# Generic Skills of an Instructional Developer

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While a strong case could be made that instructional development has been around for some time under various guises with other names,[1] another view is that instructional development is simply a refinement and logical extension of the work of W. W. Charters and other educational engineering pioneers. But instructional development is new—new not only because of a new name, but new (or renewed) with vigor and a new concern about who and what make up this field.

Instructional development, in attempting to become a profession, is beginning to examine itself more closely. Because a profession emerges from and reflects the activities of practitioners within the field, this self-examination must include the abilities of those practitioners.[2] However, investigation of developers' abilities has yet to be done in any large-scale, organized fashion.

## Previous Studies

In 1974,[3] AECT did publish a list of basic tasks of the technician and specialist levels in the area of instructional program development. While a percentage of the task list was gathered through field observations and on-site task analyses, the final list was compiled by committee and, thus, became a mix of both what an instructional program developer did and should do. The task list was not developed further into a list of more general abilities nor was the list field-tested by further analysis.

More recently (1978), the American Society for Training and Development (ASTD) conducted a national survey of its membership to determine the activities of "training and development" practitioners in business, industry, government, and public institutions.[4] The survey itself was a self-report based on a task list generated by a committee and reviewed by selected ASTD chapters. The survey findings were reviewed by a committee and, like the earlier AECT work, the tasks were grouped by a committee. Because of the difference in conceptual models used to group tasks, ASTD had no grouping for *instructional systems development* (the AECT term) although a grouping probably could be constructed by combining ASTD task categories, "Designing and Developing Training Programs and Materials" and "Analyzing Needs and Evaluation Results" and including some tasks from other categories in the report. The organizational model used strongly resembles instructional development models, but no relationship is developed nor is previous task analysis work cited.

Most related studies (Case & Lowrey, 1973; Hamreus, 1969; Jensen, 1968; Snow, 1969; Stone & Martin, 1964; Wiseman, 1966) have dealt either with tasks primarily related to the location, storage, and retrieval of media or with media usage within specific locations such as school districts. Another related problem is that few studies have the task analysis and the task inventories related to the development of curriculum to teach the competencies derived from the tasks. Those that have (e.g., Chisholm & Ely, 1976; Curriculum Development Institute, 1971; Hyer et al., 1971) either do not focus directly on instructional development or discuss it within specific constraints.[5]

## Generic and Specific Skills

At this juncture, some commentary on generic skills is needed. Most task analyses directly reveal tasks performed, not skills involved. The relationship between task and skill is that the task is one of many possible performances stemming from an underlying skill or skills. External conditions surrounding and cuing the performance shape the specific task performed. The performer's current condition, underlying attitudes, and other worker traits also shape the actual task performance.

From a number of performances under similar external conditions, using a number of different performers, the underlying skill can be inferred. The skills may be relatively narrow or may involve complex performances with a

[1] In the 1950s and the early 1960s, when much of the foundation of instructional development was being laid, the term itself was largely unused, if not unknown. In the late sixties and the early seventies, the term received special impetus from the federally funded National Special Media Institutes. These evolved into the Instructional Development Institutes. The term now is used primarily in postsecondary education and professional schools. In the elementary/secondary world, instructional development is confused with curriculum development and media services. In government, business, and industry, it runs head-on onto the more encompassing term, human resources development.

[2] The term *abilities* is used here to include knowledge, attitudes, belief, and skills—skills being the application of knowledge as shaped by attitudes.

[3] Keep in mind that in most cases, the publication date of material minimally reflects work that ended at least 6 months—more likely 12–18 months—before. And, that is the end date of the work. When the article or report is written, data may have been gathered 6–18 months prior to that. Thus, the information and data base from which the article or report was developed is likely to be about 2 years old. This is true of the AECT report.

[4] "Government" includes all levels of government, and "public institutions" are herein defined as institutions open to the general public even though privately owned or operated.

[5] Kerr (1978) outlines the role of a developer-like person but uses the term "educational communications consultant" and seems to be addressing only the K–12 area. One problem that arises is that the social, organizational, and legal problems related to instructional development in K-12 institutions are often different from those in postsecondary education or in business/industry, or in government. There also may be major differences in institutions that are similar in mission but are in the public and private sectors. There are, then, any number of reasons why little seems to have been addressed to the general abilities expected of instructional developers.

number of abstract variables having no inherently correct solution. A real problem lies in the scope of *generic*. How generic is generic? In a hierarchical taxonomy of skills, each higher skill must be regarded as generic to skills directly subordinate to it on the hierarchy. Thus, *generic* becomes solely an operational term deriving its meaning from the context in which it is used. To put the rest of this article in perspective, remember that the context is that of the overall training of instructional developers in a graduate-level program in formal education.[6] The context of formal education is important because the approach to training instructional developers in other contexts, especially business and industry, is quite different. The generic skills we will look at are for the most part rooted in specific instructional development performances and skills but not so general as to be unteachable over a 2 to 3 year period or genetically innate. These skills, however, do relate directly to some traits or prerequisite without which the skill may be impossible (or highly improbable) to learn. For example, it may be impossible to teach the skills of developing a learning task hierarchy to a learner who does not have the ability to manipulate abstract information. Similarly, teaching the androgynist interpersonal skills may not be possible.

A second view of generic skills in this article will be that we are looking for a magic number of seven, plus or minus two. In all honesty, this is done for the sake of convenience to establish a generic skill level from someplace between the procedural skills in instructional development (e.g., conducting a needs assessment, choosing an instructional strategy) and an innate skill such as general intelligence (however measured). In the following pages, we will consider five generic skills, some fairly specific to instructional development, others less directly related but still applicable to instructional development concepts and procedures.

In the order of their appearance, the five are:

- interpersonal communications skills;
- extracting and assimilating chunks of information and working them into a logical (as defined by the subject-matter expert) framework;
- solving problems, mostly in instructional development;
- applying principles of the behavioral sciences;
- systematically searching for related information.

There is a sixth that is less generic—learning, keeping up with, using, adapting, and creating instructional development procedures. This includes using instructional development terms in conversation. After all, if you can't speak the language of instructional development, your I.D. colleagues won't recognize you as an instructional developer, even though your clients will.

## Level of Skills and Practice

Perhaps this difference between the first five generic skills and the sixth less generic skill has to do with the level of practice with the field. In *Jobs in Instructional Media Study*, Hyer, et al. (1971) used worker instructions to set three general levels of performer, aide, technician, and specialist—a concept later used by Grady (1974) and Prigge (1974) in AECT certification studies.

Reigeluth, Bunderson, and Merrill (1978) differentiate among *"scientists*, who discover principles, *technologists*, who use those principles to develop procedures, and *technicians*, who use those procedures to produce instructional products." (Italics as in original.) Scientists, according to Reigeluth et al., are more concerned with general principles than with the actual development of a specific piece of instruction. Technologists and technicians may equate with the practicing instructional developer. This reaffirms the two-role "instructional developer." One role emphasizes the theoretical side of instructional development and the second stresses the actual development of an "instructional product."[7] This sixth less generic skill rests more heavily than the rest on what the field actually involves.

## The Scope of Instructional Development

In dealing with the generic skills of the developer, some limits to the field of instructional development must be set beforehand. There are an abundant number of definitions of instructional development—at least one or two per author in the field. According to the recent AECT glossary (1979), instructional development is:

> A systematic approach to the design, production, evaluation, and utilization of complete systems of instruction, including all appropriate components and a management pattern for using them; instructional development is larger than *instructional product development*, which is concerned only with isolated products, and is larger than *instructional design*, which is only one phase of instructional development. (Italics as in original) (p. 20)

This "systematic approach," which includes ". . .a management pattern for using them (all appropriate components of a complete system of instruction)," also implies a direct and strong interaction between the instructional developer and managers within the total organization or institution. This interaction usually occurs in order to secure the cooperation and appropriate support for the development and installation of the aforementioned instructional system.

## Deriving Skills from the General Literature

In the absence of a large body of information on the skills of an instructional developer, it is only natural to turn then to the general literature of the field for support. The main body of instructional development literature, however, is largely dichotomous. It either deals with specific systems, models, and techniques of instructional development or it is made up of case studies of instructional development projects. While the information in both areas is undoubtedly needed, the skills must be inferred from the information presented. The different types of literature often lead to different inferences.

## Interpersonal Skills

The systems and models approach places emphasis mostly upon the cognitive skills of the developer. The case studies, whether directly or by infer-

[6]See the article by Tim Bentley in the February 1980 issue of the newsletter of the Industrial Training and Education Division (ITED) of AECT and a description of some differences.

[7]Product is defined by Reigeluth as "the output of any phase: design, production, or validation." AECT's instructional product is more an output of the production phase. Extending Reigeluth, an evaluation report and a programed instruction lesson using random access video are equally products. The AECT frame of reference will be used because it better assists in determining different skills needed to "produce" different results.

ence, often stress the importance of interpersonal communications skills[8]—an ability often lacking in training programs. Diamond et al. (1973), in a chapter entitled "Some Lessons Learned," is particularly to the point.[9]

> Since the development process is highly personal, the relationship between the development staff and the faculty is highly important . . . .
>
> Occasionally there will be disagreements in the development process between the faculty member and the developer. Sometimes these disputes must be skipped temporarily and dealt with later on . . . .
>
> The people responsible for design and implementation, evaluation, and production must work closely not only with the faculty but also with each other. There must be mutual understanding and the various responsibilities in the total process and respect for one another as professionals and as people. . . . Development is actually the sum total of a complex series of human interrelationships—a fact that cannot be overlooked by those responsible for the process. (pp. 239-240)

Few studies within the literature of instructional development currently respond to this apparent need. Savage (1975) is one of the few examples of studies concerned with training in the interpersonal communications area. Kerr (1978, p. 159) calls for ". . .training in empathy, human relations, and/or counseling in order to overcome the natural hesitancy of teachers to enter discussions of instructional problems." Goldberg and Grimes (1978) in discussing the needs of practitioners in instructional development heavily emphasize the areas related to "human needs." Consider their list of topics for research and development and note the high proportion of those that require interpersonal skills:[10]

> consultative skill building;
> dissemination and diffusion techniques;
> user-needs studies;
> understanding the politics of change and innovation;
> leadership and management training;
> development of effective linkages with research and development agencies, colleges, universities, and so forth;
> problem identification and solution;
> effective staff development;
> organizational development, analysis, renewal;
> interdisciplinary team building;
> improvement of data collection and presentation;
> cost/benefit, cost/analysis and improvement of interpersonal communication. (p. 191)

Thiagarajan (1973) was eloquent when he spoke of his personal role as part of an instructional development team.

> But nobody warned me about the problems of working with all those insecure and paranoid teammates. None of the programming workshops, courses, or other textbooks seem to have as an objective the improvement of interpersonal communication skills so vital for an SME (subject matter expert) and an ID (instructional developer) to work together.

## Information Structuring

For the instructional developer, the situational context of interpersonal communications skills is often that of working with a subject-matter expert to determine the structure of the content. This procedure mixes the interpersonal skill with a high level cognitive skill. In many cases, the structure of the content, according to the subject-matter expert, is not the same as that found in the standard text or reference. This implies that the developer, through personal interaction with an individual or with a committee of content specialists, can formulate a working content structure within which the information and skills to be taught can be formed into a sequence and hierarchy. Such a structure is necessary if interrelated sequences of instruction are to be developed.

Not only must the developer work with the subject-matter expert to maintain a good interpersonal relationship, but the developer must also quickly master new content areas. This ability to assimilate large quantities of new and relatively unstructured (at least to the developer) information and then to create an intellectual structure for it is little discussed in the literature of the field. The developer must not only take in large complex chunks of information quickly but he or she must create a theoretical framework in which to manipulate the information. The developer must question the subject-matter expert to check both the validity of additional incoming information and the framework in which it fits. In this mode, information begets information and if the developer has truly established a strong rapport with the subject-matter expert, this expert may offer unlimited quantities of information simply as a sign of good faith.

The total process—receive, classify, and store information, build/rebuild structure, request new data and recycle—usually occurs at a rate too fast and too complex to carefully define what is happening. If one adds in the fact that the developer is actually performing the process for two sets of data, one dealing with the actual content material and another dealing with maintaining the personal rapport between developer and client, the whole process becomes a bit mind-boggling. Yet, instructional developers do perform such activities as part of their routine work. The secret of successful performance (another way of saying the underlying generic skill) is probably an ability to "go with the flow" of the questioning and information. Bratton relates the skill to that of anthropologists acquiring information about a new culture. It is probably also related to the ability to take a standardized test (any subject) and do well, and/or to easily learn a new language, and/or to quickly learn a role or part (become a "quick study"). Somehow it is more than

[8]The term *interpersonal communications* is used to denote those skills that primarily have to do with dealing with people rather than data. For example, the instructional developer and the content expert may not agree on the correct definition of a certain term. The developer may be technically correct and "win" the argument but do it in such a manner that the developer/content expert relationship is destroyed. The developer could be said to have exhibited good cognitive or "intellectual skills" while failing in the area of interpersonal communications.

[9]Although Diamond speaks of higher education, his words have relevance in any situation where the faculty member, teacher, or subject-matter expert is "in place" before the instructional development process begins. His observations may not apply when the curriculum is developed before the teacher or trainer is hired.

[10]Contrast Kerr and Goldberg and Grimes with articles on instructional development by Morgan (1978), Kaufman (1978), and Branson (1978) in the same issue of ECTJ for a concrete example of the cognitive-interpersonal skills dichotomy.

simply information processing. Whatever the skill components may be, the existence of the skill itself should be sufficient evidence that instructional development is more than a simple technical process and its practitioners more than technicians—at least in this instance.

## Problem Solving

The instructional developer must operate in the context of the total instructional problem and find organization-wide solutions to problems as well as solving specific instructional problems.

While Reigeluth's scientist-technologist classification makes it seem as though only the scientist can indulge in creative problem solving, most practicing instructional developers would gainsay this idea. They would point to the number and diversity of elements involved in the development of even a simple module—elements that make problem solving the order of the day. These include, at a minimum, factors in production, distribution, system maintenance, and both formative and summative evaluation. The number of variables taxes even the accomplished developer, although developers, not unlike chess players, soon reduce the almost endless permutations down to a manageable number of viable lines of attack. Unlike the previously mentioned skill of forming the structure of a new content area, this skill draws more on previously learned information and procedures in instructional technology and instructional development.

Problem solving is mentioned frequently in the literature but usually without specifics of the exact nature of the skill. When specifics are given, they usually take the form of some process model based on the scientific approach rather than a taxonomic model of problem solving skills from specific to generic. Few models ever integrate both the process *and* the taxonomy—perhaps because the former is regarded as a continuous flow making it difficult to measure without disrupting the flow. For purposes of the actual training of instructional developers, the process model seems most appropriate, while for the development of an understanding of the elements of problem solving and their interrelationships, the taxonomic approach would seem more viable.

## Applying Behavioral Sciences

As is the case with any applied science, instructional development draws heavily on other disciplines but has its own set of specialized information and protocols. The would-be instructional developer must learn both the specifics of the field and large measures of those disciplines that support it. Of those supporting disciplines and fields, the one most heavily drawn upon is psychology—particularly the psychology of learning and instruction. The instructional developer is, in effect, an applied behavioral scientist whose mission is, in general, to apply the relevant principles of learning in the creation of ways to instruct the learner. The case could be made that applied behavioral science is a generic skill—rather than a field-specific skill—for the instructional developer. The argument is moot. Whether field-specific or general (as it relates to instructional development) few would contest the fact that the instructional developer must be fully conversant with behavioral psychology and be able to apply it in practical situations involving instruction. The behavioral sciences, as Saettler (1968) points out *are* the heart of instructional technology.

## Information Searching

The scope of the instructional development field and the way in which it draws on so many other fields mean that—for all practical purposes—the instructional developer can never totally master all those disciplines and fields that form the basis for instructional development. This range posits another skill tacitly expected of instructional developers—the ability to locate needed information not only within the field of instructional development but within the broad range of related fields.

This information-searching skill has as its basis the ability to conduct a complex search for information from a number of different sources in different disciplines—each discipline with its own internal structure and logic.[11] Practiced instructional developers seem to be able to locate needed information both through formal information searches and by linking together information from a number of sources each with only a portion of the information sought by the developer. While the information relates specifically to the different fields and disciplines, the searching skill is more or less generic because it relates to all while using specifics of each when appropriate.

[11]This skill may be somewhat related to gathering and structuring content information from a subject-matter expert but with nonhuman data bases as the source of the information. The developer must "go with the flow" of the data base much in the same way he or she would adapt to the subject-matter expert. More study is badly needed in this whole area.

## Summary

The mix of field-specific and generic skills so far mentioned includes:

- interpersonal communications skills.
- comfortably receiving and assimilating large amounts of new information; creating a logical structure for that information; testing the information against that structure so that additional information can be assimilated; and seeking new information that will help to further develop structure of the information—all of the foregoing done in conjunction with other persons as the source of information.
- creative problem solving of practical problems. We need far more study of precisely how the first five skills are applied within the field. If they are truly generic skills, they should be applicable in a variety of situations in instructional development. By analyzing those applications, a series of protocols can be developed to offer guidance for the practicing instructional developer and to offer some sort of curriculum model(s) for trainers of instructional developers.
- the application of the behavioral sciences to instruction.
- seeking and locating information from data bases and developing appropriate search strategies for each source of information—the foregoing done with information previously stored, usually in printed or text format.
- more specific instructional development skills.

There may, however, be a lot more to generic skills than there seems to be on the surface. Generic skills may involve a completely different approach to the handling of information.

## A Further Look at the Generic Skill

To explain generic skills any further,

we must look to a framework broader in scope than instructional development. A number of such frameworks do currently exist. Some are derived from the job analysis field where field-specific skills are derived from the observation, compilation, and classification of tasks.[12]

The Labor Department, for example, uses an extensive task classification system to develop the *Dictionary of Occupational Titles*. Many of the task descriptions therein border on a list of generic skills, depending on the specific skills chosen as benchmarks.[13] The fields of instructional development and learning psychology also offer some models and taxonomies for classifying tasks and, by implication, skills. The venerable Bloom/Krathwohl domains have somewhat given way to Briggs and Gagné's hierarchy but while Bloom and Krathwohl developed all domains, the Gagné approach rests heavily in the cognitive domain, offering little help when it comes to interpersonal skills and manual skills.

A third, and perhaps the most fruitful, approach is to use a general psychology model that incorporates features of the other models listed. One such model is Guilford's (1967) structure of intellect. In this model of human intelligence, Guilford (1966) accounts for a broad range of skills—including creative problem solving—and places *intelligence* ". . .within the mainstream of general psychological theory." The terms *intelligence* and *structure of intellect* are often misconstrued because they bring to mind an association with Gagné's intellectual skills hierarchy and Bloom's cognitive domain.

In actuality, Guilford comfortably accommodates the affective domain and the "people skills." The structure of intellect does this by including "behavioral content," which Guilford defines as ". . .information where awareness of attention, perceptions, thoughts, desires, feelings, moods, emotions, intentions, and actions of other persons and of ourselves is important." (For more about Guilford's structure of intellect, see Silber's article on p. 33 of this issue.) The structure of intellect is not offered as "the" model of intellect. Rather, it offers a relatively convenient and reliable way of classifying the mental processes of skills in any field—including instructional development.

Another model that can be applied to generic skills is Piaget's stages of intellectual development. This model (discussed in Silber's article on p. 33 of this issue) offers some guidelines for training instructional developers.

## Teaching Generic Skills

In Piaget's construct, persons would have to be proficient in formal operations (manipulation of information with highly symbolic content) before being able to demonstrate many of the generic skills mentioned in this article. Persons at the concrete operations level could not, then, by definition, acquire the generic skills at the formal operations level. Thus, by implication and logic, they could not become successful instructional developers until they had moved up to formal operations. Formal operations learning requires learners to be put into learning situations in which they (with appropriate guidance) must perform formal operations. It behooves us to examine our training methods to ensure we are offering instruction not only in the prescribed content but also at the formal operations level.

If, for example, formal operations must be taught by solving new problems that cannot be solved with concrete referents, to move from a concrete to a formal operational level ". . . involves overcoming inconsistencies and contradictions that are generated when a student seeks to apply her (*sic*) current repertoire of problem solving strategies to tasks for which they are insufficient. Thus, to encourage a level change, developmentalists design situations that confuse the student. For a Piagetian, this confusion is a necessary part of a process by which a student reorganizes her basic cognitive structures to better deal with the demands of the tasks she is confronting" (Harmon & King, 1979, p. 19).

Applying this information, then, to an instructional development program means that:

- Over a period of time, the courses should be structured so there is a progression from concrete operations to formal operations.
- The skills learned in the courses should be arranged so that even if the content varies from cognitive to affective or from fact to concept to problem solving, every higher level course should have some problem solving built into it.
- A program must have more to it than the learning of facts and procedures because the cumulative effect of a number of concrete operations is *not* necessarily a move up to formal operations.
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- Students making the move from concrete to formal operations levels must be given special care, and their confusion must be resolved if such resolution is possible for them. *If it is not possible to move them from concrete to formal operations, even more care and counseling is needed,* and it is the ethical obligation of the program to provide the student with such counseling.
- All courses should be broken down into skills to be acquired[14] and these should be examined as to the type and level of skill (by someone's consistent classification scheme) and then sequenced accordingly—this has special implications for courses outside the regular program.

The ideal program, of course, has done a careful needs assessment for skills needed by instructional developers, developed a skill list and classified it by both type and level of skills, and then built its curriculum—courses and means of measurement—on those bases. It then uses the finest of methods to bring its students to the levels of both specific and generic skills (whatever levels) specified in the program. If this is not happening, then instructional development as a field and we, as practitioners, are in trouble. This is especially true of instructional development training programs.

[12]Looking at tasks in the field was the basic premise at the beginning of the article. We are what we do, not what we say.

[13]Tasks with higher complexity levels, especially Data and People, are almost always more generic than lower level tasks.

[14]We call these "terminal behaviors," and all of us, as a matter of standard practice, describe our courses in these terms.