasks	• HPT practitioners begin with understanding the required performance and its organizational setting. They will analyze the organization and the larger environment. They will specify a gap between existing and desired performance and make sure the gap is worth closing before proceeding further
	Cause analysis	• In presuming an instructional solution to a given problem or opportunity, analysis in ID does not investigate causes of a performance gap • The closest that IDs get to cause analysis lies in determining whether learners should be able to use job aids during their training and in the workplace	• Having aligned a performance gap with organizational business goals and determined that the gap is worth closing HPT practitioners will conduct a cause analysis to identify environmental and individual sources of the performance gap • In conducting cause analyses, HPT practitioners use a troubleshooting sequence that investigates environmental sources of the gap before investigating knowledge and other sources of the gap lying in the personal repertory
		• Create effective learning as learning is good and more learning is better. In workplace settings, training serves this learning function	• Deliver workplace performance in ways that meet organizational missions and business goals. In workplace settings, HPTers will employ a solution-agnostic process to ensure they understand performance requirements and causes of performance gaps before they create solutions to close them
	Intervention selection	• Focuses on the selection of training media and perhaps job aids • Training is viewed as the default solution to any gap between actual and desired performance	• HPT practitioners match the interventions they select to the sources of a performance gap arising from a cause analysis • As interventions that address environmental sources of performance gaps tend to be less expensive and faster to create, HPT practitioners will use them in place of interventions that address the personal repertory when they can
	Measuring results	• If conducted, evaluation focuses on the extent to which the training delivered some sort of return on the organization's investment • Isolating effects of training is an important part of a credible evaluation report • Often conducted contrary to Kirkpatrick's and Phillip's guidance to start at higher levels and work backwards	• Isolating out the effects of training, within a larger HPT intervention, interests some HPT practitioners but not others • May use a Kirkpatrick/Phillips model if decision-makers are interested in the return on their investment in training, but will do so in the order these authors recommend, beginning with higher levels and working backward • Will use program evaluation approaches to investigate other questions decision-makers may have

Molenda also traces the development of ID methodology. He attributes its origins to the application of operations research to training development in the military, where the emphasis was on training as part of integrated operational systems, such as weapons systems. Thus, training was provided as part of a larger system that defense contractors delivered to the military. The methodology for this systems view of training was developed at Florida State University as the Instructional Systems Development (ISD) model. The methodology was in itself a systematic method for development of training, which embodied both

- *Project management* principles (such as a work flow using the ADDIE steps)
- *Design processes* intended to proceduralize the best available decision-making principles for application of the emerging technology of instruction

Thus, ISD was originally defined as both a *systems approach* to creating training and a *systematic approach* to managing training development projects. ISD also had the goal of *systematic design* by incorporating procedures for design of the training itself. IDs completed phases and activities that became project deliverables. These deliverables became inputs for subsequent phases and activities.

As HPT branched from ISD, the development of HPT theory followed a substantially different course. Rosenberg, Coscarelli, and Hutchison (1999) state that from ISD, HPT took the systems analysis framework, but it was substantially broadened: they attribute to Mager (1988) the point that "In the HPT suprasystem, instructional technology is a subsystem, and HPT is a subsystem in the overall management suprasystem" (Rosenberg et al., p. 25). Thus, while the focus of ISD was on the training (sub) system within the context of operational systems, the systems framework took HPT in a different direction: HPT's focus is on the entire organization's performance, and within that the performance of work groups and individuals. Work groups range in size from small teams to larger departments to global enterprises.

More recently, while learning theory evolved from a behavioral to a cognitive learning theory perspective, HPT has retained much more of a behavioral orientation (although the Rosenberg et al. discussion of the field's origins does include cognitive engineering). HPT practitioners creating custom software solutions that provide on-demand access to information, advice, tools, and learning also draw on cognitive psychology to create performance support systems. Creating systems that help knowledge workers recognize situations, make decisions, and solve problems, HPT practitioners may use cognitive task analysis to ensure that the user interfaces they create match both the mental models (i.e., "thoughtflow") and workflow that exemplary performers use to complete their job tasks (c.f. Villachica & Stone, 1999; Villachica, Stone, & Endicott, 2006).

The evolution of HPT methodology also diverged from ISD's systematic methodology. In HPT, attention was at first on the major analytical frameworks. Process models of the problem-solving process or the project management system of the sort contemplated by ISD came later, with the work of Mager and Pipe (1970), Rossett (1987), Rosenberg (1990), and Hutchinson (1990). It is probably fair to say that the defining focus of HPT has remained on the analytical frameworks, rather than on standardization of procedural methodology. For example, the standards which define ISPI's CPT are performance-based and do not require the use of any particular methodology (ISPI, 2002b).

The evolutionary trends of HPT development are substantially different from those influencing ID. As HPT practitioners view training as only one of many possible interventions to improve performance, the field has been influenced by a wide range of fields and the interventions they create. Rosenberg et al. (1999) include information technology, ergonomics and human factors, psychometrics, behavioral feedback systems, organizational development, and change management. Each of these fields has had its own influence on the evolution of theory and practice of HPT.

Systems View

The concept of a "system," is a cornerstone in both ID and HPT. Brethower (2006) defines a system as "a collection of elements and relationships held together by a purpose in common" (p. 124). As an example of a system, consider an automobile assembly plant. The plant is made up of a collection of elements (people, machinery, processes, etc.) combined to accomplish the purpose of producing finished automobiles that can be shipped to dealers throughout the world.

Starting with this cornerstone concept, a systems view has three essential characteristics (Anderson & Johnson, 1997; Brethower, 2006; Meadows, 2008):

- *It is holistic*. A systems view attempts to encompass all of the system's elements—both tangible elements (people, buildings, and machinery) and intangible elements (workflow processes, organizational culture, company policies, and safety regulations). However, the system is seen as more than the simple sum of its parts. For example, in the automobile assembly plant, the people cannot produce automobile without the machinery and the machinery cannot produce automobiles without the people.
- *It focuses primarily on the interactions among the elements rather than on the elements themselves*. The tangible and intangible elements of the system interact in ways that are complex, dynamic, and interdependent. Small changes in one element may ripple throughout the entire system, influencing all of the other elements. Elements of

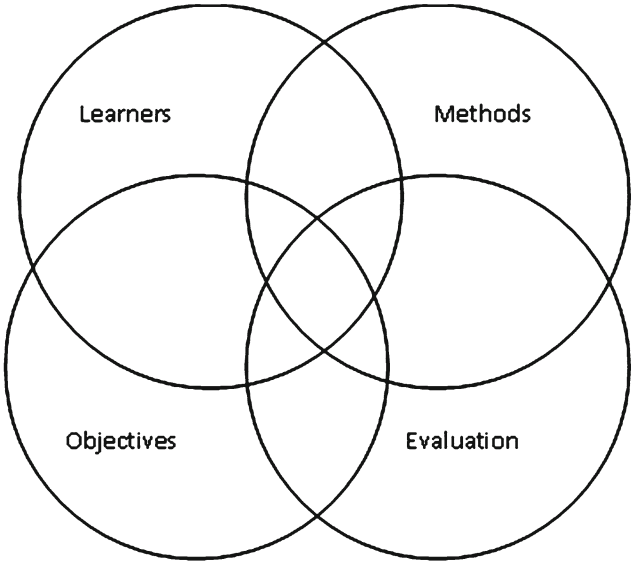

Fig. 4.1 Components of an instructional system (Morrison et al., 2007)

Table 4.2 Gilbert's (1996a, 1996b) behavior engineering model (BEM) (p. 88)

	Information	Instrumentation	Motivation
Environmental supports	*Data*: Information about expectations, guidance during performance, and feedback the extent to which performance met expectations	*Instruments*: Tools, time, and materials required to perform the task	*Incentives*: Financial and nonfinancial rewards for performing the task; consequences for nonperformance
Person's repertory of behavior	*Knowledge* (*and Skills*): The internalized know-how required to perform the task	*Capacity*: Innate physical, cognitive, and emotional capabilities required to perform the task	*Motives*: The interest and desire to perform the task

the system may interact in ways that produce unexpected consequences. For example, in the automobile assembly plant, a new piece of machinery will often result in changes in workflow processes, organizational culture, and safety regulations.

- *It views systems as "nested," with larger systems made up of smaller ones*. For example, one smaller system within the automobile assembly plant is the building, which is in turn, made up of smaller systems—lighting, heating, and ventilation. Conversely, the assembly plant itself is part of a larger system of the manufacturer, which is in turn part of an industry that is part of national and global economies.

Both ID and HPT begin with this systems view. However, they apply it to different systems. ID considers an "instructional system" while HPT considers a broader "performance system." Each system has the same three essential characteristics. However, the purpose and elements of the systems differ. The ID process creates an instructional system, the purpose of which is to promote the acquisition of specified knowledge or skills. Morrison, Ross, and Kemp (2007) present one view of an instructional system that consists of four interdependent elements (*see* Fig. 4.1):

- Learners—characteristics of the individuals who will participate in the instruction
- Objectives—the knowledge or skills the learners are to acquire
- Methods—the means that will be used to help the learners learn
- Evaluation—the means to be used to determine the extent to which learning has occurred

Other descriptions of instructional systems appear within Dick, Carey, and Carey's (2009) ID model, Smith and Ragan's (2005) ID model, Gagne's nine events of instruction (Gagne, Wager, Golas, & Keller, 2005), and Merrill's (2002) first principles of instruction. Each instructional system is made up of a different set of elements. Within in each system the elements interact to promote the acquisition of specified knowledge or skills. In contrast to ID's focus on instructional systems, HPT focuses on producing performance systems that promote the consistent performance of a specified job or task in ways that meet organizational expectations. Gilbert (reprinted in 1996a, 1996b) presents one view of a performance system comprised of six interdependent elements (*see* Table 4.2). According to Gilbert, worthy performance occurs when both environmental supports and a person's repertory of behavior work together to produce consistent performance that meets organizational expectations. This systemic view stresses multiple elements working at different levels in ways that produce competent human performance.

Other performance systems arising from HPT include Kaufman's (1983) organizational elements model, Langdon's (2000) language of work model, Marker's synchronized analysis model (2007), and Rummler's (2006) anatomy of performance model. Each performance system is made up of a different set of elements operating at levels of individuals, work groups, departments, enterprises, and even societies. But in each system the elements interact to promote the consistent performance of a specified job or task towards goals that organizations value.

Methods

Owing to similarities and differences in their frameworks, ID and HPT use a variety of similar methods but sometimes in different ways.

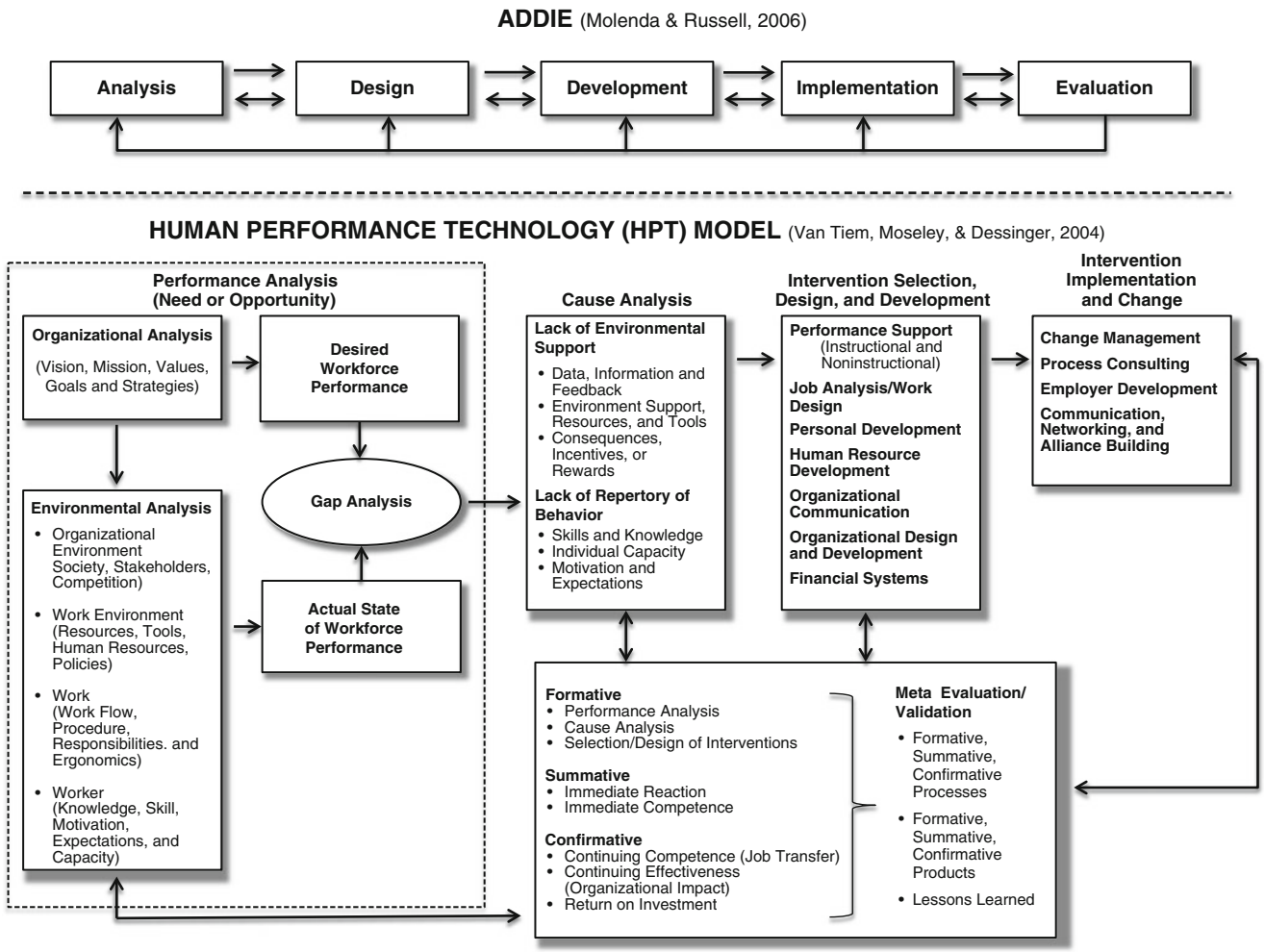

Fig. 4.2 A comparison of ADDIE and HPT models

Core Processes

As depicted in Fig. 4.2, both ADDIE and HPT are linear, systematic models. Both models help practitioners address complexity inherent in these efforts by ordering their phases and component activities. IDs and HPT practitioners completing these phases and activities produce deliverables that become inputs for subsequent phases and activities. Both models employ aspects of analysis, design, development, implementation, and evaluation. While both ADDIE and HPT embed evaluation throughout all phases, HPT can be heavier on analysis, with phases addressing both performance and cause analysis. HPT also specifies both implementation and change management. Where ADDIE separates Design and Development, HPT combines them. An ID creating training will complete all or part of the ADDIE phases. HPT practitioners creating performance improvement systems will complete all or part of the phases and activities comprising the HPT model, depending on the nature of the project they are working on. In both ID and HPT settings, senior project personnel typically complete aspects of analysis, design, and evaluation. Less experienced personnel often address development and implementation. Unfortunately, Both ID and HPT models commonly omit a maintenance phase. This omission makes it impossible to calculate trustworthy life cycle costs and benefits associated with these efforts.

As depicted in their models, both ADDIE and HPT employ linear, "waterfall" core processes, where the completion of one phase leads to the beginning of the next. The exception lies in evaluation, which provides feedback informing all of the phases in the model. ID has seen the emergence of prototyping-based models that employ iterative mock-ups created collaboratively with end users. Baek, Cagiltay, Boling, and Frick (2007) describe how rapid prototyping and participative design overcome the bureaucratic and linear nature of ADDIE, speeding up its otherwise slow design and development processes. Ross et al. (2007) mentions the role of prototyping in design research and natural work settings. Aside from a discussion of rapid application development (RAD) in creating performance support systems (Villachica et al., 2006), rapid

prototyping and participative design do not appear in the most recent edition of the *HPT Handbook*.

Performance Analysis

One of the major contrasts between ID and HPT lies in the area of analysis. Typically in response to some formal or informal request for training, IDs completing the analysis phase of the ADDIE model specify broad learning goals as well as learner characteristics and workplace contexts. IDs may also specify learning hierarchies and job tasks during the analysis phase. IDs subsequently use the outputs of the analysis phase to form instructional objectives during the design phase. In contrast, HPT practitioners begin with a performance analysis targeted at specifying the nature of the problem or opportunity. The performance analysis consists of three different analytical activities: organizational analysis, environmental analysis, and gap analysis. This phase of the HPT model ensures practitioners align any gap between actual and desired workplace performance with the organization's missions and business goals at the levels of the organization, work, and worker. HPT practitioners will use a statement like this to describe the performance gap itself:

- What we want our (insert target population here) to do is (insert expected behavior here) at (insert expected measurement here)
- What our (insert target population here) are doing now is (insert existing behavior here) at (insert existing measurement here)

Use of this convention tends to clearly specify the performance problem as well as when it will be solved: when others in the organization meet the desired performance. During the performance analysis, HPT practitioners will also make sure the specified performance gap is worth closing.

Harless (1973) coined the term "front-end analysis" to refer to these activities, and he addressed what is now the performance analysis phase of the HPT model in the first of his 13 "smart questions":

1. Do we have a problem?
2. Do we have a human performance problem?
3. How will we know when the problem is solved?
4. What is the performance problem?
5. Should we allocate resources to solve it (p. 231)?

To answer these questions and complete the performance analysis, HPT practitioners will partner with clients, sponsors, and other stakeholders.

Cause Analysis

In focusing on knowledge, skills, and attitudes, IDs do not employ a cause analysis to investigate the sources of a performance gap. The closest they may get might be to determine whether learners meeting a particular objective might use a job aid (e.g., Mager, 1997; Morrison et al., 2007). In contrast, HPT uses a solution-neutral troubleshooting approach that refrains from specifying a treatment—whether it is training, other changes to environmental support, or other changes to the personal repertory—until the diagnosis of the performance gap is complete. Cause analysis focuses on identifying *all* possible environmental and personal sources of the performance gap, and HPT practitioners expect to see multiple, interacting sources of any given performance gap.

In diagnosing the sources of a gap, HPT practitioners will address potential sources arising from inadequate environmental support before those arising from an inadequacy in people's repertory of behavior. The reason lies in the concept of leverage (Chevalier, 2003, 2006; Gilbert, 1996a, 1996b). Environmental sources of performance gaps tend to be more common, anecdotally accounting (by a common "rule of thumb") for roughly 75 % of all performance gaps (Dean, 1997). HPT practitioners will consider a lack of skills and knowledge as the source of a given performance gap only *after* ruling out all environmental sources of a performance gap.

Intervention Selection

In ID, intervention selection focuses on the selection of training media and perhaps supplementing it with job aids as their default solution. In addition to many workplace executives, managers, and supervisors, IDs tend to presume that learning is good, and more learning is even better. This perception leads to the widespread belief that training is the default solution for any gap between actual and desired performance in the workplace. In contrast, HPT practitioners will investigate all potential sources of a performance gap and then use all potential means to close it (Molenda & Pershing, 2007; Rummler & Brache, 1990). In HPT, sources of performance gaps arising from the cause analysis lead to recommended interventions to close the performance gap. HPT practitioners refrain from recommending solutions (or interventions) until they have identified the source(s) of the performance gap. In specifying only those solutions that address corresponding sources of a performance gap, HPT is "solution agnostic." In selecting interventions associated with multiple causes of performance gaps, HPT practitioners are more likely to create, implement, and maintain solution systems, rather than isolated interventions.

As interventions fixing sources of performance gaps that lie in the environment tend to be faster and less expensive to create, implement, and maintain than those involved in changing behavioral repertories, HPT practitioners tend to view instructional interventions as among the most costly and least desirable of performance solutions. This perception is sharpened by Dean's (1997) anecdotal observation that only 10.5 % of performance gaps arise from a lack of required skills and knowledge, meaning that training that enables learners to acquire such skills is a special case of HPT, appropriate for closing a relatively small number of performance gaps.

Measuring Results

While both ID and HPT emphasize evaluation, the approaches most commonly used differ. In ID, the focus is on training. Perhaps the most commonly used analytical framework is Kirkpatrick's with Phillips' extensions (Kirkpatrick and Kirkpatrick, 2006). The purpose of the model is to demonstrate return on investment for training, using a 4- (or 5-) level analytical framework. However, the top levels of the model have been criticized as difficult to develop, and aimed at the wrong target: isolating the effects of training (Watkins, Leigh, Foshay, & Kaufman, 1998)—a goal of interest to trainers, but often not to the business. In fairness, we believe some of this difficulty comes from the experience of practitioners who often implement the model starting with the lowest level, rather than the highest, and thus find themselves focusing on outcomes which are of least importance. When this happens, the measures used can be highly misleading.

By contrast, the HPT approach resolves from the start the challenge of measuring important outcomes: the focus of front end analysis in HPT is on closing the performance gap with real business consequences to be measured in ways which are meaningful to the client (Moseley and Dessinger, 2010; Winiecki, 2006). There is no intent to isolate the impact of each performance improvement intervention, including training. Thus, development of meaningful business impact measures is not an added, artificial exercise; it is an inherent part of the initial problem definition (Brinkerhoff, 2006; Pershing, 2006). This approach has the added advantage of assuring the sponsorship to gather the data for the measures of results, because they are part of the business' normal work, and not an added, artificial step.

True Confessions: Limitations of the Preceding Comparisons

Thus far this chapter has presented only an abstracted comparison of the "classical" analytical frameworks used by ID and HPT. Both fields are undergoing constant evolution, drawing both on practitioners' reflections and advances in underlying theory. IDs and HPT practitioners constantly adapt these fields to meet their own, clients', and stakeholders' requirements. Accordingly, in any real-world ID or HPT project, the devil is in the details. The authors would like to explore two such issues of evolution and context here: the rise of a cross-disciplinary approach to design thinking and the emergence of savvy IDs who blend elements of ID and HPT in improving workplace performance.

The Rise of Design Thinking

Conversations about the nature of design in instructional systems development (e.g., Boling & Smith, 2007; Ertmer et al., 2008; Rowland, 1993; Silber, 2010) also involve conversations about the design process and design thinking (e.g., Brown, 2008; d.school, 2010; Lawson, 2006; Myerson, 2001). This broad conception of design cuts across

- Disciplines, including architecture, engineering, community planning
- Professions such as graphic design, product design interior design, and textile design (Lawson, 2006)

Jonassen (2004) maintains that design involves ill-structured problem solving in the face of vague goal statements and few constraints. There are multiple, undefined criteria, with no right or wrong way of solving the problem, only better and worse ones.

Elements of design thinking are beginning to make inroads into both ID and HPT. As depicted in Table 4.3, Baek et al. (2007) apply them in their discussion of user-centered design in ID. Villachica and Stone (1998, 2010) have discussed elements of design thinking in creating both instruction and performance support systems based on the use of Martin's (1991) RAD. Readers wishing additional information on this topic may want to review Susan McKenney and Jan Herrington's chapter on Design Research appearing in this Handbook.

The Savvy Instructional Designer

In workplace settings, IDs creating training would be wise to adopt a performance-based approach that mixes elements of ID and HPT (Sims & Koszalka, 2007). This approach lends itself to improved transfer of learned skill and knowledge to workplace. In this setting, training that closes a skill gap removes a barrier to meeting a business goal or enables an organization to meet some aspect of its mission. Training professionals who fail to align their efforts with business goals or consider non-skill sources of performance gaps and non-training solutions proceed at risk, with these factors being the top two reasons contributing to the failure of training and development efforts in the workplace (Phillips & Phillips, 2002). Like their HPT counterparts, savvy IDs align their efforts with meeting the needs of their workplace sponsors in ways that focus on results, take a systems view, add value, and establish partnerships (Addison, Haig, & Kearny, 2009).

A savvy instructional designer:

- Collaborates with others in the organization to
  - Identify performance gaps
  - Align them with missions and business goals to focus on valued performance
  - Determine whether the gaps are worth closing
- Identifies all possible causes of given performance gaps and collaborates with others to address them
  - IDs often address knowledge gaps by creating training and guidance gaps by creating job aids

Table 4.3 Design thinking elements in ID and HPT

Aspect	d.school bootcamp (2010)	Baek et al. (2007)	Villachica and Stone (1998, 2010)
Mindsets	• Show, don't tell • Focus on human values • Craft clarity • Embrace experimentation • Be mindful of process • Bias toward action • Radical collaboration	• User participation • Contextual analysis • Iterative design • Rapid prototyping	• Collaborative analysis and design • Rapid prototyping • Usability testing • Timeboxing • SWAT teams
Phases	• Empathize • Define • Ideate • Prototype • Test	• Not specified	• Alignment • Joint requirements planning • Design reviews • Prototyping • Usability testing

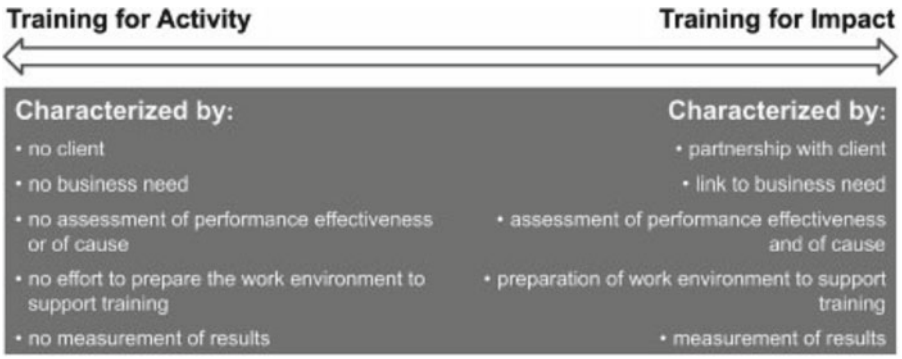

Fig. 4.3 Training for activity and impact. From Robinson and Robinson (1990)

  - IDs partner with other professionals to address other sources of gaps, knowing that the training department is often blamed for any unclosed gap
  - IDs may employ strategies associated with either the performance support or the technology integration literatures. Readers wishing more information about the latter may want to review Mark Lee's chapter on Technology Integration Work Settings appearing in this Handbook.
- Collaborates with others to ensure that training transfers to the workplace. This involves asking for executive and management support for transfer before and after the training (Broad & Newstrom, 1992)
- Partners with others in the organization to ensure that the different components of the solution system integrate in ways that close the gap
- Employs rapid prototyping and participative design to shrink development time while improving quality
- Reports the extent to which the solution system closed the performance gap
- Collaborates with others to conduct needs assessments and evaluations to answer other questions that keep decision-makers up at night

This recommendation for performance-based ID corresponds to Robinson and Robinson's (1990) concept of training for impact. As depicted in Fig. 4.3, a continuum of training approaches lies between training for activity and training for impact. In the former, a requestor typically asks for some sort of training. IDs create the training. Once delivered, the activity is finished. This form of topic-focused instruction often fails to transfer to the workplace. While training for activity is unfortunately commonplace, this approach does not prepare people to perform their jobs. Robinson and Robinson contrast this approach to training that produces a positive impact in the workplace. Performance-based training is designed to produce such a favorable organizational impact.

Robinson and Robinson (2006) later refine this continuum to compare traditional to performance-centered approaches, where the former is characterized by focus on learning produced in a firefighting mode largely independent of collaboration with the client group. In this approach, implemented learning equates with success. In a performance-centered approach, the focus is on what people need to do in the workplace, with learning and other solutions being means to this end. Practitioners of this performance-centered approach are

solution-neutral, partnering both proactively and reactively with client groups to identify causes of gaps and potential solutions. In the performance-based approach, success means closing performance gaps. In workplace contexts the practice of ID should be informed by HPT. While the two fields are not twins, they should be cousins in practice.

Conclusion

Clearly, it is conceptually possible to do ID without using an HPT framework, and it is equally possible to do HPT without doing ID. The two fields shared common theoretical roots and methodologies more than a generation ago, but they have different goals and have evolved in very different ways into different professions. That said, it is increasingly common (except perhaps in academic settings) for ID to be done within an HPT framework which coordinates a broad range of training and non-training interventions, using cross-functional teams, and to evaluate the overall success of the project in terms of improved organizational performance, as HPT requires. We believe that (at least in nonacademic organizations), the trend will continue of training departments redefining their mission in organizational performance (HPT) terms. Thus, we believe the fields will continue to cross-fertilize and evolve their theoretical structures and methodologies. For example, the emerging interdisciplinary field of design is an influence on both ID and HPT. However, we believe ID and HPT will remain distinctly different fields of professional practice. The savvy ID practitioner, therefore, should develop the conceptual flexibility to work effectively within an HPT framework, on a multidisciplinary team.

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