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**Instructional Systems Design:
An Application of the Process in
Supervisory Training**

Julie A Freeman

**A Thesis
in
The Department
of
Education**

**Presented in Partial Fulfillment of the Requirements
for the Degree of Master of Arts at
Concordia University
Montréal, Québec, Canada**

March 1988

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ABSTRACT

Instructional Systems Design: An Application of the Process in Supervisory Training

Julie A Freeman

The purpose of this study was to attempt to investigate empirically the process of instructional systems design in supervisory training. The ITU model presented by Holden (1983), was initially proposed as the basis for this investigation. The reality encountered in the work environment, however, necessitated some radical departures from this model which were sufficient to invalidate any such investigation. The proposed method and actual method are compared and the ramifications of the differences between them are discussed in relation to the literature on instructional design. Although the instructional product was perceived as successful by the client, it is the author's view that it could have been still more effective if instructional systems design principles had been adhered to more rigorously.

For Dad.

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CHAPTER 1

INTRODUCTION

Companies have been asserting "people are our greatest asset" for so long that, as many employees could attest, the statement has practically ceased to mean anything at all. Recent writings, however, indicate that while in the past such a statement may have been little more than a platitude, the situation is now changing. This may be because the importance of managing and developing valuable human resources effectively is considerably more obvious and pressing at a time when the quality of personnel can mark the difference between success and failure for an organization. The following discussion explores this concept in more detail and considers the ramifications of such an idea for modern human resource development (HRD) departments.

Baird, Schneier, and Laird (1983), in the introduction to The Training and Development Sourcebook, state their belief that this renewed emphasis on the importance of human resources is a result of the increasing complexity of modern organizations coupled with the fact that we are moving more and more towards an information and service-based economy. Organizations are finally beginning to recognize that poorly motivated, poorly trained personnel can be a liability in the current economic environment. The fact that they are becoming more cognizant of the necessity to train and develop their personnel is evidenced by the spectacular growth of the field of HRD in recent years. Estimates of

annual training expenditures in the United States alone range anywhere from \$31 billion (American Society of Training and Development, cited in Kahn & Buchsaum, 1986) to \$60 billion (Sonnenfeld & Ingols, 1986), and \$100 billion dollars (Gilbert, 1976) if corporate and government 'education' (i.e., companies absorbing the cost of university degrees, for example) and training as well as hidden costs are combined.

The latest estimate of direct training expenditures in the United States from Training Magazine's Sixth Industry Report are in the region of \$32 billion for 1987, an 8.4 percent increase over 1986. Furthermore, direct expenditures - comprised of everything except trainers' salaries and overhead costs - increased 12.2 percent. Such findings led the associate editor to comment "... after decades of intoning that 'people are our best asset', employers actually may be putting their money where their platitudes are" (Geber, 1987 p. 39). In an excellent new book, Naisbitt and co-author Aburdene also maintain that the money corporations are spending in this area is a significant recognition of the value of employees to the corporation. They state "corporations are finally willing to invest in people and their skills through training and education to the degree that they have always invested in equipment" (Naisbitt & Aburdene, 1985, p. 165).

While the training expenditure estimates presented above vary widely, the most recent ones of \$60 and \$32 billion are probably closer than they would appear since the smaller figure does not include the hidden costs of training

(i.e. trainees' salaries etc.) and only covers organizations with more than 50 employees. In any event, it is obvious that huge sums of money are spent in this area every year.

While these figures are for the United States, it can be assumed (as with many North American issues) that the same situation prevails in Canada, albeit on a smaller scale.

Peter Drucker's statement in his latest book entitled Innovations and Entrepreneurship, reflects this growth in the HRD field, "... the continuing education and professional development of already highly educated and highly achieving adults has become the true 'growth industry' in the United States in the past twenty years" (1985a, p. 265). There is reason to believe that this growth trend in HRD will continue. The renowned futurist, Alvin Toffler, predicted at the 1982 Annual Conference of the American Society for Personnel Administration that training and development - not computers or genetics - will be the fastest growing, most critical industry in the future (cited in Phillips, 1983, p. vvi). Even as far back as 1977, experts at the U.S. Manpower Services Commission were predicting that management development was the key to future prosperity (cited in Boyle, 1981). If these predictions are correct, then the American Society for Training and Development (ASTD) projected estimates of half a million jobs in the field and budgets that could reach \$600 billion (cited in US News and World Report, 1985, p. 44) may not be as incredible as they seem now.

Somewhat ironically, considering the amounts of money

involved, even companies described as 'best managed' or 'excellently managed' are unwilling or unable to assign a figure on this important investment (Sonnenfeld & Ingols, 1986). A 1984 study of 1,200 major companies by Hay Associates reported that less than one company in a hundred even purport to assess the millions of dollars they spend on education annually (cited in Sonnenfeld & Ingols, 1986). This could well account for the difficulty noted earlier in obtaining accurate figures concerning training expenditures.

If, in general, companies do not really know how much they spend in this area, how do they assess the worth in terms of contribution to the corporate profit structure? For the most part, it appears that they do not (or cannot). Very few companies "... have any idea what they are getting for all the money and effort they spend on training, let alone what they should be getting" (Drucker, 1985b, p. 30). The same concern has been voiced earlier. Tosti (1980) states that organizations "typically fail to analyse [the] purposes, costs or effectiveness [of these expenditures]" (p. 4). Worse, he believes that over half of training budgets are wasted, and that this waste is mostly related to the myths surrounding what training can and cannot do. Romiszowski (1981) agrees, stating that while training is rarely a complete solution to a problem in industry, industrial organizations often tend to expect more than is reasonable from their training departments (p. 32).

Using training as a panacea for all of an organization's problems obviously results in much wastage of time and money, yet this approach is prevalent. Many

authors (e.g., Holden, 1983; Romiszowski, 1981) have observed that training is often used to 'solve' everything from motivational issues to performance problems regardless of whether or not it is an appropriate strategy. The basic problem, according to Tosti (1980), appears to be the confusion over the inherent differences between knowledge and behaviour:

Training means changing behavior, not acquiring knowledge. While a worker may acquire knowledge, there is no guarantee that behavior change will occur or problems be solved ... simply put, the definition [of training] does not relate back to the classroom situation with which most people are familiar (p 44).

He is not alone in this view: "there is a naive belief that the giving of information will change attitudes which in turn will change behaviour. This is a nonsense which bears no relation to our experience of life" (Crawford & Jones, 1986, p. 225). While this may be the most prevalent problem, it is by no means the only one. Some of the other examples of the misuse of training dollars which have been cited include: making training more complicated than it needs to be; over-training; training personnel at the wrong time (Tosti, 1980); and "spectacular but non-specific" training experiences (Crawford & Jones, 1986).

Compounding these issues is the fact that few organizations attempt to evaluate (except in a superficial way) whether the training programs they provide actually do what they were designed to do. Have they met their objectives? Do they need to be modified or improved in some way? Has the organization benefited?

It is well known that, historically, management has not seen the need to ask these questions, taking instead a philanthropic attitude towards training - the assumption being that training, rather like a university education, was valuable, that 'something was better than nothing'. This attitude is all the more amazing when one considers that it is contrary to other aspects of a business operation where all departments are required to contribute and substantiate their actions in relation to profits (Belasco & Trice, 1975).

As the knowledge of this fallacious attitude gained widespread attention, increasing pressure has been placed on training departments to produce measurable results to justify their continued existence. As a result, training management have made a great effort to comply (if for no other reason than to protect their own jobs). This increased interest in the subject is evidenced by the proliferation of 'how to do it' articles on training and evaluation, especially for management programs, in leading journals and magazines such as Training, and The Training and Development Journal, although some of this increase is undoubtedly due to the overall growth of the economy in general, and the HRD field in particular.

While there is certainly 'quantity', the quality of many of these articles is questionable. In an early review of the literature on management effectiveness Campbell (1971) states that, "by and large, the training development literature is voluminous, nonempirical, nontheoretical, poorly written, and dull [as well as] faddish to an extreme"

(p. 565). A similar review by Goldstein (1980) published almost ten years later, indicated that in the interim period, the vast majority of literature on training was still not theoretical, empirical, new, or thoughtful. Goldstein goes on to bemoan the fact that a large proportion of this literature was dominated by anecdotal presentations of little value.

Goldstein (1980) does acknowledge, however, that there is a small but increasingly significant literature that focuses on important issues and suggests that future research include some of the following considerations.

- 1) Researchers of training should consider all aspects of the instructional process and develop theories of adult instruction.
- 2) The creative development of evaluation models which would permit the extraction of the greatest amount of information within the constraints of the environment. Researchers cannot afford to be frozen into inactivity by the spectre of threats to validity.
- 3) A further understanding and recognition that training is a process within an organization must be reflected within the study of instructional systems. We must consider training as a system within work organizations rather than simply treat instruction as a separate technology.
- 4) There is a desperate need for high quality empirical investigations that examine the usefulness of training techniques (p. 262-263).

It is somewhat surprising that the problems and issues discussed above should continue to be so widespread when the science associated with training and evaluation methods has become so refined. The techniques for front-end analysis, production, and evaluation of training programs are available in instructional design (ID) models through fields such as Educational Technology. Although some companies - for example, Arthur Anderson (Miles, 1983), Canadian National (Schmidt, 1987), and Bell (Rosenberg, 1981) - have reported a great deal of success using ID techniques, many others are not even aware such techniques are available.

Why is it that systems approaches, particularly with regard to ID, are not the standard for the field and in widespread use? The answer may lie in the fact that because these techniques require a more systematic approach than conventional instruction, trainers may believe they are too confusing, difficult, time consuming, or costly to apply. More likely, they simply do not know of them or, if they do, have not been properly trained in their use.

Whatever the reasons, it would appear that there is clearly a need for the more rigorous application of the principles of instructional design models, if industry training is to become more effective and (cost) efficient.

This thesis attempts to document the application and use of the systems approach to instructional design in an organization not currently using such techniques. While recognizing that sometimes it is not possible to apply such principles stringently in a 'real world' environment, it should certainly be possible to make concessions to the

needs of industry by modifying the established ID models without necessarily detracting from the logical and conceptual rigor of the original model.

The study also attempts to show that the use of such a model, far from detracting, can contribute to ensuring the production and evaluation of quality training programs which meet real needs while also meshing with organizational goals - an approach which coincides with Goldstein's (1980) suggestions for future research.

In the following Chapter, the instructional systems design concept will be examined and compared with traditional approaches to instruction. Some examples of ID models will also be presented and explored with special emphasis on their use in the industrial/organizational training environment.

A comprehensive model will be explained in more detail in Chapter 3. The investigation process and results of the application of this model, as it was applied in a project involving cargo supervisors in a major Canadian airline, will be documented in Chapter 4. The results of this application will be discussed in Chapters 5 and 6.

CHAPTER 2

TRADITIONAL VS. SYSTEMS APPROACHES TO DESIGNING INSTRUCTION

Traditional Approaches

According to Hannum and Briggs (1982), instructors have traditionally been responsible for all aspects of course development and delivery, usually because of their superior knowledge of the subject concerned. Generally, the first thing an instructor would do in developing a course would be to identify the content. Decisions concerning specific content were based on several factors: the content the instructor thought was important; the content he or she was most familiar and comfortable with; the availability of materials for each of the topics; the content covered by major texts in the field; and knowledge of previous course syllabi. A major additional factor was the amount of time which needed to be 'filled' - a 30 hour course required more content than a 16 hour course. Instructors also made decisions about how to convey the information. These decisions, though, were "... likely guided by a set of assumptions about instruction that had been incorporated into operational procedures by the school or training institution" (Hannum & Briggs 1982, p. 9).

This view is typical and fairly representative of what happens when the traditional approach to designing instruction is used. The emphasis on the teacher, or instructor, is paramount - as an expert on the subject he or she is expected to be able to 'teach' it.

While this approach is still prevalent, it does not necessarily lead to good instruction, perhaps leading to some of the problems already discussed. Knowledge of subject matter does not automatically translate into the ability to teach it - as anyone who has been a student can attest. The result of such a traditional process is often poor quality instruction:

Some persons have been able to design and deliver effective instruction using such an approach but this is not the usual case. The limitation of traditional approaches to course and program development is not that they never work, but rather that the quality of instruction developed ... varies widely, is usually unpredictable, and is often never determined at all. Developing and delivering quality instruction in a traditional manner is in large part an art that unfortunately is practiced by only a limited number of instructors. Thus, uneven quality results. Even among exceedingly talented instructors, there is the problem that their talent is not passed on to others who could in turn become 'artists' in the design and delivery of instruction (Hannum & Briggs, 1982, p. 9).

While the traditional approach can work, it is often a hit or miss affair: it is not necessarily effective or efficient unless the instructor is particularly talented.

Systems Approach

Contemporary views of the instructional process, on the other hand, stress a more systematic approach: "instruction is a systematic process in which every component is crucial to successful learning. This perspective is usually referred to as the systems point of view, and advocates of this position typically use the systems approach to design instruction" [emphasis added] (Dick & Carey 1985, p. 2).

This systemic approach has its theoretical underpinnings in general systems theory. While there are no 'laws' such as one would find in systems sciences, there are "a series of concepts and orientations which can be used by many disciplines to organize and show the relationships between the various parts of the empirical world" (Richey, 1986, p. 34). According to Richey, the interest in such an approach seems to be an extension of the value which human beings place on order in their lives: "[it] is an attempt towards understanding relationships and the effects of a given process, attitude, or object upon other people and other events" (p. 34).

Because the term 'system' describes an abstract concept, Romiszowski (1981) has rejected the usual definitions such as 'a set of components or elements, interacting together towards a common goal' as too far removed from everyday understanding to be much use in comprehending the concept. While acknowledging that some systems define themselves by their very nature, (the example he gives is that of a bicycle), they can always be viewed as part of another system (a bicycle, for example, can be viewed as a man-machine system or as a component in a city transport system). Similarly, a given system is made up of smaller systems (for example, the gear or braking system of a bicycle). As a result of these considerations he concludes that:

A system exists because we have chosen to consider it as that. We have drawn the boundary that limits the extent of the system, thus defining the components, or sub-systems that compose our 'sys-

tem of interest'. Once defined in this way, we can identify the principal connections between this system and its environment, the inputs from the environment to the system and the outputs from the system to its environment (p. 5).

It is only when a system breaks down that there is a 'problem'. Once a problem exists, the system may need to be analysed in order to distinguish what 'should be' from 'what is'. Since effective problem-solving involves choosing solutions from amongst alternatives, it follows that "the criteria for such a selection to be made must spring from the specific problem" (p. 10). According to Romiszowski then, thinking in systems terms helps to:

- a) define the problem;
- b) analyse the problem to identify possible alternative solutions;
- c) select amongst the alternatives and develop the most viable solution 'mix';
- d) implement the solution; and
- e) evaluate its effectiveness.

The Association for Educational Communications and Technology (AECT) uses the term 'instructional development' to describe this systems approach to designing instructional solutions. They define instructional development as:

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" (cited in Wallington, 1984, p. 496)..

AECT further breaks down this term to differentiate

'instructional development', which is the broad application, from 'instructional product development' which is concerned with 'isolated products', and 'instructional design' which is concerned with only one phase of instructional development. As Wallington (1984) comments, these latter two terms could presumably be used interchangeably. In this thesis the term instructional design (ID) will be used consistently for the whole process involved in the systematic design of instruction.

The term 'systematic' needs to be qualified here as it would be wrong to assume that talented instructors using the traditional method outlined earlier are not systematic in the conventional sense of the word. The term systematic as it applies to the systems approach in learning situations consists of a whole set of procedures or processes which interact effectively to ensure that the outputs of an instructional system are people who possess certain knowledge and skills. Their knowledge, skills, and ability to perform are measured at the output of the system itself and fed back to modify the inputs or the processes of the system. The benefit of viewing instruction through the systems approach is that the importance of each component in the process is highlighted: "they must all interact effectively, ... there is not an overemphasis of any one component in the system, but a determination of the exact contribution of each one to the outcome of the system" (Dick & Carey, 1985, p. 4).

While the preceding discussion refers to education in general, it is equally applicable to training since, in

principle, there is little difference in the utilization of any systems approach to education and training, particularly in the design of the instruction itself (Romiszowski, 1981). Furthermore, there is little qualitative difference (in terms of the process described) between the AECT definition outlined earlier and the American Society for Training and Development (ASTD) definition of training and development. Wallington, (1984) finds only two visible differences, (1) The ASTD definition explicitly includes the initial step of determining the actual skills required, and; (2) it relates this training to jobs:

Identifying, assessing, and - through planned learning - helping develop the key competencies (knowledge, skill, and attitudes) which enable individuals to perform current or future jobs (ASTD, cited in Wallington, 1984, p. 496).

The apparent similarity between the two definitions belies some subtle distinctions, particularly in terms of the goals that education and training attempt to accomplish. While the ultimate outputs of an 'educational system' are people that can function and contribute to society in a broad sense, the immediate outputs of a 'training system' are people who can apply certain knowledge and skills to a specific job. In other words, the focus in training is generally much narrower and job related. Obviously, prior 'education' coupled with specific training equip people to perform effectively and thus contribute to the 'organizational society'.

The success of any training program (instructional system) then, depends on successful transfer of learning to

the job. Assuming no organizational constraints, if employees can actually perform the job in question the instructional system is considered to be successful; if not, then changes must be made to ensure it is more effective in bringing about the desired learning outcomes.

Instructional Design Models

Foundations of the systems approach to instructional design models are based heavily not only on systems and communication theory but also on learning theory and research in related disciplines, particularly instruction. According to Richey, (1986), this knowledge base for instructional design has been expanded through practical applied experiences which have been based on these four theoretical foundations. One of the products of such applications has been:

A series of procedural models of design. Like all models, procedural models simplify complex process and interactions, and synthesize each detail into an easily understood form. In essence, these models convey recommended design techniques to the practitioner (p. 93).

The models developed from this approach are therefore a result of many years of thinking, and research, and the accumulated experience of the last twenty five or so years (Kemp, 1985).

However, as has been noted by many authors (e.g., Andrews & Goodson, 1980; Romiszowski, 1981; Dick & Carey, 1985) there is no single systems approach model for designing instruction. Instead, there are various models

which bear the label 'systems approach', the components of which are basically the same. In a relatively recent study, Andrews and Goodson (1980) reviewed some 40 descriptions of instructional design models and their analysis shows this similarity. Commenting on the data provided by Andrews and Goodson, Dick (1981) states "... rather than diverging, we appear to be converging on a common consensus of what instructional design models or theories will be. It is highly unlikely that there will be a significant shift away from this paradigm. If such a shift were to occur, it is unlikely that it would be considered an instructional design model, but rather would take on some new label" (p. 30).

Any such systems model consists of a number of essential stages (adapted from Dick, 1981; and Romiszowski, 1981):

a) Front-End Analysis

Problem determination,
Consideration of alternative solutions,
Identification of training needs (if applicable),
Identification of constraints;

b) Strategy Formulation

Analysis of training needs,
Formulation of broad goals and subgoals (or objectives),
Determination of learner characteristics,
Design of instructional methods,
Media selection to implement strategy;

c) Development and Production of Materials

Determine specific content,
Development and production of materials,
Test development based on materials;

d) Formative Evaluation

Implement experimentally,
Revise accordingly;

e) Summative Evaluation

Evaluate the overall results.

It can be argued that these generic instructional design models constitute a theory of instructional design which includes a description of a series of steps; steps which, if properly executed in sequence, will result in predictable learning outcomes (Dick, 1981).

Certainly, there has been much research emphasis on the stages which form the basis of any ID model, (see for example, Kaufman, 1982 on needs assessment, Mager, 1962 on writing objectives, Kirkpatrick, 1976 on evaluation) - after all, these models are based on theory to a certain extent. However, this concentration on the 'parts' of the model has been criticized by some writers because less and less emphasis has been placed on the 'theoretical glue' necessary to hold the pieces together (Burton, 1981). Others would argue that this is not necessarily a problem as long as the components have been researched and are based on theory. Dick and Carey (1985) for example, state that their model (described a little later) is "an outgrowth of over twenty years of research into the learning process [and] each component of the model is based upon theory and in most instances research that demonstrates the effectiveness of that component." (p 4).

While the components to greater and lesser degrees have been demonstrated to be effective there is, admittedly, little in the way of formal research studies that would indicate the superiority of the overall approach and

validate the theory. Dick (1980) states that this situation is contrary to other 'sciences' in which a given theory is tested by a great number of empirical investigations, but believes that in this case it could be due to the difficulties involved in doing so.

Perhaps the reason for this situation is that it is extremely difficult to empirically compare one instructional design model or theory with another because of the difficulty in locating sufficient numbers of designers who are equally qualified in using two or more models, and who are willing to design the same instructional materials. When one seriously considers research of this kind, the time, costs, and difficulty in locating participants make such research almost impossible" (p. 30).

However, the studies that have been published (particularly primary studies that have used the process and documented their results) provide strong support for the use of such an approach (see Rogers, 1982, for an example).

Dick and Carey (1985) report that there appear to be three main reasons for the effectiveness of this systems approach. These are:

- 1) The emphasis placed on the 'front-end' analysis. That is, the importance placed at the outset on what exactly the learner is supposed to know, or be able to do, at the conclusion of the instruction. Doing this clarifies what the planning and implementation process must effectively accomplish.
- 2) The careful linkage between each component of the model, particularly the relationship between the instructional strategy and the desired outcomes of the

learning. Care is taken to ensure that instruction is aimed specifically at the skills and knowledge to be learned as well as ensuring that the appropriate conditions exist for such learning.

- 3) The systems approach is a reliable and replicable process. Proper evaluation techniques ensure that the instruction "does what it is designed to do". In addition, since the instruction developed through such a process is designed to be used many times, it is worth the effort to use such an approach (p. 7).

Briggs (1982) provides a slightly more elaborate view concerning why the systems approach is successful. He believes that the strengths of current design models include: the use of theory and research as a base for the models; the use of taxonomies of outcomes for instructional objectives; a choice of complex or simple models; the flexibility of techniques and formats; an emphasis on evaluation; the use of practice as a guide to research; and the fact that learning objectives are matched to the instruction (p. 19). Andrews and Goodson's (1980) review also indicates that ID models produce effective instruction in a variety of settings: "the general tasks constituting a model of instructional design, though differing in sequence, are generic in that they may be applied across differing purposes, emphases, origins, uses, and settings. This attests to the robust quality of the systemic or systematic approach to instructional design" (p. 13).

From this discussion, it would seem that ID models

appear (albeit based on somewhat circumstantial evidence) to be reasonably effective. In addition and more importantly, it has also shown rather more convincingly perhaps, that it is, in general, superior to most traditional approaches for producing quality instruction. While this is undoubtedly the case, there is still the need for further empirical study of ID models in order to try and validate the 'theory' (Goldstein, 1980).

The following discussion examines some instructional design models in more detail.

Examples of Instructional Design Models

As Andrews and Goodson (1980) have shown, since ID models are essentially similar, any differences are usually apparent in the degree of complexity of the model (a more or less detailed breakdown of the stages for example), the theoretical bases, and the way in which the methodology is presented, rather than in the general approach itself.

Some proponents, Dick and Carey for example, prefer to use the flowchart form of presentation, (see Figure 1). This particular model does not include a major front-end needs analysis, but assumes this to have already been accomplished.

While this gives a good visual picture of the overall process, and is easy to follow, some misgivings have been noted. Romiszowski (1981) states that there are three main problems with this presentation of the methodology.

- 1) They give the impression of a more or less linear, step-by-step process where one step is

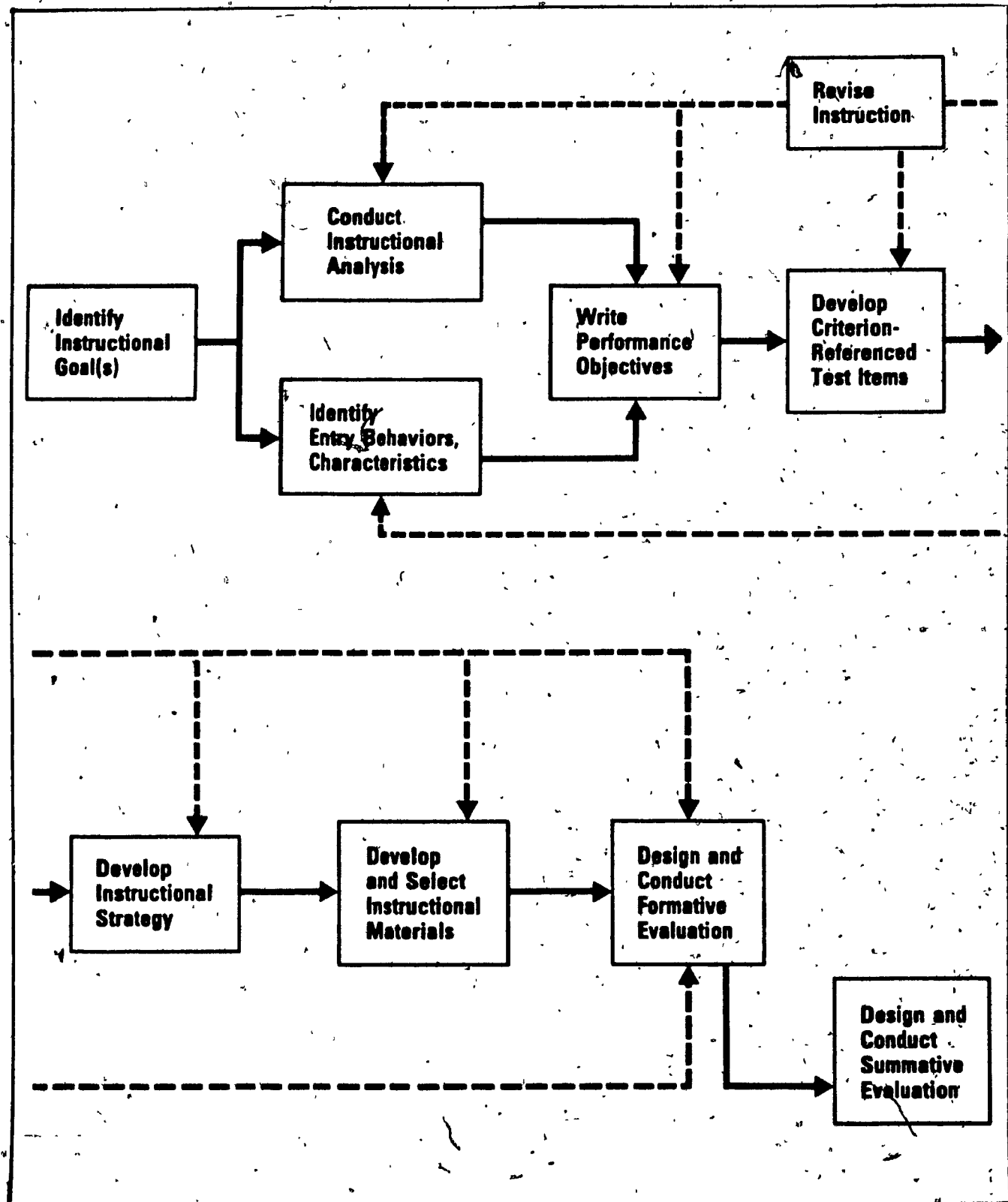


Figure 1. The Dick and Carey Systems Approach Model for Designing Instruction.

completed before the next one is commenced. This is not in fact the case. Problem-solving involves a lot of jumping forward based on sudden insights, and feeding back to complete or alter earlier steps. The flow charts should have arrows (perhaps dotted to indicate the occasional use of these paths) from every block to every other block, both forwards and backwards. But this would make the diagrams so cluttered as to be unreasonable.

- 2) They give the impression that most of the analysis happens at the beginning, the synthesis or design stages about the middle and evaluation mainly at the end of the process. In reality, systems thinking (the application of the systems approach) involves the exercise of these three types of intellectual activity at all stages throughout the process.
- 3) Such flow charts have tended to give the impression that the procedure is mechanistic, that there are precise rules for the carrying out of each stage, as in the case of a flow chart of a computer procedure. Some rules do exist but these do not cover all eventualities. Some step-by-step procedures exist but these are more to guide one's thinking rather than to take over the thinking process. The systems approach to problem-solving is not algorithmic; it is heuristic (p. 18).

Illustrated in Figure 2, instead of a flow chart, Romiszowski simply labels the stages and provides detailed information for each one. Although his categories seem almost too simple, it should be remembered that he includes an analysis, synthesis, and evaluation at each stage.

Holden (1983) presents the Training Development Standards from the Bell System in the United States and the Training Development Guidelines of the International

Telecommunications Union (ITU) of Geneva as examples of world-wide course development models. He himself uses the ITU approach. These models are compared along with

Romiszowski's in Figure 2 which illustrates (as the Andrews

| Romiszowski* | ITU | Bell |
|--|--|---|
| 1) Define Problem | 1) Preliminary Study 2) Job Analysis | 1) Pre-Project Study 2) Job Study |
| 2) Analyse Problem and Select Solution | 3) Population Analysis 4) Training Needs 5) Determination of Objectives 6) Design of Tests 7) Validation of Objectives 8) Determination of Entry Requirements | 3) Objectives (Tests and Training Design) |
| 3) Develop the Solution | 9) Determination of Methods and Means 10) Material Production | 4) Materials Development |
| 4) Implement and Test Solution | 11) Validation 12) Remedial Action 13) Implementation | 5) Field Test |
| 5) Evaluate and Revise | 14) Evaluation | 6) Training Introduction |
| * Analysis, Synthesis, and Evaluation are explicitly included in each of Romiszowski's stages. | | |

Figure 2. A Comparison of the Romiszowski, ITU, and Bell Models of Instructional Design.

& Goodson study predicted) their similarity.

While there are upwards of 60 models presented in the literature and probably countless others, primarily in industrial use, which remain unpublished (Schmidt, 1987, provides an example of an individualized industrial model), the three that are presented here can be considered a representative sample. To present others would add bulk to this thesis without contributing significant additional information.¹ Readers interested in other examples should refer to the Andrews and Goodson (1980) article.

As this review has shown, for designing instruction per se, ID models provide a good framework from which to proceed. If used properly, it is generally accepted that they can significantly increase the quality of a given instructional package while ensuring that it is an appropriate solution to a given problem. As such, their use in industry (in conjunction with a well articulated training strategy) should contribute significantly in reducing the time and money wasted by inefficient and/or ineffective training solutions to corporate problems - problems in the sense of perceived discrepancies in human performance between 'what is' and 'what should be'.

To reiterate, then, while common sense would indicate that certain modifications may need to be made to such models in order to use them in individual settings, the principles inherent in these models are generalizable to a wide variety of situations. There is a need, however, for further field research to attempt to address some of the issues suggested by Goldstein (1980) which were outlined in

the Introduction to this thesis.

The current study undertakes to investigate the use of ID principles in developing a solution to a perceived problem in human performance among supervisors in a large Canadian airline. In so doing, it will address the following.

- a) The process of applying an instructional systems design model.
- b) The issues and suggestions outlined by Goldstein.
- c) The issues involved in using an ID model in a corporation not currently familiar with such techniques.
- c) The adaptability of the model to the unique situation in which it is being used.

While any one of the models discussed in this Chapter probably could have been used with equal success to describe the process involved in such an investigation, an arbitrary decision has been made to use the ITU model explained by Holden (1983). This model was chosen because it is easy to follow, and because of the clarity such a detailed breakdown of the steps provides. In addition, it was developed specifically for a training application. This simplifies the explanation and understanding of the process since there are no references to general education. The model also stresses extensive front-end analysis (unlike Dick's & Carey's for example) which the author considers to be a critical component in industrial training.

The following chapter provides more detail concerning

how this model should be used and the methods which Holden recommends in implementing each stage in the model.

CHAPTER 3

PROPOSED METHOD

Holden's (1983) description of the ITU instructional design model was selected as the intended generic method of approaching this supervisory project. Such a generic approach was proposed for two reasons. Firstly, without having started work on the project, I was not in a position to specify a detailed situation-specific method of proceeding and, secondly, ID models are, by their very nature, generic and therefore supposedly applicable to any situation. Essentially, this Chapter presents a more detailed conceptual overview of instructional design in relation to the specific model together with the intended procedure Holden recommends. It is not, however an exhaustive treatment of the 'how to' approach since, at this point, such a treatment would be beyond the scope of this thesis. Rather, it is presented as a general method as the author envisioned it would be implemented prior to starting the project. Readers interested in more detail are referred to Holden's book, Training For Performance and Profit.

His explanation of each phase in the ITU model is paraphrased below together with some embellishments for purposes of clarification gleaned from general reading. These embellishments are necessarily few in order to avoid interfering with the model as Holden presents it.

For readers unfamiliar with the ID concept, the explanation is divided into two parts, (a) the rationale, which explains why what is proposed should be done and, (b)

the suggested process, which explains how it can be accomplished. For easy referral, chapter numbers from the source book are included under 'suggested process' for each phase should more detail be required.

Phase 1 - Preliminary Study

Rationale

The preliminary study is essential in ascertaining whether a training course is actually required. This front-end analysis determines if training is the solution to the problem and, if so, provides a clear idea of the scope and cost of such a program. If this analysis indicates that training is NOT required (for example, it may be that a change in procedure is all that is necessary), then obviously one does not proceed to Phase 2. This kind of initial study is essential if one wishes to avoid the innappropriate use of training to solve problems and issues that are more cheaply, efficiently, and effectively solved by other means.

Suggested Process (Chapter 3)

- 1) Arrange a preliminary interview with the client and other interested parties in order to ascertain:
 - a) what they have observed which would indicate that there is a problem;
 - b) how they believe this problem is affecting the operation; and
 - c) what they feel should be done about it.

- 7
- 2) Ask for permission to observe the operation by being assigned to two separate supervisors in different locations for several weeks. Look for the following.
- a) Duties, standards, expected accomplishments - are they clear and agreed upon?
 - b) Work environment - is it conducive to satisfactory performance? Are the necessary tools available? Are specifications clear?
 - c) Feedback systems - are they adequate? Do supervisors know when they have performed well or badly?
 - d) Reward systems - are rewards perceived as adequate? Do they discriminate performance and non-performance? What are the morale and/or motivation levels?
 - e) Barriers to effective performance - environmental? Personnel? Availability of information? Planning?

In addition, during this observational period arrange to speak with several different supervisors, managers, and employees in order to solicit their views regarding what constitutes satisfactory supervisory performance. Ask for input on how these three different groups see the problem and what they would do about it. For example, do supervisors believe they are (or are they perceived as):

- a) Lacking knowledge and/or skills; and/or

- b) Cannot perform adequately because of environmental constraints; and/or
- c) A combination of both.

By speaking with the client who requested help, the managers, supervisors and employees involved, and through direct observation of the job over a period of time, one should be able to determine the following:

- a) What is not going right;
- b) Who is not performing as expected;
- c) Why; and
- d) The effect on the organization - customer service, morale, money, etc.

The results of this analysis should be interpreted to determine if training is the correct solution or part of the solution. If it is not, then report to the client on your observations and make recommendations for other solutions (change in procedures, job aids, etc.)

Phase 2 - Job Analysis

Rationale

Once it has been ascertained that some form of training is applicable (that is, if the source of the problem is rooted in the lack of some knowledge or skill, or both), the job analysis pinpoints exactly what job skills are to be taught. The analysis must be sufficient in detail to be able to determine the when, why, and how of each task in order to enable the designer to estimate its difficulty,

frequency, and importance to the job. This knowledge is extremely important as it forms the basis of decisions concerning how to teach a specific skill or piece of knowledge as well as providing a common checkpoint as one proceeds through subsequent stages.

If training is identified as the solution to the observed performance discrepancy, then it is essential that the job be analysed as this forms the basis of determining what should be taught in the course.

Suggested Process (Chapter 4)

From data collected under Phase 1, information should be available for the following:

- a) Purpose and products of the job;
- b) Job standards (formal and informal), and discrepancies;
- c) Organizational fit, lines of authority/responsibility;
- d) Working conditions/environmental constraints;
- e) Required characteristics to perform the job/role of job holder; and
- f) General idea of the tasks involved.

Task Analysis

A more detailed analysis is required for the task analysis and would include arranging access to subject-matter experts (SME's) in order to ascertain the following:

- a) The importance of a given task to the job. That is, what are the consequences if it is done improperly?
- b) How frequently is the task performed? Always? Often?

Rarely?

c) How difficult is the task?

This information is essential in using training to reproduce these same skills in a person who does not yet possess them.

The DACUM approach with the SME's is one of the most effective ways of acquiring an initial listing of tasks. Basically, DACUM (an acronym derived from "Designing A curriculum") is a form of structured interview with a small group of experts. Its purpose is to derive a consensus on how a job should be done correctly. The process involves asking the group to name as many tasks associated with the job as possible. These are written on cards and placed on a wall. For each card, the group is asked to identify how they know when to start this task, and when they know it is complete, as well as all intervening steps. For each of these steps the instructional designer asks questions regarding their frequency, difficulty, and importance. The result of this process, which can take up to several days, is a list of sequenced, colour-coded tasks which all members agree constitute what a competent performer would be able to do.

If necessary, this information can be supplemented using other methods such as reading documentation about the job (if it exists), and interviewing people currently doing the job, or associated with it. At this point, comprehensive information about what makes up the job should be clear and available.

Phase 3 - Population Analysis

Rationale

A population analysis simply provides information about the prospective trainees - the 'target audience'. Only information which is relevant to how the course or program is to be taught should be gathered at this stage. For example, educational level, existing knowledge base, limitations, and cultural characteristics are useful. Obviously the teaching strategy will depend upon these characteristics.

This analysis of the target population provides information concerning the characteristics of the potential trainees as well as some of the differences that may exist between them. Only information which is directly relevant to the ability of trainees to learn the material is required. The analysis is done in order to tailor (or customize) the course by ensuring the material and learning methods are at the appropriate level. In addition it also helps identify the entry level knowledge and skills already acquired by the trainee and what will have to be taught.

The analysis should be in sufficient depth to answer the following questions.

- a) What experience do trainees have?
- b) What can trainees currently do that is relevant to the course?
- c) What are the attitudes and habits of trainees?

Suggested Process (Chapter 5)

Some information about the target audience will already be available from the observation stage and from the SME's during the task analysis. If more information is required, there are two main options:

- a) Administer a pre-test of items from the task analysis to a sample of people from the population;
- b) Collect demographic data on general characteristics such as age, education, sex, language, work experience, past training courses taken, work location.

This comparison between the skills and knowledge already possessed, and the skills and knowledge required for entry into the course provides the basis for the next step - what to teach.

Phase 4 - Training Needs

Rationale

In this phase, all the actual knowledge and skills that will be taught during the course are identified. These come from the initial job analysis and are placed in one of four categories.

- a) Those items of skill and knowledge that can be considered as prerequisite; i.e., already acquired by the trainee.
- b) Those items which do not have to be taught because they are too simple or because they can be acquired by simple observation and common sense;
- c) Those items which can be acquired by other

means than the course in question. This will include the use of job aids and informal teaching;

- d) The items which will be included in the formal course are those remaining from the original list (p. 23).

Suggested Process (Chapter 6)

The content of the course is determined from studying the results of the task analysis performed in Phase 2. Each main task represents a complete performance and consists of a number of sub-tasks. From this list identify what it is that the trainee would need to know or be able to do in order to successfully perform the task.

Background information such as theoretical principles should be taught only when they have a direct bearing upon the sub-task or task which needs to be performed. That is, only information which is essential to learning or which facilitates learning should be taught, information which does not fulfil one of these functions is extraneous. Material that constitutes background information should perform one of the following functions.

- a) Task introduction - provides rationale or context.
- b) Explanation of related vocabulary.
- c) Connection of previously learned tasks.
- d) Preparation for future connections for tasks still to be learned.
- e) Add a 'fun' element.

Phase 5 - Determination of Objectives

Rationale

The writing of good objectives is one of the major keys to the success of the project and is required for all tasks identified in the task analysis. Objectives are behavioural, and are stated precisely. The particular format popularized by Mager (1962) is to specify what the learner should be able to do at the end of the learning session, the conditions under which he should be able to perform it, and to what standard. To be useful they must reflect the tasks and requirements of the target population because any evaluation attempt depends upon them.

Suggested Process (Chapter 8)

Write behavioural objectives for each of the tasks and sub-tasks identified in Phase 2. It is important that these objectives express precisely:

- a) the type of behaviour already identified for the successful completion of the tasks;
- b) the conditions under which it must be performed; and
- c) the criteria for behavioural assessment.

It may be necessary to write several objectives to describe adequately the types of behaviour for a given task if it is particularly difficult or complex. Review each objective for clarity. Ask the question 'could I observe a learner doing this?' for each objective. Avoid terms such as 'know' and 'understand' as it is impossible to observe

someone knowing or understanding something.

Phase 6 - Design of Tests

Rationale

Based on the objectives written in Phase 5, tests should be designed for each task which is included in the training. Successful completion of these tests generally indicates that the instruction has been successful. In other words, trainees are in a 'can do' position. 'Will do' depends on factors outside the scope of such a training course.

Suggested Process (Chapter 9)

Tests should be based on the objectives outlined earlier and written to ensure they reflect these objectives. A test must be written for each objective and a final test for each major cluster of objectives which form the entire task.

Phase 7 - Validation of Objectives

Rationale

This stage is included as a final check to ensure that one is planning to teach the right things.

Suggested Procedure (Chapter 13)

Provide a list of tasks and sub-tasks together with their appropriate objectives to SME's in order to get consensus on whether the objectives are a fair and accurate

assessment of skills required for competence.

Phase 8 - Determination of Entry Requirements

Rationale

The prerequisite knowledge and skills identified in Phase 3 should be formalized at this point to ensure they match the target audience identified in stage four.

Suggested Process (Chapter 3)

It may be necessary in some cases to use entry tests to determine if pre-course remedial training is required. If so, these tests should be constructed at this point.

Phase 9 - Determination of Methods and Means

Rationale

This phase involves decisions regarding how the material is to be taught: the overall strategy to be employed; the detailed learning strategies for each task; and the choice of media (or combination of) that will be used to convey the material.

Much of the work required in developing an instructional strategy has already been completed since:

- a) the objectives have already been identified;
- b) prerequisite skills have been identified;
- c) sequencing (in terms of a hierarchy of tasks) has been decided;
- d) content has been determined (from knowledge and skills

analysis);

- e) appropriate tests have been developed and designed.

Suggested Process (Chapter 10)

With this information as input, make decisions regarding the five major components of an instructional strategy.

1) Preinstructional activities

- consider motivational level
- attraction to the instruction
- preparation for the following instruction

2) Information presentation

- sequencing from the task analysis
- size of each chunk of material
- exact content of information, concepts, principles etc.
- examples
- type of presentation

3) Student participation

- group or individual work (or combination)
- practice
- feedback
- reinforcement

4) Testing

- pre-tests
- criterion-referenced tests
- administration of tests

5) Learning Theory(ies)

Phase 10 - Material Production

Rationale

At this point the materials are chosen from among existing items or are actually produced in accordance with the design strategies determined in Phase 9. Important at this stage is feedback regarding the effectiveness of what is being produced. This can be obtained in several ways. Developmental testing with members of the target group or subject-matter experts is one possible approach.

Suggested Process (Chapters 9 and 12)

- a) Review instructional strategy for each objective.
- b) Survey available information/materials (SME's can provide input).
- c) Identify any existing materials which can be used as is and which can be used with modifications.
- d) Determine what new materials need to be designed.
- e) Select the best medium for materials presentation for each lesson.
- f) Plan the general presentation format and procedures for each lesson.
- g) Produce rough drafts of materials and evaluate for clarity and flow of ideas.
- h) Produce rough draft of the instructor's guide.

Phase 11 - Validation

Rationale

At this point, if all the preceding stages have progressed smoothly, the training course is in next to final form and is ready for field testing with representatives from the target population.

Suggested Process (Chapter 13)

Conduct a field trial for the formative evaluation of the final course. The conditions for this trial should duplicate as much as possible the conditions required in the final training.

Pre-Trial

Ensure the following.

- a) All materials are produced and the necessary equipment is available.
- b) An appropriate number of trainees are available and willing to participate. These should comprise a random sample of the target population.
- c) A site is available which has similar conditions to the real site.
- d) Instructor documentation and materials for the running and administration of the course are produced and ready for implementation.
- e) Evaluation sheets have been developed and produced.

During the field test

- a) Reassure the trainees and instructors that there is no risk involved. It is the training materials, not themselves, that are under test. Trainees should be encouraged to provide feedback by reporting all difficulties encountered as well as what they consider to be good. Explain that changes will be made based on this feedback so that a better course will be available for future students.
- b) Collect the following types of data.
 - 1) Results from the various tests.
 - 2) Comments made by trainees and instructors about difficulties encountered at particular points in the materials.
 - 3) Data on attitude/questionnaire evaluation forms (including debriefing comments) in which learners reveal their overall reactions and where difficulties lie with the materials and the instructional procedures in general.
 - 4) Time required for completion of each component of instruction.
 - 5) Reactions of SME's and other observers.

Phases 12 and 13 - Remedial Action and Implementation

Rationale

From information gathered in Phase 11, in which the

course was evaluated by the trainees, SME's and designers, all noted revisions in content, process, or testing are now incorporated into the final course. For some changes this may entail very little modification, in others it may be necessary to repeat some of the stages. (This phase is more generally known as the formative evaluation).

Suggested Process (Chapter 13)

- a) For major modifications this may involve re-validation with the SME's.
- b) Produce final version with attention to appearance as well as content.
- c) Ensure sufficient copies of materials etc. are available.
- d) Establish implementation measures if required.

Phase 14 - Evaluation

Rationale

After the course has been in operation for some months, a summative evaluation is conducted to see if the knowledge and skills taught are being transferred to the job situation. Ideally this is a statistical evaluation and acceptable results indicate the training is doing what it was designed to do. This summative evaluation should be designed with the other tests in Phase 6 in order to ensure it is appropriate.

Suggested Process (Not Explicitly Addressed)

Follow the four-level evaluation process suggested by Kirkpatrick (1976). Collect data concerning (a) reactions, (b) learning, (c) behaviour change, and (d) benefits to the organization. The evaluation design should follow an experimental paradigm as closely as the real-life situation permits in order to be sufficiently rigorous to provide some kind of statistical evidence concerning effectiveness or non-effectiveness. In addition, some cost-benefit analysis techniques should be applied if at all feasible.

CHAPTER 4

ACTUAL METHOD AND RESULTS

The preceding chapter outlined the method for using ID techniques in the context of the ITU model. Although the author, from her academic background, envisioned this type of process, the reality encountered in the workplace resulted in a different approach. In some cases, this reality necessitated a radical departure from the model, whether in content, sequence, approach, omission, or process. In other instances, the author was able to follow certain stages quite closely. As a result, this Chapter reports the results of the process in the context of the actual method used. What follows then, is a chronology of the events which took place from the beginning of the author's involvement to the production and implementation of the final course materials. Where possible, those events which correspond to the phases of the ITU model outlined in the previous chapter, are identified, although it proved impossible to force the myriad of details into such a framework and still keep the flavour of the actual situation as it transpired.

Chronology of Events

When the author agreed to undertake the responsibility for this project, it was on the understanding that a course would, in fact, be developed. As a result, she was not required to perform a preliminary study to clarify and define the problem as supervisory training had already been

identified as the solution.

Although not present while the analysis was being conducted, the events leading up to this decision to produce a supervisory course were explained and these, as the author understood them, are presented below together with relevant background information.

Background Information

From 1982 through early 1986, the Cargo function in the airline was growing at the rate of 15 - 20 percent annually, and contributing significant dollars to the revenues of the Company. This was due, for the most part, to the growth of the cargo industry as a whole and the introduction of new products to remain competitive. Paradoxically, this growth was occurring at a time when supervisory positions were being reduced (in some instances this ratio was as high as 1 supervisor for 70 employees) and the training function within the Branch had been practically decimated.

In the Spring of 1986, the Cargo Vice President held a general conference to determine the future direction of the Branch. As a result of this Conference, many issues were discussed and recommendations made in all aspects of Cargo operations. In relation to training, two very clear needs emerged:

- 1) A desperate need for technical training at all levels to ensure employees were adequately trained in the new products and technologies in order to maintain the spectacular growth record; and

2) A need for specific supervisory training.

While senior management was digesting the information and recommendations that came from this Conference, an increased awareness of the importance of the customer was also emerging - emerging from the idea that cargo was not in the shipping business, but in the service business. This push resulted in the formulation of a document called the 'Customer Core Value Commitment' which outlined 10 'core values' related to customer satisfaction from which the Branch would operate.

A copy of this document was given to each employee and, in addition, a decision was made to make a training film, the objective of which was to impress upon employees the importance of customer service. In order to provide input for this film, the Management & Organization Development (M & OD) Department conducted system-wide interviews with employees.

The Need for Training

The result of these interviews was approximately 35 hours of raw film footage and it became increasingly clear from the comments made by employees, that they were greatly disillusioned with the Company's activities and support in the critical area of training. A viewing of this raw footage convinced Cargo executive management that both the quantity and quality of technical and management training needed to be greatly and immediately increased.

As a result, all supervisors system-wide were brought

together in May 1986 for a three-day Supervisor's Conference, the goal of which was to identify the specific training needs of supervisors "in order to achieve profits through satisfied customers and competent motivated employees." In a follow-up letter after this conference, the Vice President of Cargo emphasized his commitment to ameliorating the situation and promised to "ensure that Human Resources has developed (in conjunction with Cargo) the necessary training courses and schedule to provide you with the knowledge and skills required to carry out your evolving role".

In addition to the commitment of providing training to supervisors, a new training organization was established within the Branch to provide updated technical training to all Cargo personnel.

The Need for a New Supervisory Course

Although a basic supervisor's course was available as part of the corporate curriculum, it was of a very generic nature and therefore did not reflect any of the issues and problems unique to the Cargo situation. In consideration of the fact that the M & OD Department was dedicated to management development training, Carl Johnston, a manager in this department, was asked to participate in the development of a new program which would meet the needs identified during the Conference. The author was hired on a contract basis to work with him in conjunction with the Cargo Training Manager to design and produce a course that would meet the specific needs of Cargo supervisors system-wide as

identified in a follow-up questionnaire after the conference.

Role and Job Analysis (Phase 2, Job Analysis)

Also prior to the author's involvement, substantial effort had already been expended by Carl Johnston in the M & OD department to try and model the supervisor's role in the Company as it currently existed rather than as an ideal state which might eventually evolve. The resulting 'Supervisor's Role Constellation' (SRC) reproduced in Figure 3 is a compilation, adaptation, and synthesis of information published on supervisory roles and tasks. His explanation of this model is reproduced here in its entirety because of the importance subsequently placed on it in being used as the foundation of the course.

As is evident from the diagram, the Supervisor occupies a pivotal position in [the cargo function of the airline]. The role is multidimensional, complex and demanding. The knowledge and skills required to fulfil it are varied and continually changing. Primary (survival) skills are the abilities to plan, organize, problem-solve and communicate, regardless of the particular job in a particular situation.

The planets (major areas of responsibility) in the supervisor's constellation are four and each consists of a number of satellites (tasks and activities) that must be competently carried out. The ability to make decisions is inherent in all of these tasks and activities. The major areas of responsibility are:

- Planning and Administration
- Customer Service
- Operations
- Personnel

As well, the supervisor has to deal effectively with his/her superiors in the line organization and a varying number of other members of manage-

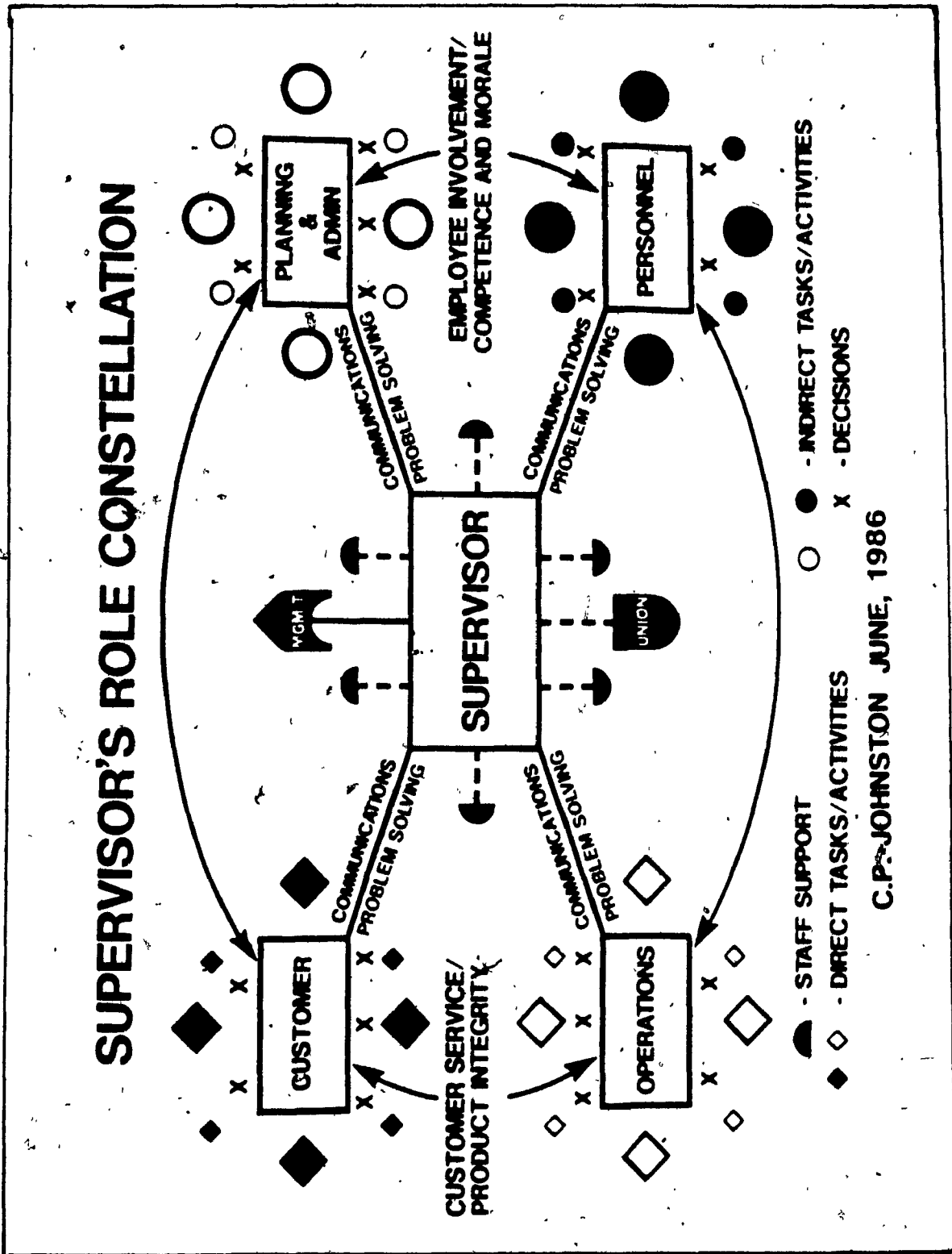


Figure 3. Supervisor's Role Constellation

ment who provide support services or control functions to the line (e.g. training, manpower planning, accounting, engineering, facilities, labour relations, etc.). Some of these staff are people positioned within Cargo, others elsewhere in the Company (e.g. C & SS, Personnel, Legal).

Another group of employees with whom the supervisor must interact (often on a daily basis) are Union officials. This set of interrelationships demands a comprehensive understanding of the Union Contract and well-honed negotiating and conflict handling skills.

In the model, it is assumed that the supervisor already possesses some background knowledge and experience to function effectively in his/her job. Such knowledge includes an understanding of the nature of the Cargo business, how it is organized, its products, technology, philosophy, policies, systems and procedures. Gaps and weaknesses in any of these areas will obviously impact on the supervisor's ability to carry out his/her role and are, in part, the responsibility of the manager to identify and correct perhaps through formal training, although more likely through consultation and guidance.

As a second-level supervisor, the role of the manager is very much the same as that of the first line supervisor. The major difference being that he/she has additional responsibilities (e.g. budgeting, cost control, public relations) a longer time horizon (i.e. planning) and a greater amount of accountability for all aspects of the business. In a Cargo setting, the second level supervisor is responsible to ensure that his/her deputies (i.e. supervisors) are properly trained and equipped to:

- a) Effectively manage day-to-day operations;
- b) Provide the best possible customer service; and,
- c) Develop and lead a competent, motivated work force. As the first line supervisor must plan, organize and coordinate the tasks and activities of his/her team, so too, must the manager for his subordinates.

As specialization (i.e. division of labour) increases, the problem of coordination becomes more and more difficult). To survive, the manager/supervisor has to delegate more and more responsibility to his subordinates. In effect he/she becomes increasingly dependent upon them to manage and coordinate the

work among themselves. Team-work, particularly in a changing environment in which standardized procedures, rules and regulation become rapidly obsolete or insufficient, is the order of the day. The role of the supervisor under such circumstances changes from that of controller and 'boss' to one of coach and planner. Emphasis shifts from directing work to developing people so they can direct themselves.

Information flow becomes extremely important, communication takes on a new perspective and performance feedback, coaching and counseling (the most difficult of the supervisor's many tasks) becomes the new imperative.

But this opens up a whole new can of worms. The question becomes not simply one of 'does the supervisor possess the necessary skills to coach and counsel successfully?' but also one of 'are we structured properly to enable him/her to do so?' And will our systems and processes permit or hamper operations? This introduces questions of span of control, job design, reporting relationships, shift work and a host of others.

Because of the nature of the Cargo business, the differences in size, work load, schedules, etc. from station to station, the answer to these questions can only be found in each individual situation. In effect, this means that there can be no rigidly specified role for the Cargo supervisor that will fit all situations (i.e. where and when he/she should spend his/her time, what he/she should concentrate on, what problems/ issues he/she must resolve, what decisions he/she must take). Flexibility and adaptability become increasingly important personal characteristics.

Nevertheless, there is a set of basic, core skills that the supervisor must possess if he/she is to survive and prosper. And regardless of the particular situation, as the Company places more and more emphasis on customer service, a greater degree of employee involvement will become increasingly necessary.

The role of the supervisor is indeed changing. As the Vice President [of Cargo] so aptly put it: "The essence of the supervisor's job is to achieve results through others. To plan and organize work, and coach

and motivate people, not to do their work or make decisions for them. A coach does not score goals, he/she enables others to score goals. He/she manages winning teams."

Course Concept (Phase 4 & 9, Training Needs, Methods)

From this explanation of the role model, it was evident that any course (or program) should focus on generic management skills such as communication and problem-solving which permeate all aspects of the supervisor's role. Such a course should also focus on instruction in the various tasks and activities - both direct and indirect - under the four main areas of responsibility outlined in the SRC which a supervisor should be able to competently carry out. In addition, the course should be designed in such a way as to ensure that the training is transferred to the job situation in order for the Branch to reach its ultimate goal of improved customer service through product integrity and a competent, motivated workforce.

Objective and Guidelines (Phase 5 & 9, Objectives, Method)

Based on this SRC model, Carl Johnston had written an objective and guidelines (already approved by the cargo training department) which were to be strictly adhered to as they would form the basis of the course. These were:

Objective

To provide the newly appointed supervisor in Cargo with the basic knowledge and skills he/she will require to competently address 80 per cent of the problems he/she will face in his/her first week on the job.

Guidelines

- 1) Course should be designed around "Supervisor's Role Constellation" as framework and constant reference. Generic skills are communication, problem-solving and decision-making.
- 2) Course should focus on core (or survival) knowledge and skills, the context and the nature of the business itself (enabling knowledge and skills); secondary or 'facilitative' knowledge and skills will be either picked up on the job or obtained later in other courses including CCSP [Cargo Customer Service Program].
- 3) Courses should be extremely practical in nature, and minimize any theory or models which do not have immediate and concrete application. Focus on diagnostics rather than theory.
- 4) Should be complementary to, but not include materials covered in CCSP or Coaching & Counselling. [CCSP was already in existence and Coaching & Counselling was to be developed by Carl Johnston concurrently with the Supervisor's Course.]
- 5) Course should maximize learning through the application of adult learning principles: discovery learning, discussion, cases, video, self-awareness exercises, simulations, role plays.
- 6) Programmed instruction should be used to convey factual, straightforward information in order to minimize lectures and lost time in the classroom. Rule of thumb 2 - 1 (self learning vs. classroom time).
- 7) Course should be designed so that it can be taught by trained discussion leaders - i.e., other supervisors.

As is evident from the objective and guidelines, these kinds of decisions would normally be made much later during Stage 5 (Determination of Objectives), and Stage 9 (Determination of Methods and Means), if one was following the ITU instructional design model.

Project Organization (No Explicit Phase Reference)

This administrative issue is not explicitly referred to in the ITU model but it is crucial in 'laying out the ground rules', determining who reports to whom, introductions, and who is responsible for what so that everyone knows where they stand from the beginning. For example, although I reported directly to the M & OD representative, I was responsible for the project and was in constant contact with the Cargo Training Manager, the Advisory Group (subject-matter experts), and other people involved to a lesser degree in the project.

As the following diagram shows, (see Figure 4), the Design Team (DT) consisted of the newly appointed Training Manager for the Cargo Branch (EB), a member of the M & OD Department (CPJ), and myself (JF) as consultant. The Advisory Group (AG) to this team consisted of four current supervisors and one manager who had currently been promoted from a supervisory position. These subject-matter experts were hand picked by the Training Manager (himself a former supervisor) for their communication skills, technical/managerial competence, and perceived ability to make a significant contribution to the project. They all agreed to take part in this project as members of the Advisory Group (with the approval of their managers) even though their involvement would for the most part be in addition to their regular duties. Initially, these supervisors were told to expect approximately two to three two- or three-day formal meetings over the duration of the expected six month project

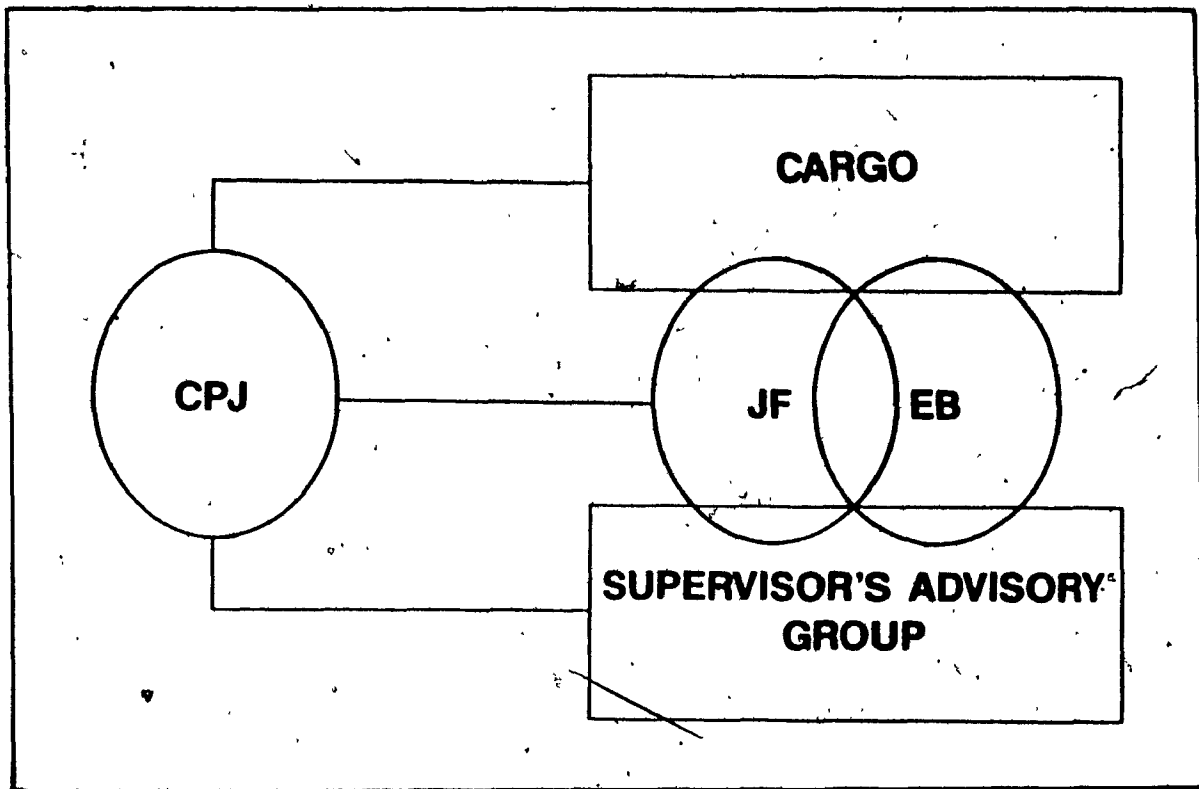


Figure 4. Project Organization.

to discuss matters such as strategy, design, and course content. However, they were not aware of what their exact role would be, that is, they were not told what specific tasks they would be expected to accomplish. This was not an omission. The DT was not quite sure, either, as it was a new venture - SME's had not really been used to help develop courses in the Company in this manner before.

First Meeting

Prior to the first meeting, I wanted to prepare the SME's for an in-depth task analysis using the DACUM approach after the administrative issues had been dealt with (since DACUM is a technique of task analysis, this would normally have been attempted during Phase 2). It was generally felt however, that this might be too demanding and scare the supervisors. As a result, a memo was sent welcoming and thanking them for their participation and asking them to try and think through some of the problems and issues which they felt a new supervisor would face in his or her first week on the job.

The objectives for this first meeting as they were given to the SME's were:

- a) To agree on the model [SRC] and strategy to accomplish the main objective of the supervisory program.
- b) Identify the major problems and situations a new supervisor will encounter.
- c) Identify the modules which will comprise the pre-course work (commonly referred to as the 'pre-work').

- d) Discuss/review/identify the most appropriate methods for delivering this program.
- e) Identify the individual role and responsibilities in the project and how the group intended to proceed.
- f) Review the Coaching and Counselling Course [CCSP] and determine the next steps toward finalization.

A review of the minutes of this first meeting indicate that the objective and guidelines were considered valid by all members and therefore should be followed. My role was also clarified. She was to: communicate with the AG and the Cargo Training Manager but report directly to Carl Johnston in M & OD; with input from all members I was to produce the pre-work modules and course material (where appropriate), instructor notes and guidelines; and, evaluate and revise the program as necessary. The other members of the team would be assigned work as necessary.

Overall Strategy Decisions (Phase 9, Determination Method)

Based on the SRC model, the objective, and guidelines outlined earlier (particularly guideline number six which stressed the importance of providing participants with factual information prior to the course in order to free classroom time), the first major strategy decision was to split the program into two parts: Part 1 was to consist of pre-work while part 2 was to consist of the time spent in the classroom - i.e., the course itself.

Part 1 (Pre-work)

This was to consist of a number of self-instructional modules containing the knowledge that a new supervisor should know. These were to be completed and reviewed with the supervisor's manager prior to attending the course.

Part 2 (Skills Building during Course)

Basic instruction in the generic management skills of problem-solving/decision-making, and communication was to be provided.

Part 2 (Evolving Scenario)

A scenario of a medium-sized station - XYT - similar to one in the airline's system was to be developed and cases or 'incidents' were to be built around the problems and issues that a new supervisor might confront on his first week on the job (tentatively called "A Day in the Life of Joe Fixyt"). Emphasis in class time to be on solving the incidents with particular attention to the effects (monetary or otherwise) of any decisions taken.

The idea was to have the trainee apply the knowledge and skills from the pre-work modules, and the generic skills learned, to the real life situation outlined in the cases.

Part 1 Content of Pre-Work Modules (Phase 4, Training Needs)

In order to determine the subject areas for these modules, the Advisory Group was asked to try and identify the major problems and issues, of whatever kind, they

considered critical for a new supervisor to be able to competently address. These were to be taken from each area of supervisory responsibility in the SRC. While the generic management skills were considered important, and therefore should be included, other subject areas were also identified which the Advisory Group considered equally important if the program was to be extremely practical. The Design Team agreed that these additional areas, while not strictly 'management', should be included since the objective of the course was to teach a supervisor to survive his or her first week on the job. Survival meant being able to deal with problems, whether managerial or technical, and it was recognized that many of the problems he or she would encounter would, at least to some degree, be technical or specific to the job. As a result, the pre-work modules were loosely divided into three major categories:

- 1) generic management-type information;
- 2) information specific to the job itself; and
- 3) information concerning some of the more technical aspects of the job from the point of view of a supervisor (as opposed to the person actually doing the job.)

These modules (in order of presentation) were:

| | |
|------------------|--|
| Generic: | Role of the supervisor Dealing with Employees Communication, Negotiation, Power & Influence Planning & Organizing Problem-Solving & Decision-Making Corporate Personnel Policies and Procedures |
| Specific: | Union Contract |

Dealing with Customers
Cost Appreciation

Technical: Products/Standards/Procedures
Planning of the Load
Computer System

Since the intention of this pre-work material was to include anything that a supervisor could easily learn on his or her own, many of the theoretical concepts were included in these modules, since it had already been decided that class time would be devoted to the practical application of these concepts to simulated real-life situations. Since it was generally accepted that people learn better by 'doing', this approach had the double benefit of reinforcing the general concepts, and showing how they related to the specific job.

The outcome of this meeting was that the author was to start production of these modules and the AG was to send in information (in rough draft form) of cases associated with real event problems and issues that a new supervisor could conceivably face during his first week. Incidentally, for the purposes of this course, ALL supervisors were considered to be new because the AG believed they needed to take a proper course in supervision.

The Design Team continued to meet regularly on an informal basis and periodically with the Advisory Group on a more formal level throughout the duration of the project.

The author was required to chair all meetings subsequent to the first one and, additionally, she was responsible for all administrative issues associated with the project.

Module Production (Phase 10, Material Production)

Great effort was expended to relate the material contained in the more generic modules both to every day life and the job situation (the term used we used was "cargozed"). Wherever possible, the necessary theory was put in practical and easy to read terms which a supervisor would readily be able to understand and apply.

As an example, in the module entitled 'Dealing with Employees', a section covers why people work and what they need from their jobs. A theoretical concept (that of Maslow's Hierarchy of Needs) was appropriate here but it was not presented as a 'theory' per se. Instead, under rubrics such as 'What Employees Need From Their Work', 'What A Supervisor Can Do To Fulfil Those Needs', and 'How Those Needs Relate To The Job And The Supervisor', the theory was explained - without actually referring to it - using everyday examples. In addition, the reader was asked to think back to what his supervisor did or could have done to make his time on the job more rewarding. In other words, the message was to make the reader think about the things he himself needs from the job, and to recognize that his subordinates have those same general needs. At the very end, and in brackets, for those that may have been interested, was written "Incidentally, it was a famous psychologist named Maslow who first formulated this theory of a Hierarchy of Needs."

While I wrote the generic modules, (using various reference materials) the technical ones such as the

Computer System, which gave specific factual information, (for example, computer codes), were written by those best qualified to do so because of time constraints. This resulted in several different 'styles' of writing in the final bound document, something which would have been better to avoid if possible. These technical modules were well suited to a programmed instruction format but time constraints prevented the author from producing such modules from the information provided. As such, these modules were printed in basically the same format as they were given to the author.

For these factual modules, in cases where the information differed depending upon the country involved, (for example the Teamsters Union in the United States and the IAMW in Canada), Canadian information was written for the pilot program. This would be updated for specific target audiences for later offerings.

Questions and exercises at the end of each Module were included where appropriate to ensure that potential participants would have to think about the information presented prior to attending the course. These were not 'tests' per se but would have been developed in Phase 6 of the ITU model.

Some Concerns Regarding the Pre-Work

The major concern identified with this pre-work package was to ensure that the supervisors did in fact read it and come to the course prepared. Students and trainees are notorious for not doing assigned work before classes and,

while this is a problem in any situation, it was especially important that they read prior to this course because no (or very little) time would be spent in lecturing in these areas. In addition, we wanted to convey the fact that this was a serious course which required hard work. Similarly, anyone who was not prepared to take it seriously was considered to be exhibiting the wrong attitude (and perhaps not the kind of person who should be a supervisor).

In order to address this issue, it was decided that supervisors would need to have their work 'signed off' by their respective managers to prove that they had completed it satisfactorily. From this idea, the concept of involving managers more actively in the pre-work was formulated. This approach was particularly attractive since, another issue identified as problematic could also be addressed, namely, the notion of managerial support of supervisory training.

Role of the Manager in the Pre-Work

A major aspect of this pre-work then, became the involvement of the supervisor's manager. His involvement was expanded to include the coaching and counselling of the participant through discussion and correction of the exercises. Involving the participant's manager in a training program was a new concept for the airline. It was considered an essential new component by the Design Team (including the Advisory Group) because, during the Supervisory Conference, one of the key problems identified was the lack of support given by managers to their supervisors. Traditionally, some of the reasons why

training programs have not received support are:

- a) Trainee's supervisors did not fully understand the nature of a given course that their subordinates were taking and how it was supposed to improve their effectiveness on the job. Since managers often could not see the benefits, some had resisted employee involvement. Often, these same managers had little training themselves yet 'still made it' and feel their employees should be able to do the same. However, many of them succeeded in spite of the system rather than because of it.
- b) Once training was over, participants would go back to the workplace and could not apply what they learned because the work environment and atmosphere remained the same. They would get discouraged and revert to the established way of operating.
- c) As a result of the above, coupled with the fact that managers were sometimes reluctant or unable to release personnel from the line for training, courses were often viewed either as a 'holiday' or a waste of time.

The Organizational Development Aspect

This basic supervisory course was designed not only to be extremely practical but also to try and avoid these types of pitfalls principally by involving the manager from the start.

Because participants were expected to work their way through the modules before attending the course, it was

critical to the success of the program that they have a resource person with whom to discuss the material as well as any problems they encountered. The questions and exercises at the end of each module then were included as both testing material and as a basis for review and discussion between the participant and his manager.

The manager was to be provided with the answers to testing material (where applicable) - but in order to coach effectively, it was necessary that he or she be familiar with the material, and become involved in the process by applying his experience in Cargo to the questions and exercises in the pre-work. As a fringe benefit, it was hoped that this meeting and discussion with the subordinate would set the stage for their future relationship by giving the manager an opportunity to see what the employee was learning and how it would apply to the job situation. (In other words, by showing the manager how it might benefit him through superior work by the supervisor). Similarly, the employee was given the opportunity to discover his manager's approach to problem situations brought up in the pre-work exercises as well as knowing that he was receiving some support and therefore not alone in the training.

As a result, the course was seen as having not only a management development component, but an organizational one as well. Although too early to tell, it was hoped that as supervisors move into managerial positions they would be more likely to take this philosophy of their role in employee development with them.

It was recognized however, that simply building this second-level involvement into the design of the course was not enough to make it happen. For the managers concerned it meant not only a fairly radical change in the approach to the way they manage their subordinates, but also posed a certain amount of risk: risk in terms of possibly appearing inadequate in the coaching and counselling function. Additionally, the new role involved more time and work on their part. In general, while the Advisory Group agreed that the approach was a big step in the right direction, and was optimistic that most managers would be both willing and able to take on this new responsibility, some concern was expressed that certain individuals would decline to be involved for various reasons. Consequently, a certain amount of resistance was expected.

It was considered critical by everyone involved to overcome this resistance by the minority of second-level managers. This was because, even though the pledge of support and the commitment to training showed that both senior management and supervisors were solidly behind this project, it was realized that the program would have a weak foundation if the middle and lower management (the people who would have to administer and coach and counsel participants through the pre-work on a day-to-day basis) were not similarly committed.

Supervisors under those managers not committed to the concept were considered to be at a disadvantage not only in terms of the course itself, but also from a management development standpoint. It was extremely important

therefore, that all second level managers be involved in the pre-work process, and this could only be accomplished if the senior management team could "sell it" by showing the benefits to those involved.

Obviously, attempting to change the prevailing philosophy of coaching and counselling in a company is not an easy task, and is not something that can be accomplished overnight. However, it was evident that the first steps needed to be taken if senior management wanted to demonstrate the commitment made during the Supervisor's Conference to improving supervisory training.

Attempting to gain second-level support for the basic course was therefore seen as a way of showing employees that management were serious about that commitment. A position paper on this subject was submitted to the Vice President, Cargo, by myself and he indicated that he was in full agreement with the proposed approach in accomplishing this objective. As is obvious from the preceding information, this OD component was as much a political as a course strategy consideration.

Work Load for Managers

Prior to the course, it was anticipated that a manager would have to spend approximately 5 to 8 hours, over a period of 3 to 4 weeks, with a subordinate doing the pre-work. It was also anticipated that some managers would probably spend longer than this depending upon their level of interest and current work load. However, if two subordinates under the same manager were taking the course,

it would not be necessary for him to coach them individually as small group sessions were considered to be equally effective.

Although coaching and counselling is supposed to be part of a manager's job, apparently there were many who did not perform this function because they simply did not know how. In order to make it easier for a given manager, the pre-work questions and exercises were made very specific and job oriented, thereby requiring little more from him than applying his experience.

Managerial Coaching and Counselling

In order to try and prepare the manager for his role in the course, it was decided that each manager of a participating supervisor attend a session on Situational Leadership (a program developed by Blanchard & Hersey) prior to the participants receiving the pre-work. Situational Leadership is a pre-packaged diagnostic instrument which essentially helps a manager to determine the 'readiness' of a given subordinate to undertake certain assignments. Once the manager has diagnosed his subordinate's ability for a certain task, he can choose the approach most likely to be effective.

Situational Leadership was chosen as the vehicle for achieving this because the M & OD Department had recently received a presentation on the subject and decided (after checking with various other Canadian companies already using it) to pilot test it in Cargo as the Coaching and Counselling course. Since both M & OD and Cargo were having

trouble in determining the content to develop their own coaching and counselling course, using Situational Leadership in this capacity was seen as a case of killing two birds with one stone. There was no analysis performed regarding what the managers thought they needed in order to upgrade their coaching and counselling skills. The decision to use Situational Leadership was purely corporate.

The session scheduled to brief the managers on their role in the Supervisor's Course was to be added to the end of this two day course in order to provide a comprehensive orientation for both the organization and management development components of the program.

Part 2 (Class Time) Identification of Content

The second part of the program, five days of classroom time, focused on the practical application of the knowledge and skills presented in the pre-work (as well as additional instruction) to 'real life' simulations of problems and decisions which a supervisor might encounter in his/her first week on the job. A course length of five days was considered to be an appropriate amount of time; this was an arbitrary decision by the AG and DT.

As previously determined, in order to accomplish the practical application of the knowledge and skills presented in the pre-work material and set the stage for class exercises, for the duration of the class time, each participant would experience "A Day in the Life of Joe Fixyt" by playing the part of Joe (a newly appointed supervisor) in a simulated cargo terminal. It was necessary

to create a fictitious terminal because the supervisors were from various cities located both in Canada and the United States (and would eventually include trainees from Europe). Since stations within the system vary in size, and therefore complexity, the duties associated with the supervisory position also vary. For example, in a smaller station the supervisor is generally responsible for more situations as the operation is not as busy or complex as in a larger station. Larger stations tend to divide up responsibilities amongst supervisors.

The fictitious station was medium sized and supervisors were required to solve problems during the course within the context of that station in order to ensure all participants were referring to the same informational/contextual base. This was considered to be an acceptable solution and not thought to detract necessarily from the transfer of training because the concepts taught would be the same for everyone. Of course, as with many types of management training, these concepts remain to be applied to the specific working conditions within which the trainee is required to work.

This simulation of the station was included in the pre-work, together with the rationale, to give participants the chance to familiarize themselves with it prior to attendance. Essentially, this 'module' consisted of information concerning such things as size, schedule, maps, number of employees, etc.

Though several meetings with the Advisory Group, critical cases (or 'incidents') were developed around the problems and issues a supervisor might confront on his first

week on the job. Essentially, as stated previously, supervisors were required to actually 'live' at the Station (XYT) and go through a day in the life of a supervisor managing this station. The emphasis in class time was on solving these incidents with particular attention to the effects (monetary or otherwise) of any decisions taken. In other words, the concept during class time was not to title any exercise 'problem-solving' or 'time management' for example, but to incorporate these elements implicitly into the various cases and exercises - an approach which more closely approximates how these concepts are used in real life.

Case or 'Incident' Content (Phase 2 & 4 Task Analysis)

The content for these cases was provided by the Advisory Group in conjunction with the designers. This was done by taking the four main areas of responsibility as identified in the SRC and sub-dividing them into their component functions. Each function is associated with certain knowledge, tasks, processes, activities and common situations. By identifying the situations that a supervisor would deal with under these functions, (whether 'normal' or 'abnormal') together with the tasks, processes, activities, etc. which would need to be performed for each one, a detailed list was compiled of the areas that would need to be addressed during class time. Once the information was available it was possible to: determine the best strategy to teach each one; produce the materials; sequence them to ensure they built naturally on one another, were consistent,

and also made the best use of class time. It was important that the Design Team and Advisory Group identify and include as many items as possible which a new supervisor would have to deal with if a comprehensive training course was to be produced.

As Figure 5 shows, this initial job analysis produced an extremely long and detailed list of tasks (i.e., problem situations). There were simply too many items under each of the functional headings to be able to address each item separately - that is, using each item as the major emphasis in a given case or incident - in the timeframe available. It was therefore necessary to distinguish them according to importance. In order to reduce this to a manageable size, the Advisory Group was asked to choose the most important items for major emphasis in cases that would incorporate several of the less important items if possible.

As an example, under the heading "Customer" an issue that a supervisor often has to deal with is a lost package. This might involve an irate customer who needs to be calmed down, and the package found. Of course, there are other tasks and activities from other areas which have to be performed in order to satisfactorily resolve the situation (using the computer system, delegating tasks, determining what to do next, etc.). The major emphasis for this particular case or role play would be on the customer and dealing with the problem - with the supervisor talking to him face to face, explaining what he is doing to solve the problem, all the time remaining friendly, professional and calm.

| | |
|--|---|
| <p><u>CUSTOMER</u></p> <p>Lost shipment (irate) Package cannot be shipped as scheduled Package a safety/security violation Claim dispute Form of payment unacceptable No credit arrangements The always 'rush' deal Special handling (delicate/valuable) Complaints re: long wait time Customer compliments/recommendations Phone questions re: disposition and handling of goods or booking space on flights Fielding calls for the manager Damaged shipment Giving reasons for delay or damage Chatting (drivers, shippers) Tracing goods Reducing or cancelling storage charges Rude/Drunk/Know it all/first timer</p> | <p><u>PERSONNEL</u></p> <p><u>DIRECTS</u></p> <p><u>Personal</u></p> <p>Performance problems Confrontation Discipline Motivation Interviewing Letter writing Giving work assignments Feedback (pos and neg) Performance reviews Exit interviews Probationary interviews Hiring of SA's Coaching and counselling Advising on career/moves 'Being there to talk' Listening to suggestions Supporting initiatives Open door/open mind/closed mouth</p> |
| <p><u>OPERATIONS</u></p> <p><u>Shipping</u></p> <p>Late acceptance of goods Late aircraft arrival Delayed departure Missing documents Unacceptable goods Computer system Customs detention of goods Security delays Commodity restriction Trouble shoot aircraft or facility problems Dangerous goods Type of service not ID'd on AWE Type of goods not ID'd on AWE Delivery service drivers deliver goods without complete forwarding information</p> | <p><u>Union</u></p> <p>Contract interpretation Grievances Documenting facts Conducting investigations Local Union/Management meeting Granting time off for Union business</p> <p><u>Group</u></p> <p>Giving work assignments Monitoring group performance Crew meetings Disseminate information Morale Going through leads</p> |
| <p><u>Interfaces</u></p> <p>Ramp Load agents AC servicing Maintenance Customer service (phones) Cargo sales Contract OAL Other stations Outside agencies Cargo movement Central site Stoc Flight Dispatch Weather office Personnel Visiting airline employees</p> | <p><u>BOSS/PEERS/STAFF</u></p> <p>Manpower levels Developing shift schedules Consultation (meetings) Training sessions Referral/reference Feedback/input to manager Management meetings Daily operational meetings Monitoring staff performance Self career planning</p> |
| <p><u>Emergency</u></p> <p>Spill (unknown substance) Power failure Aircraft fire Personal injury Weather alerts Criminal situations (police) 3rd party accidents DC spill Bomb scare Aircraft crash Building fire Water pump rupture Fire alarm Equipment accident Customer injury on premises Medical emergency</p> | <p><u>PLANNING AND ADMINISTRATION</u></p> <p><u>Operation</u></p> <p>Load planning Table of Priorities TAMP Bumping Pallet-building rules Load types and AC types by destination Lack of equipment Paperwork Loads avail. to ramp when nec. Project work Ensure functional equipment Safety Monitor AFS schedule Monitor P & D drivers Control traffic thru building</p> <p><u>Personnel</u></p> <p>Vacation planning Shift planning Team meetings Developing subordinates Calling overtime Time recording Reduced overtime (RO) Compassionate leave</p> |

Figure 5. Initial Job Analysis of the Supervisory Position

Under "Load Planning", however, a case might be built around the Table of Priorities. In this case, the supervisor would have to decide which packages have priority and this would involve contacting a customer and letting him know that the package will not leave on a particular flight. The case could show that an alternative would be equally acceptable. In other words, the major emphasis for a case of this kind would be making a decision regarding priority, evaluating alternatives and determining how that would affect the operation. Only minor emphasis is placed on the customer.

Again, under "Delayed Aircraft", the pallet may already be built, but contains a carton of frozen shrimp (amongst other things). In this case, it may need to be unloaded and put back in the freezer for the delay time. Again, the customer must be contacted to inform him of the delay. The case, then, could show that this is not a problem since P & D (Pick up and Delivery) could still make the transfer to the trucking company on time. The emphasis here might be on planning with the customer only one stage in the total process.

From the items listed in Figure 5, sixteen 'main emphasis' cases/ simulations/role plays were developed.

These were:

- 1) Shift Planning
- 2) Shift Turnover
- 3) Planning of the Load
- 4) Late Acceptance of Goods
- 5) Unacceptable Goods
- 6) Operational Emergency
- 7) Safety/Emergency
- 8) Weather Alert

- 9) Aircraft Handling
- 10) Performance Problems
- 11) Contract Interpretation
- 12) Lost Shipment
- 13) Giving Work Assignments
- 14) Daily Operational Meetings
- 16) Leadership

Each of these 'incidents' was considered by the Advisory Group to be among the most important from the main list. In addition, several other tasks were incorporated from the list when and where applicable. While all the tasks were not addressed, the Design Team and Advisory Group felt comfortable that the most common problematic ones - and therefore the most important - were adequately covered. The rationale for this decision was based on the assumption built into the objective. That is, 20 percent of the important issues or tasks are responsible for 80 per cent of the problems on the job.

This component, that is these cases or 'incidents' that a supervisor would likely encounter on the job, took approximately one half of the total classroom time and participants worked on them in groups. Through a rotation system, the members of each group changed every day both to enable participants to work with everyone in the class and to ensure that any one group was not at an advantage or disadvantage (in terms of group dynamics) for the entire duration of the course. The instructional design of these cases varied according to the content. Some were true case studies, requiring reading and group discussion, others were role plays, and yet others were paper simulations requiring individual input and group consensus. Often, but not

always, a presentation with the rationale was required.

The remainder of classtime was devoted to skills-building exercises on general management issues (role plays, simulations, videos etc.), with some brief lectures. Approximately 20 percent (spread out over the 5 days) of the course was devoted to these 'lecturettes'. They consisted of guest speakers, that is, subject matter experts, from Labour Relations, the Employee Assistance Program, Security, and Cost Appreciation. Where possible these lectures were tied in with appropriate case material. In addition, the Vice President of Cargo agreed to introduce the course. While the original idea was to have him introduce the course to give it more credibility (and also because he wanted to do so), this introduction evolved into a 'talk session' in which he discussed some of the challenges to the Branch and answered questions on a wide range of issues. His presence was so well received that it was decided to allow time for this interaction in subsequent courses.

Preparation for Implementation (Phase 13 Remedial Action)

Since it was considered critical to the success of the program to ensure that the various supervisors' managers were completely briefed regarding the rationale behind the design of the supervisory course, how the program was to be evaluated (i.e., the use of the questionnaires), and their roles and responsibilities concerning the content and administration of the pre-work, and in order to ensure consistency both for the explanation and instructions, a

meeting was arranged which all the managers involved were required to attend.

After the decision was taken to prepare these same managers for their coaching and counselling role by providing the course in Situational Leadership, it was considered a good idea to take this opportunity to incorporate the explanations and instructions by extending the course for half a day and schedule the briefing session at the same time as intended for the original meeting. This course and meeting was scheduled, then, to take place one month before the supervisors were to attend the course. It was arbitrarily determined that this would be sufficient time for participants to meet with their managers and complete the pre-work package.

Managers were to receive the appropriate number of copies of the questionnaire (for summative evaluation purposes) and pre-work packages at this meeting to take back to their respective stations and, upon their return, the questionnaire was to be administered and then the pre-work packages handed out to those supervisors attending the course. It was suggested that they discuss and work out a schedule for meetings at this time. Managers were also asked to remind participants that, in order to be accepted into the course, they would have to produce a signed statement testifying that the work had been completed satisfactorily. The Design Team chose to add this component as a way of ensuring that the program was taken seriously by prospective participants and their respective managers.

However, due to a 'crisis' within the Cargo Branch just

prior to this stage in the implementation, it was impossible to pull these managers from the field as scheduled. Because of this crisis, the suggestion from the field was to cancel the Situational Leadership course completely. The Vice President of Cargo, was fully supportive of the program and, much to his credit, insisted that the managers should attend as soon as it was possible. As a result, the scheduled Situational Leadership course was cancelled twice in a row and was finally scheduled only one week before the supervisors were to attend their course. Since this would obviously leave no time for the pre-work package to be completed properly, members of the Design Team and the consultant flew to each station involved and spoke to the manager individually concerning the program, explaining the rationale, his role, the questionnaire, and the pre-work package. This was done about one week prior to his attending Situational Leadership so that the supervisors would have at least 10 days to read through the material.

Obviously, this seriously compromised the design of this particularly important aspect of the program. It was clear that participants had met with their manager very few times, not read all the material, and had not done the exercises prior to arriving at the course location. All, however, said that they had read the material between their arrival and day three.

Class Administration (Phase 13, Implementation)

It was decided that the entire Advisory Group attend the course in the government training facility in Cornwall

since the program would be handed over to Cargo to administer in the future as they were potential instructors (together with high potential graduates) for subsequent courses. Because of the technical nature of some of the problems and issues raised in the cases, it was essential that line personnel facilitate this aspect of the course. Obviously, unqualified people, while able to present the case and provide the "expert's rationale" could not field questions and provide an insight into the issues at hand.

The Training Manager for Cargo (who also had considerable supervisory experience) was to take over the more traditional managerial concepts from the M & OD representative as he was also qualified in Situational Leadership. The author did not have much responsibility for stand-up teaching as she was not going to be available after the pilot. Her role and responsibility was to conduct a formative evaluation by making detailed notes during the course concerning participant reaction, time frames, possible additions, deletions, and changes for the second offering. All participants were aware that it was a pilot and a personal letter from the Vice President included in their pre-work stressed that they provide feedback in order that it could be improved.

Credibility

Because this course was the first manifestation of the Vice President's promises to supervisors, it had a high profile within the Company. As such there were many additions which were made in order to give it a special

status. These included:

- * pre-work binders which were designed so that each individual's name appeared on the front;
- * on the suggestion of several people, the title was changed to 'First Level Management Training and Development Program' to reflect the fact that (supervisors are first level management, and because of the second level involvement, it was really more of a program than an isolated course;
- * a 'graduation ceremony' was planned for the last afternoon with speeches by guests and the class valedictorian; and
- * framed certificates personally signed by the Vice President, Cargo, Senior Vice President, Human Resources, (and subsequently, the President of the Company) attesting to satisfactory completion were presented to each participant. These certificates were presented by the guests - Senior Vice President, Human Resources and a Director from Cargo since the Vice President was unable to attend. (For the second offering of this program, the President's signature was also included).
- * the ceremony itself was video taped.

While these additions can be considered to be bells and whistles, there is no doubt that they contributed enormously to the success of the course and the sense of importance attributed to it by the participants.

Reactions

In spite of the fact that many small revisions needed to be made, the reactions of both students and management to this pilot course were astounding. It was considered a turning point both in the quality of Cargo training and managerial support. Several recent graduates even submitted their names to become instructors for future courses. I was presented with a certificate and a pewter mug (which were extremely thoughtful gestures and much appreciated) in recognition of her contribution to the project. These events are particularly interesting in so far as they convey the assumption that, because the course was extremely well received, it was also doing 'what it was designed to do' - information which would not be available until after the post-test delay period.

Formative Evaluation Design

At the end of each day, participating supervisors were asked to complete an evaluation form for each exercise given that day rating each one in terms of how much they felt they learned, whether it was practical/applicable, whether the method of instruction was appropriate, etc. An example of this evaluation form from Day three is shown in Appendix A. Overall means from these forms for each activity for the full five days are summarized in Table 1. Because participants tend to rate activities highly (hence the term 'smile sheets'), all activities rated below a six - out of seven - were either reworked or dropped completely based on verbal comments made during discussion or written comments.

| CLASS ACTIVITY | OVERALL MEAN* |
|--|---------------|
| Simulation (Problem-Solving Case) | 7.0 |
| Employee Assistance Program (Lecture) | 6.8 |
| Unorganized Manager (Film 4) | 6.8 |
| Operational Emergency (Case) | 6.8 |
| Baja Praderia (Generic exercise) | 6.8 |
| Emergency/Safety (Case/Role Play) | 6.6 |
| Vice President (Talk) | 6.5 |
| Unorganized Manager (Film 2) | 6.5 |
| Load Planning (Case) | 6.5 |
| Unacceptable Goods (Case/Role Play) | 6.5 |
| Shift Turnover (Case/Role Play) | 6.4 |
| Union Contract (Lecture) | 6.3 |
| Play Your Hand (EAP Film) | 6.3 |
| Late Acceptance of Goods (Case) | 6.3 |
| Lost Shipment (Case) | 6.3 |
| Slight Misunderstanding (Generic exercise) | 6.3 |
| Unorganized Manager (Film 1) | 6.1 |
| Performance Problems (Case/Role Play) | 6.1 |
| Unorganized Manager (Film 3) | 6.1 |
| Weather Alert (Case) | 6.1 |
| Pygmalion (Film and lecture) | 6.0 |
| Shift Planning 1 (Case) | 5.9 |
| Shift Planning 2 (Case) | 5.9 |
| Contract Interpretation (Case) | 5.9 |
| Work Assignments (Case/Role Play) | 5.9 |
| Cargo Customers (Airline Film) | 5.8 |
| Headbands (Role Play) | 5.6 |
| Customer (Film) | 5.6 |
| Situational Leadership (Video) | 5.5 |
| Cost Appreciation (Lecture) | 5.5 |
| Performance Problems 2 (Case) | 5.4 |
| Allocation Charts (Homework exercise) | 4.8 |
| Joe Doodlebug (Generic exercise) | 4.3 |
| Security (Lecture) | 3.4 |
| * Overall mean scores for all 8 categories of evaluation (learning, practicality, applicability, appropriateness, usefulness, process, leader, enjoyment). | |

Table 1. Overall Means for Class Exercises from the Formative Evaluation.

submitted on the evaluation forms.

At the end of the course, participants were asked to do an overall evaluation on both the pre-work and class time (see Appendix B). This information was incorporated into the revisions of the course. Although these results consisted only of means and written comments (see Appendix C), they were sufficient to make revisions.

Once the revisions, which were fairly minor (i.e., slight changes in process, the addition of a test in the pre-work, etc.) were made, the course was formally handed over to Cargo management for ownership and further administration. The author's involvement with the project ended at this point, although she was still allowed access, through the Cargo Training Manager, to collect data for the summative evaluation and submit these results at a later date.

Summative Evaluation

The design chosen for this evaluation is summarized in Figure 6. It was considered quasi-experimental because, while the traditional two-group, pre-post test was used, it was impossible to control all confounding variables in a real-life setting. For example, because of the lack of 'new' supervisors, it was not feasible to have completely equivalent groups because cargo management wanted to take the opportunity to train the most recently promoted people during the pilot course. This was understandable given that the second offering would not be for another six to eight months. Additionally, while the participants were chosen by

EVALUATION DESIGN

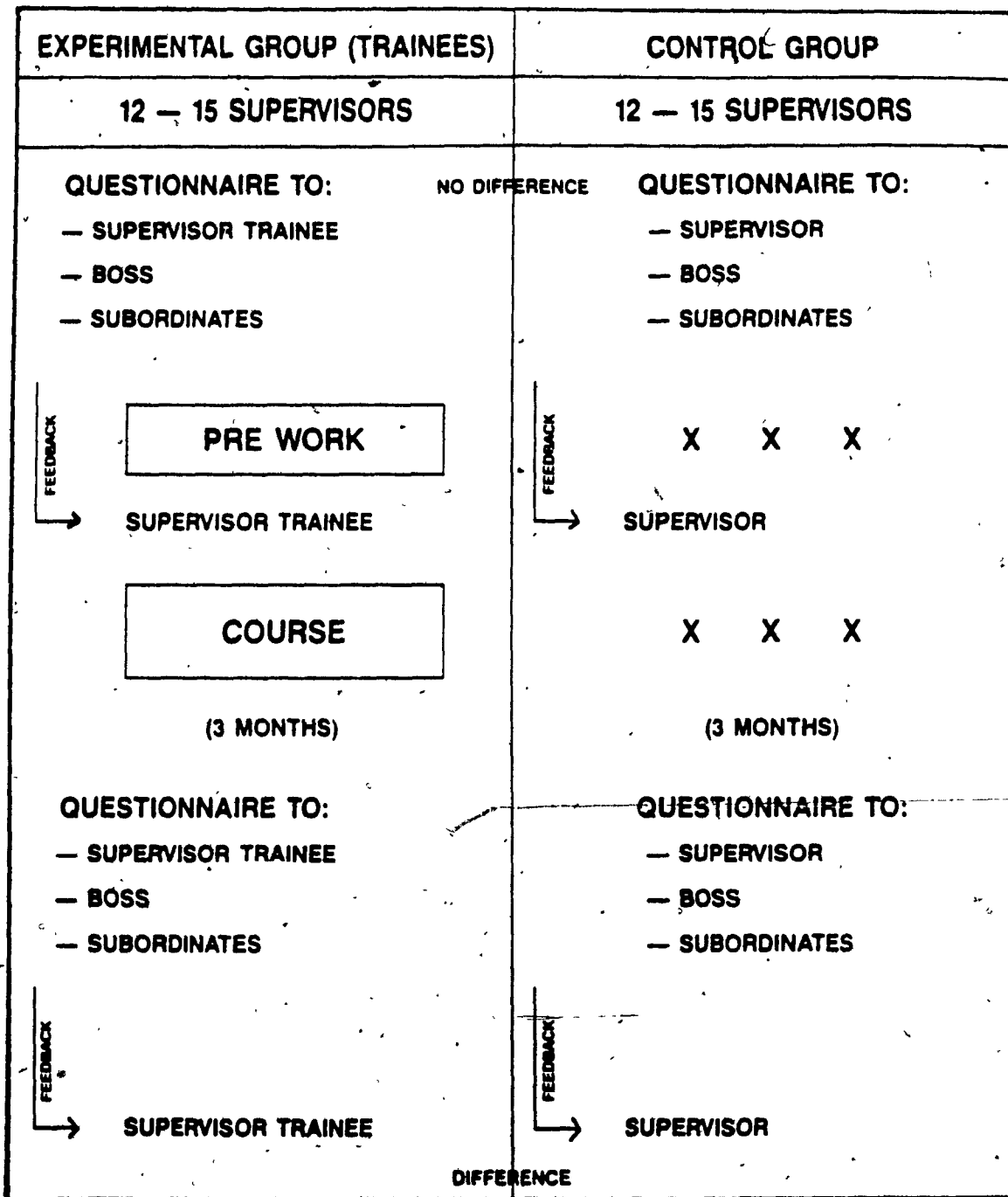


Figure 6. Summative Evaluation Design.

the Cargo Training Manager (both from the computer listing and his knowledge of most of the supervisors), the managers of these participants were asked to designate another supervisor under them as a 'control'. In the majority of cases, the Design Team was simply informed of who this individual would be.

Subjects

Subjects were 21 supervisors (20 men and one woman) in the Cargo branch of the airline. Twelve supervisors, 11 men and one woman, participated in the experimental group - this accounted for 17.39 percent of the total population of cargo supervisors system-wide. For reasons largely unknown only nine people were identified to be in the control group. These supervisors held permanent supervisory positions within the Branch (i.e., they had been formally promoted).

There are however, considerably more 'acting' supervisors in the system. These are people who take on the position temporarily for a maximum of six months in any year.

Since the course was originally designed to help new supervisors cope with the problems and issues they would encounter during the their first few weeks in the new position, it would have been logical to have included subjects who had actually been promoted but who would not have commenced their new duties until immediately after completing the course. However, there are two main problems with this:

- 1) The airline does not usually promote directly from rank employee to supervisor without that person having had some 'acting' supervisory experience. This is essentially a temporary assignment where a rank employee assumes supervisory responsibility when the permanent supervisor is away from the job for any reason (such as sickness or vacation). Usually an employee will take an acting assignment after a brief orientation but certainly with no formal training.

As a result, an employee with no formal training (perhaps with as little as a few days of familiarization with a permanent supervisor - called flumming) is given a supervisory position for as short as a day or for a maximum period of six months within any one year. Over a period of years, an employee can accumulate quite a substantial amount of supervisory experience before he actually gets promoted. As a result, it is difficult to find a 'new' supervisor in the true sense of the word. Obviously, a course of this nature should be available to rank employees before they undertake their first acting assignment as it is at this time that they are truly new supervisors.

It was initially thought that enough 'new' supervisors would be available to participate in the study, but a computer check of length of service revealed only five which met the original criterion of less than one year of permanent service. An additional five had between one and two years of permanent service. However, of these 10 supervisors, two were

subject matter experts and members of the Advisory Group to the Design Team. (Although relatively new to the position, these two had been identified as having high potential and were appointed on this basis to the Advisory Group.)

Since only eight available supervisors out of a total of 69 could be considered for the purposes of the study to be new, it was necessary to choose the remainder from people who had progressively longer lengths of service.

- 2) Even if enough new supervisors were available, to use them in this pilot program would have seriously impeded an in-depth evaluation since it would be impossible to obtain a baseline pre-measure of performance.

Summative Evaluation Procedure (Stage 14)

The major question for the summative evaluation was "have the individuals who attended this course shown any POSITIVE behaviour change" (i.e., were the principles and skills taught during the course, transferred to the job environment?).

In order to address this, a questionnaire was developed (see Appendix D - "Manager's Copy"), which asked questions relating to the supervisor's behaviour on the job in the four major categories under the headings in the SRC and subjects covered in the program: human relations, communication, problem-solving/decision-making, and certain specific job-related functions. This questionnaire was formatively evaluated by representative members of the

target audience not included in the sample. Their responses and comments were used to modify the final instrument. The same questionnaire (but worded differently depending upon who was to fill it in - 'my supervisor ...' as opposed to 'I ...') was then completed by the supervisor himself, his manager, and five of his employees in both the experimental and control groups prior to the pre-work being given out. The purpose behind soliciting the three different viewpoints was that a person's perspective of himself or herself can be very different from that of others. The true test of positive behaviour change, then, was considered to be in the perception of those people that work with him or her. In addition, the researcher was interested in seeing how wide apart (if at all) these differing perceptions were.

Since changes in attitudes can only be observed by changes in behaviour in given situations, it was decided to do a follow-up study three months after completion of the week-long course (in actual fact, this period was closer to four months). This delay was chosen in order to provide enough time for a supervisor to be exposed to many different situations, and to give his manager and employees the chance to observe these changes. The second questionnaire differed only in the addition of some global questions regarding perception of positive change in each of the main question areas (see Appendix D). These questions were added in order to allow respondents to comment on more intuitive types of change that were perhaps not covered in their responses to specific questions. In addition, because the scale for these questions was from 0 to 5 on the positive side, where

0 represents no change (since it was considered unlikely that supervisors would have changed for the worse by taking this course), it would have been possible, in conjunction with responses collected from other questions for each supervisor, to determine whether a 'no change' response meant that the course has not had a positive impact or whether a supervisor rated highly in the beginning simply cannot improve to the same degree as one rated as poorly. Additionally, a supervisor rated as poor initially who improved drastically, may still not be as good overall as a supervisor rated as good initially with no improvement shown in the posttest measure.

The original design called for feedback to both groups of supervisors after the pre-measure and then again after the post-measure. This feedback would have consisted of some rough statistics on how the supervisor was perceived by his subordinates. For example, "75 per cent of your subordinates feel that they can approach you with problems" or "10 per cent of your subordinates feel that you communicate your expectations clearly". The supervisors involved would then have had the opportunity to compare their own perceptions of 'approachability', for example with their subordinates' perceptions. This idea was not well received however, and was subsequently dropped from the design.

Appropriate statistical procedures were to be conducted on the pre- and post-measure in order to determine whether the course had any positive effect on behaviour change.

While the author received a good return on the pre-test

instrument, the return rate was so low for the post-test questionnaire that insufficient comparative data existed for any kind of statistical analysis.

As a result, the only hard data on effectiveness came from the formative evaluation during the pilot course. Obviously this information constitutes what Kirkpatrick (1976) calls 'reaction' data - the least effective and reliable.

Overall Project Stages

The major stages involved in this project are diagrammed in Figure 7 together with the approximate time frames.

Costs

It should be noted that the total cost to the company for the production of this course was in the region of \$13,000 which accounted for direct costs paid to me. Because of delays for which I was not responsible, the project was three months late and consequently \$3,000 over the \$10,000 budget. In addition to these direct costs, SME and other management time and salaries on a periodic basis throughout the duration of the project, (together with incidental expenses) should be calculated into the development costs.

The following Chapter discusses the method and results in the context of the literature of instructional design.

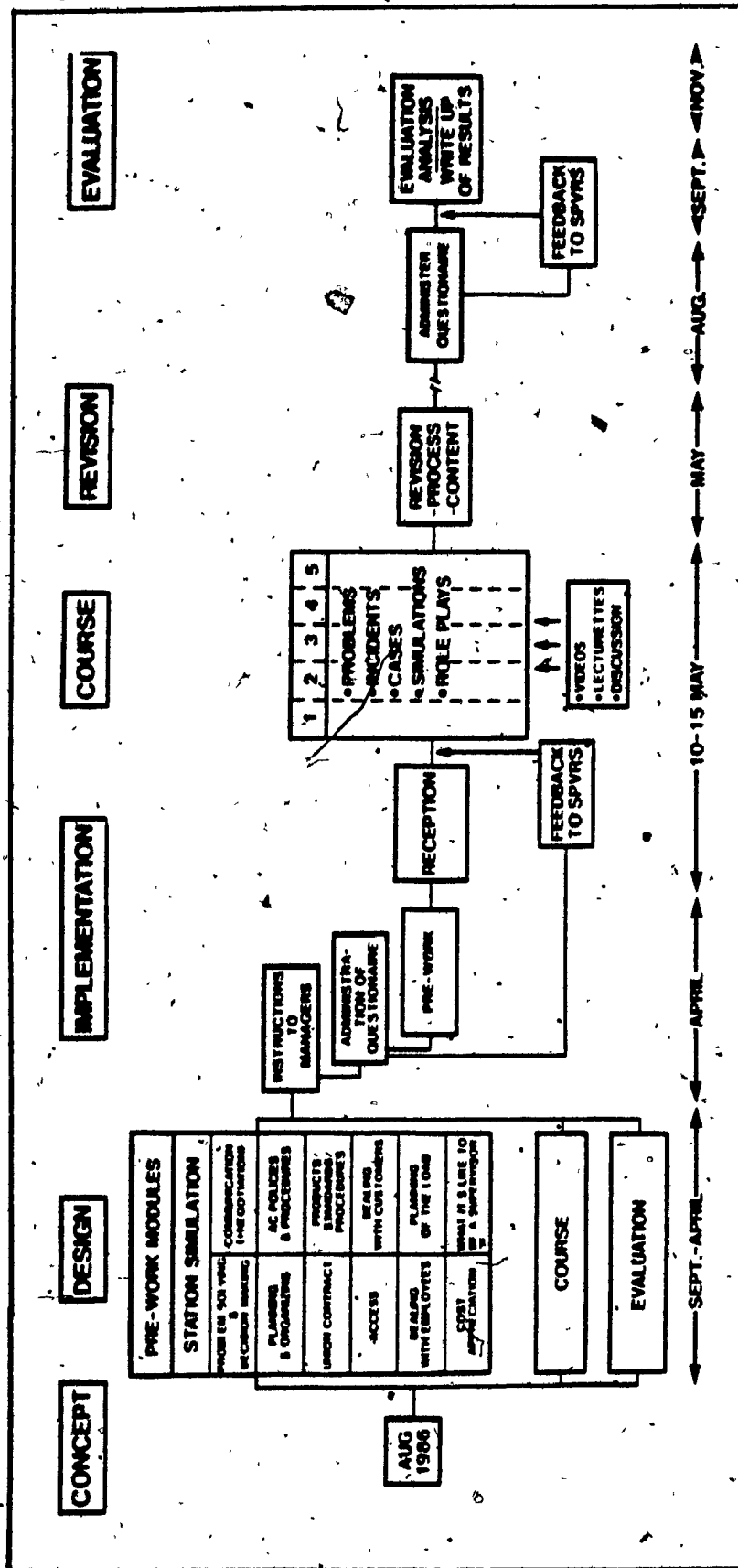


Figure 7. Overall Project Stages.

CHAPTER 5

DISCUSSION

Had this study been completed as originally envisioned, the purpose of this chapter would have been to discuss the results of the analysis of the summative evaluation data and to draw conclusions regarding the overall effectiveness of the course. These conclusions would have been examined in light of the expected modifications to the ID model necessitated as concessions to the needs of industry. The purpose of this analysis would have been to try and ascertain the relative importance of each ID phase in producing an effective product. However, since the summative evaluation data is not available, and the deviations from the idealized model were so large that the actual process did not resemble the model at all, the focus for this chapter will be on addressing these departures, why they occurred, and exploring the ramifications of such differences as they relate to the quality of the product produced.

Such an investigation and analysis is necessarily subjective and, as such, could be considered to be based on participant observer case-study methodology. It is not an intention to discuss the various viewpoints for and against case-study methodology here, as this has been extensively debated elsewhere (for a good succinct summary see Schmidt, 1987). Suffice it to say that while criticism does exist, this kind of methodology has become an acceptable approach. In fact:

The participant observer, by virtue of being actively involved in the situation she is observing, often gains insights and develops interpersonal relationships that are virtually impossible to achieve through any other method. (Borg & Gall, 1983, p. 490).

Because the proposed ITU model was essentially not followed, and the chronology of the events as they transpired would make it too complicated to look at these deviations in the sequence with which they happened, this discussion will follow the more general stages of the generic ID model outlined in the literature review. These are: front-end analysis, strategy formulation, development and production of materials, formative evaluation, and summative evaluation. In addition, a section on team composition and selection is included after the front-end analysis. This aspect of the instructional design process is often overlooked as a distinct step or phase in its own right (see Schmidt, 1987 for an exception), yet is crucial to the success of the project.

The proposed ITU model will then be examined in light of the author's experience regarding its adequacy as a basis for instructional design. The Chapter will conclude with some observations of introducing ID as a basis for training an organization not currently using the systems approach and some advice to students seeking an internship or work in instructional design in industry.

1) Front-End Analysis

We define needs analysis as a formal process which determines the gaps between current outputs or outcomes and required or desired outcomes or out-

puts; places these gaps in priority order; and selects the most important for resolution. 'Need' is defined as a gap between current outcomes or outputs and desired (or required) outcomes or outputs (Kaufman & English, 1979, p. 8).

This definition of a need as the difference between 'what is and what should be', and the analysis of that difference to determine how it can be bridged, is shared by many authors (for example, Romiszowski, 1981; Holden, 1983, Burton & Merrill, 1977; Dick & Carey, 1978). This emphasis on solving the right problem appears to be more pronounced in training applications than in education. For example, Gange & Briggs (1979), in a book considered to be a cornerstone in the field of instruction devote less than two pages to the consideration of this front-end analysis. It is not that it is any less important in educational contexts, of course, just that perhaps the 'business', and therefore profit motives, exert more influence in industry.

Needs analysis can be a confusing concept because the term is used throughout the ID process from the beginning 'is there a problem?'- right through to the needs analysis based on instructional objectives for a given task or topic area. Romiszowski (1981), in noting this problem, suggests that the term should be qualified by what exactly is being analysed. For example, front-end analysis for initial needs assessment, job analysis for the job, and task analysis for the task, etc. As such, in this thesis, needs assessment means the thing being analysed; in this instance the front-end or preliminary study.

Kaufman (1977, cited in Kaufman & English, 1979) has

proposed a taxonomy of needs assessments which roughly parallel the ID process. At one end, an Alpha needs assessment makes no assumptions about the system under study. More and more assumptions are made as one progresses through the Beta, Gamma, Epsilon, and Zeta assessments. Obviously, the less assumptions made about the system under investigation, the more objective the outcome of the needs assessment. More obviously still, an Alpha assessment would appear to be the most appropriate needs assessment for a front-end analysis simply because of its objectivity.

Of course, any assessment requires an initiating event. In this project, the initiating event was a general belief that more and better training was required in order to meet the present and future requirements of the Cargo Branch. Burton and Merrill (1977) would classify this as a 'felt need' in combination with 'anticipated or future needs'.

A felt need is synonymous with want. This type of need is usually identified by simply asking people what they want. Although this approach has a certain amount of democratic appeal to most of us, it also has some inherent problems. What people say they want is affected by their perceptions of what is possible and socially acceptable as well as what they think is available (p. 22).

As is evident, although a felt need is a good initiating factor, it is not necessarily sufficient, in and of itself, to generate a true needs analysis. For example, a felt need for more training, specifies the means to an end. What this implies is that, by providing such training, the end has been met and the problem solved.

Confusing the means and ends in this way can result in

useful concepts and tools failing for the wrong reasons. For example, a brilliant training program can be developed and provided, but if the original need is a change in job structure it will not be effective. In contrast to this "means -> ends" approach, Kaufman and English suggest "you have to define the problem and specify the required outcomes (ends) before you can make sensible judgements about the process (means) to solve those problems" (p. 9). That is, take an "ends -> means" approach. Failing to proceed in this way, according to Kaufman, is inviting disaster:

We suggest that it is the inappropriate or incorrect selection of needs which is at the root of much educational failure; and, further, we strongly suggest that the use of appropriate needs analysis tools, techniques, and strategies can greatly improve educational success (p. 8).

Although Alpha analysis is recommended, Kaufman and English acknowledge that the most difficult part is obtaining commitment, approval, and resources in order to 'get going' because people have a tendency to resist change even when it is not 'for changes sake'.

Briefly, for conducting an Alpha analysis, it is suggested that three partner groups (i.e., groups that will be affected by the analysis) construct a chart or matrix listing all the relevant issues stated in terms of what is and what should be. In this case it would have been logical to choose representative managers, supervisors, and employees as well as the Cargo Training Manager (client). It is important that these listed items are stated in terms of the ends or results (for example, 'half of all

supervisors do not interpret the collective agreement properly').

Once there is compatibility and agreement between the three groups, two questions should be asked for each item:

- 1) What does it cost to meet the need?; and
- 2) What does it cost to ignore the need?

Costs, of course, are not limited to financial considerations.

Once the discrepancy between 'what is' and 'what should be' has been defined in results terms, and a definitive decision that the need must be met has been reached, further analysis through observation, interviews, and other techniques can be conducted (as both Holden, 1983; and Romiszowski 1981 suggest) in order to:

- a) consider all solutions (not just training);
- b) identify training needs if training is the appropriate solution;
- c) identify any constraints that may have an impact on the scope of the training solution.

This may seem like a lot of extra work when one thinks that training is the solution, but the extra effort to be absolutely sure will pay off in the long run: "an appropriately designed and executed needs assessment can help us to achieve reliability, validity, and utility. We can be effective as well as consistent and efficient. We can achieve results which are also worthy and important" (Kaufman & English, 1979, p. 14).

Conclusions and Recommendations

Although the author was not present during this phase of the project, the events leading up to the decision to produce a supervisory training course indicate that this decision was based on a 'felt' need rather than data from formal needs analysis. While the situation certainly seemed to point to training as a solution, a more thorough analysis such as the Alpha assessment technique in conjunction with the methods outlined by Holden and Romiszowski would have confirmed whether this assumption was indeed correct.

2) Project Team Selection

Although much is said about the use of teams in realising an instructional design product, very little is said regarding how such teams should be put together. Over and above the designer(s) themselves, who should be involved? And at what level of involvement? The only consensus appears to be on the question of subject-matter experts (Holden, 1983; Rosenberg, 1981; Cram, 1981; Coldeway & Rasmussen, 1984; Kemp, 1985; Romiszowski, 1981, Dick & Carey, 1978). Almost all writers advocate the use of SME's in working with the designer to verify the actual content of the materials produced although they differ as to the extent of the role they maintain SME's should play. At one extreme, Bolletino (1980) argues that the role of an SME is mainly that of a resource person. She states that knowledge of the content per se is not only relatively unimportant in the design stages, but also in the production stage: "...

developing instructional materials, is carried out on the basis of the task analysis, the design, and the performance examination. Little additional information is needed." (p. 31). Although her article is mainly concerned with why a designer does not need to be a subject-matter expert, one gets the distinct impression that she needs to know practically nothing about a subject in order to produce effective materials: "from the point of view of training development, all subject matter is the same" (p. 28).

At the other extreme, Clark, Elam & Merrill (1983, cited in Schmidt, 1987) prefer to have the SME's develop the materials under the watchful eye of the designer who provides job-aids and guidelines and acts as a consultant. DeWeaver (1980) goes even further; she feels that the designer should also be a subject-matter expert in order to add credibility to the materials. This is surprising given that the whole point of using SME's is to ensure credibility - not to mention the limited career path of a subject-matter expert specializing in ID.

In my experience, none of these approaches are satisfactory except for perhaps extremely simple straightforward skill-building instructional materials. While I probably could have designed the course after assistance with the job/task analysis, it would have been impossible to produce anything other than generic materials without substantial SME assistance. On the other hand, while they were expected to act as developers for the cases during class time, it quickly became clear most of them had difficulty functioning in this capacity. This does not

appear to be an isolated case. Schmidt (1987) also found that, in reality, using SME's as developers was unsatisfactory. However these results are hardly surprising, for although master performers on the job, they had no experience in writing instructional materials. In addition, being master performers, they probably would have had trouble determining hierarchical steps in developing skills (although could have done so with prompting from a designer). On the other hand, they did an excellent job of providing the raw material from which I was able to produce final drafts and helped enormously during the quasi job analysis stage. In addition, I believe that they could have provided valuable input in forming instructional hierarchies and setting objectives, had this been required.

As a result of these experiences, I would suggest the middle ground proposed by Rosenberg (1981), where SME's would learn the basics of ID, and the designer would have to gain an understanding and appreciation for the content areas that SME's work with, to be the most plausible approach. This does not need to be a protracted affair, since SME's need only have an understanding of ID in general. More detailed information can be given for only those areas where they will be directly involved - job/task analysis, and setting objectives for example. It certainly would have made my job much easier if the SME's on the supervisory team had had some knowledge about ID. As it was, they were working in the dark most of the time because it was impossible to give them a crash course during valuable meeting time.

Although I knew considerably more about the supervisory position by the end of the project, it would have been very helpful for me to have had more knowledge of the job at the beginning. I was able to spend a day visiting two stations 'to get a feel for the operation', but it was too superficial to gain any real appreciation or understanding. Combining the observation period at the pre-design level (preliminary study) would have provided not only the traditional information sought at this stage, but also the opportunity to learn about the job content in more detail for development purposes.

Rosenberg (1981) states that Bell has formalized such a cross-training system which apparently works well. Obviously, providing a crash course in ID for SME's, and providing time for the designer in the field could not be cost justified if instructional design was not an on-going concern in the organization.

SME Selection

There appear to be no clear guidelines concerning how to select SME's for a project (reading the literature would indicate they appear out of thin air), although Schmidt (1987) reports a formal process in Canadian National. This process involves: (1) a request is sent to the various regions stating the goal of the project and soliciting suitable candidates, (2) the request is passed on to the target population group, (3) interested employees view an audiovisual presentation explain the ID process and read the material outlining the working conditions of the project.

If interested, an employee fills in an application, and his supervisor also fills out a 'Supervisor's Comments Form', (5) a short list of candidates are chosen and interviewed. The various supervisors are informed of the successful candidates.

For the project which is the subject of this thesis, the SME selection was very much more informal than at CN (perhaps because it was the first time SME's had been used in course development and ID was not an established process). In this case, SME's were chosen by the Cargo Training manager prior to the author's full involvement. His criteria were simple: from his extensive knowledge of most the individuals available, he approached five who he felt were, (a) most able to make a contribution to the project; and, (b) would fairly represent the various stations in the system. All the contacted persons agreed to volunteer some time to help develop this course. The problem of proceeding in this way was not in choosing 'good' people, (where possible candidates are known to the client or designer, this would appear to be a viable approach), but in failing to adequately prepare them for the experience they were about to enter. At the time, such preparation was impossible, since no one really knew the exact sequence of what was to happen. This included myself, as I had not worked with SME's before. As a result, they came to the first meeting, (a) not really knowing what to expect or what was expected of them, (b) with no clear idea of how many times they would have to meet as a group, and, (c) assuming very little work would be involved.

In retrospect, this was clearly a mistake. Firstly, they knew nothing about ID either as a concept or a process, and secondly they thought they would be giving advice, not actually engaging in activities such as producing and reviewing materials, activities which would take a fair amount of time (since they were volunteers, any work was in addition to their regular duties). Because the design team was relatively poorly prepared, the first few meetings were somewhat frustrating for the SME's, I think. More careful preparation in line with Cram's (1981) suggestions (e.g., 'ask the right questions' - elementary but often overlooked) would have helped to alleviate this situation. They seemed to really 'catch on' when it was time to perform the job analysis and this leads me to conclude that if the sequence of the model had been followed and explained, they would have had a better understanding of what was involved and how they could have contributed.

Lastly, in an excellent article, Coldeway and Rasmussen (1984) explain some of the reasons why the instructional development process can be difficult, threatening and demotivating for a SME. Although too involved to relate here, an understanding of these behavioural and social-psychological frameworks as they relate to working with SME's would have been beneficial at the beginning of the project.

Conclusions and Recommendations

Although the impression may have been given that this aspect of the project progressed in a less than ideal way,

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this was only the case at the beginning. At the end, as is so often the case, everyone involved felt they had both enjoyed and benefitted tremendously from the experience.

From a process and administrative viewpoint, the main recommendation would be to assign one SME full-time to the project. Having meetings every two to three months breaks the continuity of the project and the workload involved in addition to regular duties proved difficult for these supervisors; their jobs, and rightly so, came first. From the designer's viewpoint, having an SME available to work with fulltime would have been more effective and efficient. In addition, SME's should be prepared by providing them with the opportunity to learn more about ID, either through audiovisual or printed material such as used by CN. I would reiterate that this orientation should be short and only contain information absolutely necessary to their function as SME's. This would be helpful both from the designer's viewpoint and the SME's themselves. Providing this information prior to selection would enable potential employees to at least have some idea of what would be involved. Preferably, cross-training could be provided for both the SME and designer. However, each individual instructional designer should weigh the advantages and disadvantages of providing ID information beforehand. Some of the disadvantages could be that the SME's might be 'scared off', or may feel pressured to perform in a certain way. Additionally, they may feel real or imagined constraints on their ideas of what and how something should be taught.

The selection method should be left as is. An informal approach when SME involvement is not the norm is perfectly adequate. Should ID become more prevalent in the organization, then a system such as the one described at CN could be modified for use.

Lastly, in agreement with Schmidt (1987), SME's should be used fully for job/task analysis, instructional analysis, setting objectives, and reviewing materials but one should not expect them to produce instructional materials. They can provide the information for such materials but it should be up to the designer to actually write and produce.

3) Strategy Formulation

Strategy formulation is perhaps the crux of the 'pure' instructional design process. Once training has been identified as necessary, it is this phase which will determine the quality, appropriateness, and effectiveness of the final instructional package. Generally, strategy formulation relates to several areas and can be broken down into: job and task analysis, population analysis, objective setting; instructional strategies; and media selection. Each of these areas, or steps, will be discussed as it relates to the production of the supervisory course in question.

a) Analysis of Training Needs (Job/Analysis)

Job analysis essentially involves the breakdown of a particular job into its component tasks so that these tasks can be analysed for instructional purposes. Since the

concept of tasks is central to this undertaking, it is obvious that we must be able to recognise a task when we see it.

A task is a small unit of behaviour (or performance) which:

- a) has a specific identifiable triggering (or stimulus) event which starts it off.
- b) is composed of a series of actions (steps, operations) which are related in some way (sequence, time, purpose).
- c) has a specific identifiable final result (or terminating event) which indicates that the task is complete (Romiszowski, 1981, p. 123).

The most comprehensive approach to job analysis in the literature is provided by Romiszowski (1981). As such, his techniques and procedures will be examined here.

In order to ensure all relevant data are incorporated, he suggests several collection methods from existing documentation such as the job description, through to interviews, observation, input/output analysis and DACUM methods. The purpose of such information is to answer three questions about each task identified as part of the job:

- * how important is successful completion of the task to the success of the job?
- * how frequently is the task performed?
- * how difficult is the task to perform?

Answers to these questions, he maintains, will enable the designer, together with the other team members, to establish a priority amongst all the tasks.

Tasks scoring low on all counts (particularly on importance and difficulty) may not need any further action at all (e.g., new trainees will learn them rapidly on the job, without any formal training). Tasks scoring generally high ratings will require training or other action to be taken and this will usually require further analysis of the task (task analysis) (p. 129).

In terms of the job analysis performed for the supervisory course, the Supervisor's Role Constellation was developed in order to model the role of the supervisor as it currently existed and to serve as a basis for identifying the various tasks that a supervisor would have to perform under each major area of responsibility: planning and administration; customer service; operations; and personnel. In addition, problem-solving/decision-making and communication were identified as the core skills in every area. This model was constructed from a plethora of information collected on supervisory roles, tasks, and responsibilities and it does effectively convey the role of the supervisory position as well as identify the major responsibilities associated with that role. In addition, not only is it based on published research, but it also makes intuitive sense. For these reasons, the model was accepted by the SME's as being representative of their jobs. However, while it is a good general model of what a supervisor's job consists of, it is not a job analysis in the systems sense because it is not specific enough. Job analysis techniques from ID could have helped to validate this model and expand on it sufficiently for it to have been much more useful as a basis for identifying and determining which tasks needed to be taught during the course. As

Holden states "the job analysis pinpoints exactly what skills are to be taught ..." (p. 22). Through structured interview techniques with SME's (such as DACUM) and in-depth observation in the field, a much more specific list of tasks for the particular supervisory job in question could have been compiled. This list could then have been shown to second-level management (and possibly employees) to gain some kind of consensus as to whether the tasks listed were representative of the job from their perspective. Once consensus had been reached, the SME's could have continued with the Design Team to perform an analysis on each task (as outlined in the model) in order to determine which tasks were worth teaching and which could be dropped or addressed in other ways. As it was, the assumption, at least initially, was that more or less everything in a general sense needed to be taught from scratch (which may or may not have been the case).

Task Analysis

Task analysis is nothing more than a detailed inquiry into the actions that need to be taken in the performance of a specific task or job. It involves making an inventory of what has to be done. Such an inventory would include not only information about the knowledge and motor actions that are required, but also the skills and attitudes that are necessary (Davies, 1981, p. 8).

However, of the tasks identified during the job analysis, the only ones for which a task analysis is performed are those which are worth teaching and those which are either not known or not mastered. This task analysis provides information concerning the structure of the tasks

in order to determine: what to teach (the terminal, intermediate, and enabling objectives); to what standard (evaluation criteria); and in what sequence (Romiszowski, 1981). Additionally, the tests themselves can be devised and produced from such an analysis.

The importance of a detailed task analysis cannot be underestimated because the results of such an analysis may help, in the latter stages of the ID process, to establish:

- * The implementation/evaluation plan.
- * Instructional methods/strategies.
- * An instructional sequence.
- * The content of the course. (Romiszowski, p. 85).

Such a detailed analysis would have identified exactly what the instructional activities would comprise, both in the pre-work and class time, so that objectives could be written for each. Knowing exactly what needs to be taught is particularly important since, in agreement with Romiszowski, Holden (1983) states the job analysis "forms the basis of everything that is done later and provides a common checkpoint for each subsequent step" (p. 22).

I was able to do a quasi-job analysis later on in the design process for the instructional activities during class time but this was very informal and centered more on the problems and issues rather than a task analysis on what should be done from an instructional point of view. This problems-and-issues approach, while not negating the need for a proper task analysis, does have some support in the literature. Davies (1981), reports that 30 to 50 percent of all process interruptions in American industry are the

result of human error. The situation is similar even outside the manufacturing sector. The major types of error reported by Davies (p. 8) are:

- * selection - the performance of an inappropriate set of actions.
- * storage - forgetting.
- * discrimination - wrong decisions are made and the wrong actions taken.
- * test - breakdown in the verification or check-out process.

An additional factor in looking at tasks, then, is to seek out root causes of errors that interrupt the continuity of a task or task environment. Davies states "while root cause analysis is a key tool for examining situations after errors have occurred, task analysis is the key for helping prevent them from happening in the first place" (p. 9). Thus it was not inappropriate to look at the problems and issues that a supervisor could encounter, because such situations usually cause error - whether in selection, storage, discrimination, or test classifications. What was inappropriate was to concentrate on this factor to the exclusion of others equally important to the ID process.

Conclusions and Recommendations

This phase may have been the most poorly executed in the whole project simply because of the ramifications of not really understanding the nature of tasks that made up the job. This, of course, influenced every other stage in the ID process and many of the failures in these subsequent

stages can be traced back to here. Hindsight is 20/20, but the obvious error was that simply too many assumptions were made - about the job, about the tasks, about what needed to be taught, and what was required from an instructional point of view.

Obviously, stricter adherence to these factors by following the ID process for this stage outlined by Romiszowski, as well as Davies, and Carlisle (1983) may have resulted in a more solid foundation from which to proceed.

b) Objectives

The whole concept of objectives is generally recognized as integral to the systems approach of designing instruction (Kibler & Bassett, 1977), and flows naturally from analysis:

Once the needs have been identified, verified, and prioritized, you are ready to translate these needs into useful statements for the purpose of designing instruction. Needs identified from valid needs assessment procedures are translated into [goal statements, and then] statements of objectives (p. 53).

The initial front-end analysis for the supervisory project had identified a gap between 'what is and what should be', and training was identified as the solution. The goal of this training was to ensure that supervisors were 'better trained' to carry out their evolving role in the organisation. A general goal statement is not an objective, of course, because it lacks specificity and measureability (Romiszowski, 1981; Holden, 1983; Dick & Carey, 1983 and others too numerous to list). The fact that

this general goal statement had already been translated into into an overall (or terminal) course objective before I (and more formal ID ideas), became involved, would seem to support Dick's and Carey's assertion that setting objectives is arguably the best known component of the ID process.

To reiterate somewhat from the chapter on Proposed Method, an objective must consist of three components: (1) terminal behaviour; (2) test conditions; (3) standards (Davis, Alexander, & Yelon, 1974). In other words, it must specify what the trainee is expected to do, under what conditions he should be able to do it, and to what standard.

While the terminal performance objective starts out by saying "to provide the supervisor with the basic knowledge and skills ..." which is technically incorrect, it does go on to specify the performance and criteria for assessing that performance for new supervisors: "to competently address 80 percent of the problems he/she will face in his/her first week on the job." Although the phrase 'competently address' could have been clarified, the objective can be considered to meet the requirements for a terminal behavioural objective (that is, an instructional system objective) suggested by Mager (1962). Romiszowski (1981), however, suggests that it is insufficient to simply write an objective. In order for such an objective to be useful, it should be considered in terms of whether it is:

- 1) Relevant. That is, will the chosen objective contribute to the wider aims of the larger system?
- 2) Viable. Are the means available to achieve the

objective? Is there any conflict between this objectives and the objectives of the system? (p. 49).

Looking at the terminal objective with regard to the first consideration, it was relevant. Relevant in the sense that, if achieved, it would contribute to general organizational goals. Obviously, the more operational and personnel problems supervisors can solve on the front line in an efficient and effective way, the greater the benefit to the company in terms of public relations (customer satisfaction), employee relations, and reduced claims. The objective was also viable in the sense that the resources - SME's, designer, management development specialist, money etc. - were available to produce a course which was supported by supervisors and top management.

However, the objective, as stated, was somewhat difficult to measure and this posed a slight problem since, by definition, an objective must be measurable (Mager 1962; Roniszowski, 1981; Davies et al, 1974; Briggs, 1977; Holden, 1983; Gagné & Briggs, 1979). The basis for this objective (that supervisors would be able to solve 80 per cent of the problems and issues confronted in their first week on the job) was the 80/20 Pareto rule which states that 20 percent of something is usually accountable for 80 percent of something else. (For example, 20 percent of customers are responsible for 80 percent of business). Applied to the supervisory situation, this would mean that 20 per cent of the tasks and issues a supervisor must deal with would account for 80 percent of the problems encountered. By

identifying and addressing (teaching) supervisors how to deal effectively with those 20 percent of issues and tasks, it follows that they would automatically be able to solve the 80 percent of the problems generated by that 20 percent.

Such an assumption obviously places considerable emphasis on the validity of the job analysis and subsequently the 20 percent of tasks chosen to be included in the instruction. While a quasi-job analysis was performed at the 'determination of class content stage', it is unlikely that it was rigorous enough to really support the terminal objective.

Just as there are systems within systems, there are also objectives within objectives (Romiszowski, 1981). Obviously, an overall or terminal objective, will require that other sub-objectives will have to be formulated for each task in order to enable it to be achieved. These sub-objectives at the unit/exercise level are derived from a detailed analysis of the tasks to be taught. Apparently, this is particularly true for training. According to Schmidt (1987), ID models designed more for industrial applications, such as the TST model used in Canadian National, tend to place more emphasis on using task analysis as a basis for creating objectives, while 'academic models' tend to view task analysis as a "subsidiary activity to be performed after specifying objectives" (p. 34). This emphasis on analysis, entailing objectives in a training application is consistent with the sequence outlined in the ITU model originally proposed for this project.

Perhaps the most far-reaching deviation from the ID

process in the whole project was the lack of objectives for each individual unit/exercise. Because no objectives were written at this level, it compromised the choice of instructional strategies since these are derived directly from such objectives. Secondly, without the frame of reference objectives would have provided, it was not possible to really test the effectiveness of the instructional materials, that is, to measure the results, for each unit on a formative evaluation level. In retrospect, I am surprised that I could have overlooked (if one can use such a light term in this context) such an important part of the ID process. Yet at the same time I am at a loss to explain how such a situation came to be. I think that it may have had something to do with the fact that (at least during class time) the instructional units were for the most part based on real situations put into case format. Perhaps the 'learning objectives' were so obvious (in the sense that an expert would debrief) that the whole issue became cloudy. The implications in terms of whether the course 'did what it was supposed to do' from a learning perspective could be extensive, (although there is no way of knowing for sure).

However, since the interest was on whether the learning transferred to the job, this situation was rectified in part by including questions on the summative evaluation questionnaire that related to the instruction during class time. Perhaps this constituted an acceptable compromise since "test items are another way of stating the objectives, or rather giving an example of them. [A Mager type

objective] is almost a test item." (Romiszowski, 1981, p. 46). The data would have been subjective, but this would have been offset to some extent by the three different viewpoints for each question. The questionnaire also asked for a subjective assessment of the percentage of operational and personnel problems the supervisor was able to solve.

For these data to be valid, however, the summative evaluation would not have actually been summative in the true sense because the data would have been fed back into the design process. Rather, it would be a second stage formative evaluation. Even so, the questionnaire which was constructed was not sufficiently specific or detailed to collect meaningful data on the specific learning objectives for each instructional unit to see if it had been transferred. This is because the questionnaire was designed to provide more general data on the overall effectiveness of the whole instructional system rather than provide feedback data from which to make further modifications. That is, summative evaluation data "sums up the results or outputs of a course. It normally takes place after the course is over and has no effect on the structure or process of the course" (Romiszowski, 1981, p. 369).

However, while the emphasis for evaluation was on transfer of learning in the job situation, it does not negate the need for specifying instructional sub-objectives.

Conclusions and Recommendations

This aspect of the process was probably the most flawed from an instructional design viewpoint although trainee and

SME reactions to the materials, both pre-work and class exercises, were extremely positive.

Obviously, given the support for objectives in the literature this is something which should not be compromised in any future course development. Particular emphasis should be placed on the measurability of such objectives.

c) Determination of Learner Characteristics

According to Romiszowski (1981), "the clientele or target population is the one most overlooked ... stage [of the ID process]. Yet it is obviously important to verify whether the topics or tasks we are identifying really need to be taught." (p. 83). In other words it is essential for the course designers to know the current level of knowledge and skills possessed by the target group so that this can be matched with the list of knowledge and skills identified in the task analysis. In addition, such an analysis provides information about students' learning which might effect the instructional strategies employed (Kemp, 1977; Holden, 1983). For the supervisory project under consideration a formal population analysis was not conducted because the Advisory Group consisted of four current supervisors and two other ex-supervisors. The author believed that the word of these SME's could be taken regarding: what they, (i.e., the target population), had done in the past (experience); what they can do now (that is relevant); and, what they tend to do (attitudes and habits)? (Romiszowski, 1981, p. 140). While perhaps not truly representative, the Design Team felt that these supervisors did know and understand the target.

population well enough to provide valuable input on these questions. In addition, because the Cargo Training Manager (who was paying the bill for this project) was also an ex-supervisor, there was also little risk of falling into what Romiszowski calls the 'dog food syndrome' (that is, satisfying the client at the expense of the consumer).

Romiszowski and Kemp suggest that part of the population analysis should take into consideration the related experience, social customs and personal/work habits which trainees have, since these factors should influence the course design, the choice of meaningful examples/analogies, etc. In accordance with this suggestion, all aspects of the instructional materials were "cargoized" in order to ensure they were relevant to the target population. Real events were used in the cases and the generic pre-work modules also referred to the cargo situation. This attention to specific materials was appreciated by trainees - one commented "this is the first time I've had a training course that talked about things I can relate to" - although it is difficult to tell from this statement whether he was referring to the writing style, cargo content, or both. In any event, it was clear from trainee reactions that, at least in the affective domain, their needs had been taken into consideration. Less clear, however is how much the target population needs were taken into consideration for other aspects of the course with regard to course structure, sequence, methods, and media. I think the Advisory Group (SME's) tended to take the Design Team's suggestions for decisions made about these issues

because they were not explicitly aware of the instructional design implications of their input. For example, the author could have made them more aware of the ID implications by asking such questions (suggested by Romiszowski) as:

- do learners prefer to study in groups or individually?
- when a topic must be learned in its parts, will the learner prefer a synthetic (from the parts to the whole) or an analytic (from the whole to the parts) sequence?
- what amount of new information can the target population digest at one go?
- is the target population principally visual or aural learners?

Conclusions and Recommendations

Given that four members of the project team were supervisors, and two were ex-supervisors, their insights into the target population were sufficiently accurate that no formal analysis was required. Additionally, the attention to the specific cargo situation in the pre-work and class materials, as well as such adaptations as the informal writing style, is evidence that they were not developed in isolation from the final 'consumer'. As such I would not recommend changes in this approach. Since using SME's in this dual capacity saves project time and money, I would not recommend changes in this approach unless either there is reason to believe the SME's are not representative, or that they do not fully understand their peers.

However, some of the techniques outlined above should

be used to solicit information from SME's about the instructional design implications of their knowledge of the members of the target population.

d) Design of Instructional Strategies

Gagné & Briggs (1974) have classified human learning into five different categories, which they call a 'taxonomy of learning outcomes' to indicate that learned capability is not observable in and of itself.

- a) intellectual skills - using concepts and rules to solve problems; responding to classes of stimuli as distinct from recalling specific examples.
- b) motor skills - executing bodily movements smoothly and in proper sequence.
- c) verbal information - stating information.
- d) cognitive strategy - originating novel solutions to problems; utilizing various means for controlling one's thinking process.
- e) attitude - choosing to behave in a different way. (Aronson & Briggs, 1983).

Such categories are important for designing instructional strategies because each is hypothesized to require different types of instruction since these different categories of outcomes involve entirely different classes of performance. Further, different sets of conditions are required for the various types of learning to occur. Internal conditions refer to "acquisition and storage of prior capabilities that the learner has acquired that are either essential or supportive of subsequent learning." External conditions refer to "various ways that

instructional events outside the learner function to activate and support the internal process of learning" (Aronson & Briggs, 1983).

In addition, for the learning of intellectual skills, they have shown that the essential prerequisites and their relationship to one another for achieving an objective, can be diagrammed in the form of a learning hierarchy. Such a hierarchy provides the blueprint, if you will, for instructional sequencing.

Romiszowski (1983), finds the Gagné and Briggs model inadequate in several respects: for example, it implies that there are a great variety of strategies but does not identify many of them; and it downplays knowledge 'or information' to be analysed.

In a modified approach, Romiszowski clearly demonstrates how to analyse each task and its subsequent objectives in terms of the knowledge (information the learner already knows) and skills (the ability to be able to perform using that knowledge) required to perform it. He classifies knowledge into four categories: facts, procedures, concepts, and principles. Skills are classified as: cognitive, psychomotor, reactive, and interactive. Such a classification is much better suited to the management training environment since it includes what Romiszowski calls "the missing domain" (p. 216) - the social, interpersonal, interactive skills essential in the industrial context. He suggests the following method: break down the objectives into their component knowledge and skills; determine whether expositive, discovery, or a

combination of both strategies is appropriate; and then decide which type of tactic within these two broad areas is acceptable and feasible. More specifically:

- 1) Determine, from the objectives what we are dealing with:
 - a) An information problem (the need to instill knowledge).
 - b) A performance problem (the need to develop skills)
 - c) A combination of information and performance problem.

Each objective should be considered in turn.

- 2) Consider, for each objective, the basic category of knowledge or skill that we intend to teach:
 - a) If knowledge, is it factual information, concepts, procedures or principles (or what combination)?
 - b) If skill, is it basically a simple reproductive skill or a more complex productive skill (or a combination)?
- 3) In light of considerations 1 and 2, decide whether expositive or discovery methods are more indicated for the objective.
- 4) Consider the practical constraints.... These might include such factors as:
 - a) Resources...
 - b) Target population...
 - c) Wider system...

Consider what restrictions these constraints impose of your selection of a specific instructional method.

- 5) Select a method (or several alternative methods) that is (are) both appropriate and viable, in the light of the [practical constraints] ... (p. 306).

Given the immense emphasis on instructional strategies by ID models, the proportion of the author's time spent on

the design of instructional strategies was relatively small compared to the amount of time spent on the production of the content. In addition, given the fact that instructional strategies are at least as important as the content, this was also a fault of this product design.

Based on the guideline provided, the course was to "maximize learning through application of adult learning principles: discovery learning, discussion, cases, videos, self-awareness exercises, simulations, role plays." However, defining an overall strategy for all aspects of an instructional program ahead of time runs counter to the systems approach in designing instruction. Since a course of instruction usually has various aims and objectives one would expect to see a variety of both expository and experiential strategies (Romiszowski, 1981, p. 296). The question then becomes when should each be used? In order to answer this question it is necessary to return to the terminal objective for each instructional task. In this case, because of the lack of clearly defined objectives for the cases and incidents it was more difficult to determine specific instructional strategies for each one. What this means is that a case was developed around a given "problem" rather than around the tasks that would need to be done to resolve that problem. Students were generally asked to read the case, and answer 'what would you do' type questions within a group framework, followed by expert debriefing (developed in line with accepted case study methods adapted from Romiszowski). Since case studies are considered to be true discovery learning, this was the basic strategy

employed. Expositive learning in the form of lectures, was tied into similar types of cases. The only difference was that trainees were given information beforehand.

Conclusions and Recommendations

While this approach (discovery learning in the form of cases) may have been appropriate for some of these incidents (tasks), it was probably applied too generally. That is, case studies were chosen as the main teaching/learning strategy and the content was structured to fit, even if it could perhaps have been taught more effectively and efficiently using another strategy. More importantly, I think that these problems stem from the failure to perform a comprehensive task analysis, and subsequently set objectives. As a result, the class time was designed more in accordance with traditional approaches rather than with the systems approach.

The recommendation, obviously, involves the adoption of an approach similar to Romiszowski's whereby each objective is broken down into the skills and knowledge required to achieve it. The type of knowledge and/or skill should then be determined and the appropriate strategy and tactics chosen which most facilitate the teaching/learning of it.

e) Media Selection to Implement Strategy

Reiser and Gagné (1983), have published a model which apparently helps designers in media selection. "The designer uses the model by answering questions about the skill to be taught, and then follows a flow diagram to the

point that several media are suggested. The designer can then look at the practical aspects associated with the use of what are referred to as the candidate media" (cited in Dick & Carey, 1985, p. 168). While some media may be more effective for teaching psychomotor skills, and some for verbal skills, for example, to go through a whole flowchart to get to several choices seems to be wasteful, unless the designer knows nothing about media, especially since there appears to be no real consensus on media choice questions in the literature (Schmidt, 1987). In fact, in a article summarizing the research evidence, Clark and Clark (1984) state categorically that there is no evidence to suggest media choice makes any kind of difference: "media do not under any circumstances influence performance" (p. 1). Certainly, during the supervisory project we varied the media and delivery method, utilizing print, lecture, video, etc., but this was primarily to 'change the pace'. Existing materials were used where appropriate (videos for example) and of course these were used in their original medium. Most media choices were based on simple availability and economy.

For example, a problem-solving simulation was created as a print-based exercise. This exercise could have been adapted very easily to an interactive computer-based format; in fact, it would have been much more efficient (although not necessarily 'better' from a learning standpoint) if we had been able to do so. However, to write the software would have required a programmer. Even if we could have produced a computer-based version, there is the difficulty

of transporting and setting up computers in a classroom arranged for group work. Also, since the project was a combined individual/group effort, the logistics of administration would probably outway the benefits.

Conclusions and Recommendations

Having an understanding of the various media types, what they are capable of, and which is generally better for a given learning strategy is laudable. The final decisions, though, (unless resources are not an issue) should rest primarily on practical and economic constraints. Of course, this is not to say that the cheapest or most practical media should be used automatically. These constraints should only apply to the extent that they do not detract from the quality of the instructional product.

4) Development and Production of Materials

Phase 10 of the ITU model (Material Production) as explained by Holden (1983) is:

The 'work' phase as well as the 'fun' phase of the whole process. It is here that you begin to see, for the first time, the fruits of your efforts. You write, you draw pictures, you take photographs, you record scripts, you shoot video or film sequences, and then put the whole thing together into a training programme. You don't do this blindly however. As you go through this phase, you need some feedback as to the effectiveness of what you are producing. This feedback comes from developmental testing your materials. To do this you find any willing subject available and try out each segment, as you produce it, on him or her. Then you correct your materials accordingly and try it out again (p. 25).

This extensive quote is reproduced here because it

captures the essence of what occurred during the development/ production stage of the supervisory project for both the pre-work modules and the classroom exercises. In addition to the development, great emphasis was placed on the appearance of the final materials. Special attention was paid to such items as, personalized binders, detailed directions, neat printing, and general layout. While these aspects may seem trivial, they are important in creating a 'professional' image to the trainees and do not seem to be specifically addressed in the literature (although Hamilton, 1983), does consider their importance in his article on competency-based education).

There appears to be some overlap between this stage in the ID process and instructional strategies. While Holden evidently means development and production in the literal sense, Romiszowski (1984) devotes a whole book, Producing Instructional Systems (as a continuation of his first one, Designing Instructional Systems) to this subject. It covers, as one would expect, all manner of instructional strategies at the micro-level. More specifically, these are instructional tactics such as individual vs. group work and the development of lesson plans.

As is evident, this phase of the supervisory project was a literal interpretation of the ITU model. While instructional tactics were addressed - it would be impossible to actually give a course and not pay attention to these - at no time were the more general strategies outlined above translated into micro-level tactics in the kind of detail which Romiszowski advocates. Presumably, one

would have a better product with this much attention to instructional tactics, but much more analysis at the higher level is needed in order to derive them.

Conclusions and Recommendations

This phase of the project, (i.e., the literal development and production of materials) took a long time. More specifically, I worked on this phase, on and off, for the entire nine-month duration. The main reason that so much time was devoted to this phase was because I produced in the region of 90 percent of the materials myself (albeit with input from other members of the team). Producing written materials from scratch takes an incredible amount of time and effort, and in the author's experience and Schmidt's (1987), since SME's are helpful in determining content but not in actually writing, there are few alternatives to the designer playing all roles if it is a 'one-man team'. However, pure production (such as shooting film, typesetting, programming) should be delegated to qualified professionals either within the ID team or outside. Obviously, maintaining creative control is more difficult when such tasks are delegated but, with clear and precise instructions, and final approval by the instructional designer, this method is more efficient and produces quality (professional) materials.

5) Formative Evaluation

One of the distinguishing features of the systems approach to designing instruction from most traditional

methods is the formative evaluation - that is, the testing and modification of the instructional materials before the final product is produced. It is this feedback loop during the development phase which ensures the constant improvement of the instructional materials as they are developed. This testing and modification is critical because it is "almost certain that many problems ... occur in the classroom due to the limited effectiveness of first draft materials" (Dick & Carey, p. 197).

Dick (1977) suggests a three-phase formative evaluation using one-on-one with a potential trainee and one-on-one with an SME; small group evaluation of approximately eight to 12 members from the target population; and a field trial of approximately 30 students. This type of approach seems to be designed much more for programmed text type instruction or self-instructional materials where students are tested on the knowledge they have obtained. During a field trial evaluation for classroom instruction where an instructor is used, Dick suggests that "the designer withdraw from active involvement in the instructional process" (p. 317). While I would not disagree in general, it seems that observation by the designer during the class makes a lot of sense in determining the process difficulties as they occur rather than having the instructor remember and report them later.

In addition, Dick seems to think that everyone has unlimited resources (in time and personnel) to be able to complete this kind of evaluation as described. A programmed text which will ultimately be published for use by thousands

of students is certainly worth this type of time and effort. However, the economic feasibility of such an undertaking for training within an organization where the total population is relatively small is quite another matter, as Bastian, Edward, Medsker, and Schimmel (1983, cited in Schmidt, 1987) point out.

Compromise was certainly a factor in the formative evaluation conducted for this supervisory course. It would have been totally impossible, for example, to run a field trial with 30 students (not to mention the course was designed for small group delivery so that three or four groups of four was the maximum) as their number constitutes almost half the population of supervisors system wide. The largest compromise was the use of the field trial as the first 'real course' because, economically, it just did not make sense to bring 12 (out of a total of 67) supervisors into town for a week, to not receive training. As a result, these trainees did not receive final materials, although how much this affected the learning process is unknown.

This phase of the ID process followed the ITU model fairly closely in terms of an evaluation of the process (tests were not used as per the previous discussion) and support for such an evaluation was high from all members of the Design Team, SME's, and trainees. The modifications made through various techniques from one-on-one and small-group consultations with SME's right through to the field test undoubtedly contributed to improving the final product.

During the field trial, apart from observation and informal discussion, the more formal evaluation form was

used to collect data about each instructional activity as well as overall impressions and suggestions for change (see Appendix A). This daily evaluation sheet was designed to provide information for each activity on several dimensions such as learning, applicability, enjoyment, and so forth. However, in retrospect, these dimensions were too finely divided for trainees to make discriminations on such similar but differing aspects for rating purposes. To have done this properly would have taken a great deal of thought and effort when completing these forms at the end of the day. As a result some (but not all) trainees tended to pick one number that seemed to represent their general overall impression of the exercise and put this in each column. In order to overcome this, the number of dimensions should be reduced to two or a maximum of three. In addition, each instructional activity could have been rated immediately following its completion while the experience was still fresh. This would also have cut down the amount of work required by the trainees at each evaluation 'session' and may have provided more valuable data.

The results of this evaluation identified mostly content and process changes which are very specific and will not be discussed here in any detail. Except when specific comments were made regarding change for activities rated higher than six out of a total of seven on these forms, they were left as is. Because trainees tend to rate high on such forms (hence the term 'smile sheets') any instructional activities rated between five and six were re-evaluated and re-worked with attention to specific comments.

In my opinion, this actively encouraged participation and evaluation from trainees contributed enormously to the 'ownership' of the final product.

Conclusions and Recommendations

In view of the limitations, this phase proceeded smoothly. The feedback from students was excellent, and the course deemed an unqualified success. The prestige editions were particularly appreciated - finally, a course had been produced which actually met some real need in the Branch. However, no data could be collected for revision of materials regarding 'instructional effectiveness' due to the lack of objectives and test items. More attention to the ID process during the earlier stages would have set the foundation for evaluation on this measure.

6) Summative Evaluation

The need for rigorous evaluation is a pragmatic one, for employee training programs funded simply on the presumption of effectiveness, with little in the way of hard evidence to support that presumption, seem especially vulnerable in times of scarce resources (Ammons & Niedzielski-Eichner, 1985, p. 211).

Summative Evaluation Model

Kirkpatrick's (1976) four-level approach was chosen for this evaluation because it seems to be the most widely used framework for classifying areas of evaluation and is recommended by numerous other authors (e.g., Weeks, 1986; Ammons & Niedzielski-Eichner, 1985). It has also been adapted for use by many others (for example, Smith, 1980;

Hamblin, 1974). Essentially, in his model a conceptual framework is developed to assist in determining what data are to be collected. Each level answers different types of questions and more valuable data are generated as one progresses through them. These levels from the lowest to highest are Reaction, Learning, Behaviour, and Results, and are described briefly below.

Reaction Were the participants pleased with the program?
Often the reaction of participants is crucial to the continuance of the program, so good reactions are important. Additionally, initial receptivity provides a good atmosphere for learning but does not necessarily lead to high levels of learning.

Learning What did the participants learn in the program?
This level measures objectively what has been learned in the classroom situation - principles, facts, techniques, skills, etc. It does not necessarily measure whether these will be transferred to the job.

Behaviour Did the participants change their behaviour based on what was learned? This level measures behaviour on the job and takes into consideration that just because a participant's learning in the classroom is not a measure of performance on the job. Evaluations in this category may include: before-and-after comparisons; observation from superiors,

subordinates and peers; statistical comparisons; and long-range follow-ups.

Results

Did the change in behaviour positively affect the organisation? Evaluations at this level relate the behavioural change to organisational improvement and typically take the form of analysis of cost savings, work output, quality changes, etc.

It was decided that data at the Results level would not be collected because of the difficulty of doing so. For example, data on claims would not necessarily reflect increased supervisory performance because there are many different factors which could account for lost or damaged packages. Similarly, efficiency of the operation can be affected by a whole host of factors outside the supervisor's control: snow storms in some stations, for example. Finally, there is little objective data on the whole operation which would distinguish performance between supervisors since there are three on shift on any given day.

Reaction data was also not to be collected at this point since feedback from the formative evaluation had answered many questions from this point of view. To have added further questions on this aspect would have complicated and lengthened the questionnaire unnecessarily and would have provided no further useful information. Data collection on Learning was contemplated but there were no objectives for each instructional activity and therefore no tests with which to quantitatively assess classroom

learning.

The main thrust of this summative evaluation was on behavioural change on the job for two main reasons. (1) "Measures of behavioural change usually best satisfy the conditions of effective evaluation. They represent the best combination of rigor, relevance and economy" (Zenger & Hargis, 1982, p. 12). (2) The overall course objective stated that supervisors should be able to solve problems and issues 'on-the-job'; therefore it would seem logical to collect data which would determine if this objective had been met. The design of the summative evaluation then, concentrated on this third level - behavioural change.

It should be recognized here that this evaluation was designed with the knowledge that there were two fundamental flaws which might affect the data.

- 1) Because the field trial was also 'the course', trainees were learning under less than optimal conditions and with less than optimal materials which might reflect in their subsequent performance.
- 2) The supervisors were not new. They had been working as supervisors for varying lengths of time and, as such, although the results would provide some information with regard to behaviour change, it might be difficult to extrapolate those results to people who had never been in a supervisory position but who were likely to be promoted (the main future target audience).

In relation to this second point, even if all new supervisors would have been available, such a pre-post study

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would have been impossible because of the lack of baseline measures. In addition, since all supervisors were to be recycled through this program, it would be valuable to know if behavioural change occurred with this group.

Selection of Evaluation Design

In this instance the design was what Campbell and Stanley (1963) refer to as the 'nonequivalent control group design'. This involves:

An experimental group and a control group both given a pretest and a posttest, but in which the control group and the experimental group do not have pre-experimental sampling equivalence. Rather, the groups constitute naturally assembled collectives such as classrooms, as similar as availability permits but yet not so similar that one can dispense with the pretest. The assignment of X to one group or the other is assumed to be random and under the experimenter's control (p. 47).

It was not possible to have two groups of supervisors from different 'naturally occurring collectives' because cargo management wanted to take the field trial opportunity to actually train some of the newer supervisors and these trainees came from various stations across the system. Additionally, to have had one group from various stations and the control group from just one would have made the groups even less equivalent. More importantly, it would have been impossible: a) to find a station that was not represented which had enough supervisors to create a control group; and b) to expect managers and employees to rate each one. As such, managers designated a control to ensure that a control was available for each station. Because the

author had no say in who was designated as a control (although this would have made little difference), the two groups may have been radically unequivalent. Demographic data was collected from both groups but this was incomplete and no conclusions regarding equivalency can be drawn from it.

Having the experimental and control groups from the same station may well have affected the second set of posttest results (had they been available) through the so-called Hawthorne Effect. This phenomenon is well known - essentially it states that people may change because they feel important and special by being singled out to receive training and this can change the nature of such learning. Since it was not possible to provide any kind of placebo training for the control group, this was something that was considered to be an uncontrollable factor for the between group results.

However, Hamblin (1974), makes a valid point about this phenomenon for experimental groups which may have implications (over and above this 'one-shot' evaluation) for future offerings. He maintains that the Hawthorne Effect cannot be eliminated altogether as long as the trainee knows he is being evaluated. Since it cannot also be ignored, he states that it is better to put it to positive use. Since evaluation can affect the results of training, it can be put to use as a training aid. "Evaluation is not merely a way of finding out whether training was good or bad; it can itself be an important part of the training in the sense that it helps people to learn ... knowledge of results facilitates

learning ... the evaluation stimulates the trainee's learning and directs it along the correct paths" (p. 18).

He goes on to say that the effect will be present even with continual feedback but is less likely to be beneficial: "the evaluator who fails to feed evaluation data back to the trainees is not making the maximum use of the Hawthorne Effect" (p. 18).

Although the original evaluation design called for such feedback to supervisors precisely for these reasons, this feature was rejected by management and subsequently dropped. However, perhaps this aspect should be reconsidered with the use of a much simplified questionnaire covering key issues. Feedback to supervisors on their strengths and weaknesses may well have contributed to changing behaviour. The major drawback in providing this feedback is the extra administrative work involved.

Questionnaire

The questionnaire route to data collection was chosen because of its relative ease of administration, given the large group size (148 different responses in all for the pre and posttests for both groups), and its economy. Phillips (1983) states that questionnaires are probably the most common form of evaluation instrument since they can be used to obtain subjective information about participants' feelings as well as to document measurable results. Goldstein (1980) would agree, although he gives the impression that this popularity is not necessarily for the best, "the field is in danger of being swamped by

questionnaire type items" (p. 240).

Obviously, because of their versatility and popularity, questionnaires should be designed to avoid the principal problems of improper wording and faulty interpretation (Phillips, p. 70). The questionnaire developed was geared towards soliciting information on a general level based on supervisory behaviour in the areas addressed both by the course and the pre-work package. Before use during the field trial it was formatively evaluated twice in order to remove ambiguity. The first evaluation was with the SME's; the second, was with approximately 12 supervisors who were not in either the experimental or control group.

Response-shift bias has also been identified as a potential problem with questionnaires since "pre-post comparisons commit the error of presuming a uniform reference frame for each participant (pre to post) which may not exist" (Mezoff, 1981, p. 58). In other words, training influences the participant's (and to a certain degree the other raters if they know the person has been on a course) reference frame to the item in question. Mezoff suggests the use of the pre-then-post approach to limit the effect of this bias. An additional questionnaire asking the supervisor to re-evaluate his or her original assessment of himself/herself in the light of his or her current knowledge would have required too much work (both for the respondent, and the other raters). Instead, some questions were added on the post measure asking the respondent to identify specific differences since the course. As a result, this bias would have had to be taken into consideration during

the analysis.

An important feature of this questionnaire was that it was presented to the supervisor himself, his manager, and five of his employees for both groups in order to compare differing perspectives and come to some kind of conclusion, based on aggregate or overall data about improvements in on-the-job performance. This was in line with the decision taken at the design stage which identified behavioural change as the most important goal of the course. Such an approach has been recommended by many authors:

Supply the supervisor's employees and managers with questionnaires about specific supervisory behaviours. Improving relationships with subordinates is the most reasonable objective of supervisory skill training. We believe this is the optimum means of gathering data (Zenger & Hargis, 1982, p. 12).

Supervisors [i.e. managers], peers, subordinates and trained observers can also assume a role in the evaluation process ... once trainees have returned to a job site, they can report on improvements or (in the case of a poor training program) the lack of improvement in participants' performance (Weeks, 1986, p. 22).

Goldstein also recommends using managers and subordinates in addition to supervisory self-reports. Commenting on a 1977 article concerning mental health settings by Strupp & Hadley, he states:

In a cogent analysis, the authors discussed the outcomes in the assessment of individuals when there are varying degrees of agreement and conflict among the three perspectives [society, individual, and mental health profession]. Similar analysis concerning the ability of trainees when there are disagreements among the trainees', the trainers', and the supervisors' perspectives would be very interesting (p. 240).

Since the author was expecting to find differing perceptions from the three perspectives, such an analysis, as Goldstein says, "would have been interesting".

Summative Evaluation Problems

To reiterate, the major dissapointment was the lack of summative evaluation data as there is no question that this information could have answered many questions concerning the effectiveness of the course with regard to transfer of training. This was particularly distressing since it was the one aspect of the model which the author had complete control over and tried to do 'by the book'. Although the design of the evaluation attempted to follow accepted methods, and theoretically should have worked, some unanticipated events occurred which compromised the data collection. Compounding this situation was the fact that the author made some major errors in its administration.

The pre-test questionnaire yielded sufficient data to serve as a baseline level of performance for both groups. The high return might be attributed to the high profile of the course at the time (i.e., just before its introduction) when the interest level was high. The post-test questionnaire was distributed four months later and, as such, interest may have tapered. In addition, the airline went through a strike situation just after the follow-up questionnaires were distributed and managers and supervisors were particularly busy at this time. Employees, of course, were simply not available.

Although several attempts were made by the Cargo

Training Manager to collect the questionnaires after the strike was over, there was simply no interest and it proved impossible to collect more than approximately one-eighth. Sending out new questionnaires was also considered, since it was possible that after several months the originals may have been mislaid. However, the general feeling was that interest was so low that we should just drop the whole idea.

Conclusions and Recommendations

~~While there were few problems with return of the pre-~~measure questionnaires, I feel that the design of the administrative procedures for data collection was seriously flawed and may have been, at least partly, to blame for the lack of return on the post measure. For example, some employee questionnaires were returned blank or did not have the supervisors name written on them and therefore could not be identified. This could have been rectified if they had been properly coded. Some managers also forgot to which employees they gave the first questionnaire - another problem the author should have anticipated beforehand. A better method would have been to call each individual manager and ask him for the names of five employees who would be able to rate the supervisor in question. All questionnaires would then have been sent individually with a covering letter to all respondents. This would allow the author to be able to contact individuals and would have taken the pressure off the managers to administer and manage this aspect. While they were expected to do this, there were no real consequences for not doing so, especially since

they probably felt it was 'an academic exercise' and therefore of low priority during the difficult strike period.

In summary, removing the administrative responsibility from each manager by mailing questionnaires individually with a covering letter to each person would probably have greatly increased both the control of the administrative process and the response rate.

Adequacy of the Model

Even though the proposed ITU model was not followed in this instance, some observations can be made concerning its adequacy in this situation - i.e., regarding its ability to fulfil the function for which it was designed, and to adapt to a unique training situation. In terms of the model itself, although it is not presented as a flow chart is still has a somewhat linear appearance which implies that Phase 1 must be done before Phase 2, Phase 2 before Phase 3, and so forth. This is not necessarily a bad thing and intuitively it might make sense, but in actual use it becomes extremely rigid (as Romiszowski predicted). This is not a criticism of the front-end, where it obviously makes sense to do a preliminary study before a task analysis. However it becomes much more evident as one moves through the various phases. Perhaps this rigidity is in fact simply a function of the number of phases involved. In other words, it may be that the very nature of explaining a process necessitates this kind of linear approach. The ITU model, however, makes no mention of the fact that the real

world situation may not fit this pattern. In retrospect, this model represents more of a systematic approach to instruction than the systemic approach which implies "an inquiry and discipline, complete with theoretical underpinnings and a developed methodology" (Hayman, 1974, p 495, cited in Andrews and Goodson, 1980). Romiszowski's descriptive model, in contrast, explicitly states that while there are general stages, they are designed to be guidelines or heuristics more than anything else. In addition, he presents clearly the theoretical underpinnings and methodology which comprise the model. In the times of the 'One Minute Everything' it is certainly easier and less time consuming to follow a cookbook style model such as the one presented by Holden. The problem with this easy route through is that, taken on its own, it is not comprehensive enough to provide a proper understanding of ID sufficient that the concepts can be applied generally in any situation. The author feels that any model which is followed too rigidly (rather as one would follow an algorithm) may result in disappointing results. Although such models may not be presented as recipes, their very simplicity and prescriptive (i.e, step-by-step) tend to invite blind adherence.

As a 'basic model' then, I would suggest the use of Romiszowski's descriptive model over Holden's prescriptive one. However, even it does not explicitly address in any depth or detail one other critical component. It does not take into consideration the complex interpersonal and management aspects involved in the wider application of instructional design techniques within a larger system -

training departments in a corporation, in this context. These aspects consist of everything from managing the smallest administrative detail to the acknowledgement of existing intangible goals such as individual and corporate politics which may or may not be made explicit to the designer. Typically, gaining support, 'selling' the product, and making compromises in the design of the package to accommodate key people can influence the instructional design methodology. After her experience, the author would argue that ID models which do not take these factors into consideration are just simply not comprehensive enough for application in the larger system. However, this is obviously more important, perhaps, for a manager who is in charge of an entire project than for a designer working on one aspect of a product.

For reasons not clearly understood, prior to commencing this project, the author was unacquainted with any ID models which explicitly take these factors into consideration. While not the reason for the author's ignorance, it is only comparatively recently that ID practitioners have focused on these additional aspects of instructional design (Schiffman, 1986), particularly on interpersonal skills (Coldeway & Rasmussen, 1984) and the management of the ID process (Weston, 1982).

The recently developed models reflect these additional aspects yet, in keeping with Dick's (1981) comments, do not inherently change the basic models: they simply incorporate and expand upon them. In the application of ID to industrial training departments then, they are much more

appropriate.

The models adapted by Weston (1982) and produced by Schiffman (1986), are particularly inclusive and are shown in Figures 8 and 9, respectively. As is evident, over and above the basic ID stages already explained under the ITU model (which are included in different but essentially similar form), they both take into consideration project management, interpersonal relations (consulting), communication, diffusion, and dissemination, although Weston's is less comprehensive in this respect. Weston (1982) argues that the management and communication aspects cannot be considered independently: "while the instructional product development cycle [i.e., the 'basic' ID model] is self-contained, neither aspect of the ID process can operate independently of one another if success is to be expected" (p. 28).

Schiffman's model goes even further, referring to instructional systems design as "a synthesis of theory and research related to (a) how humans perceive and give meaning to the stimuli in their environments, (b) the nature of the information and how it is composed and transmitted, (c) the concept of systems and the interrelationships among factors promoting or deterring accomplishment of the desired outcomes" (p. 16). The function of managerial and consulting skills, she maintains, is essentially to glue the points (a) through (c) together. The concepts of diffusion, interpersonal relations, and project management are particularly welcome additions to the basic model as they reflect the realities of instructional design in

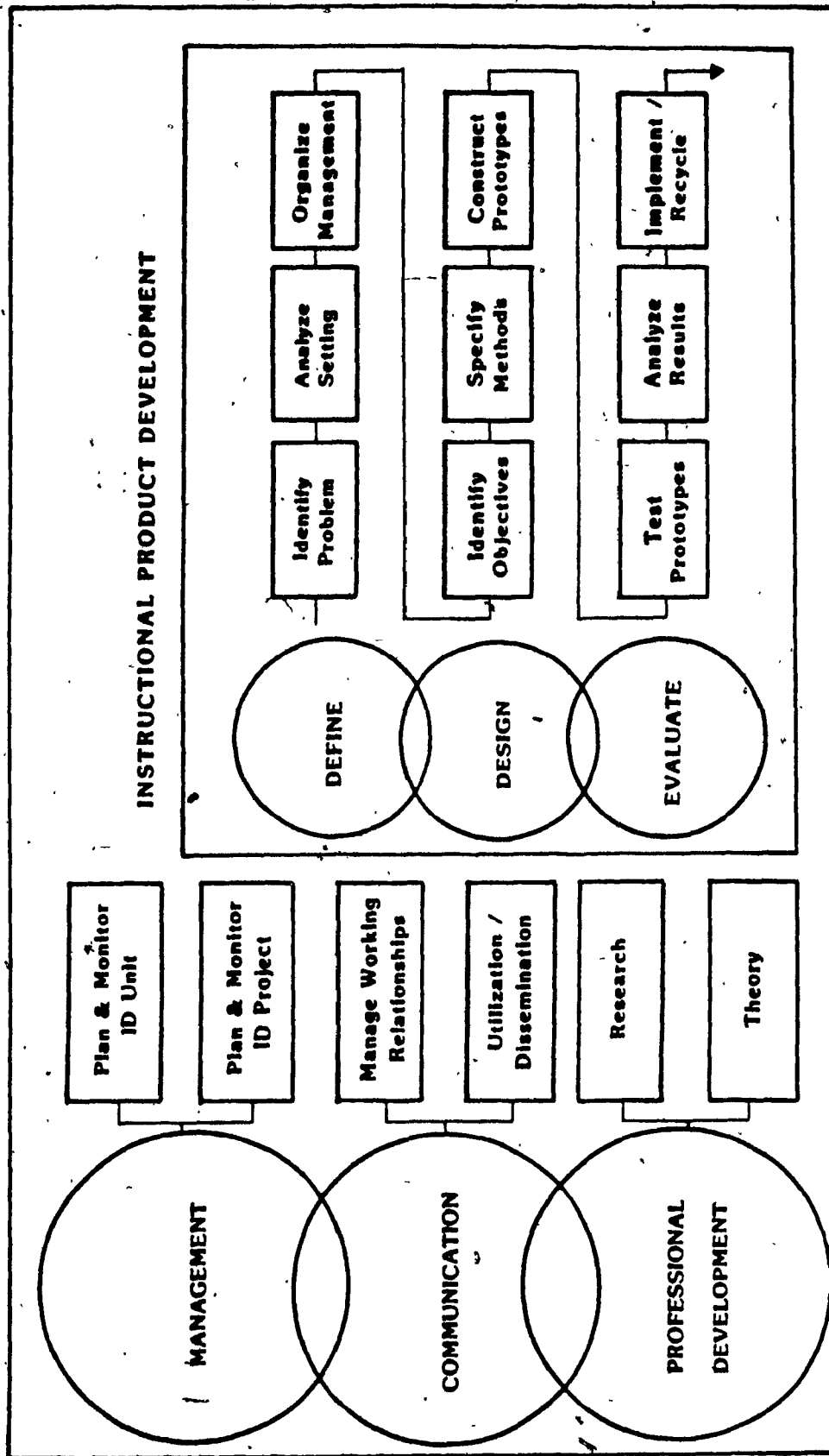


Figure 8. Constructed Synthesized Model of Instructional Development (Weston, 1982).

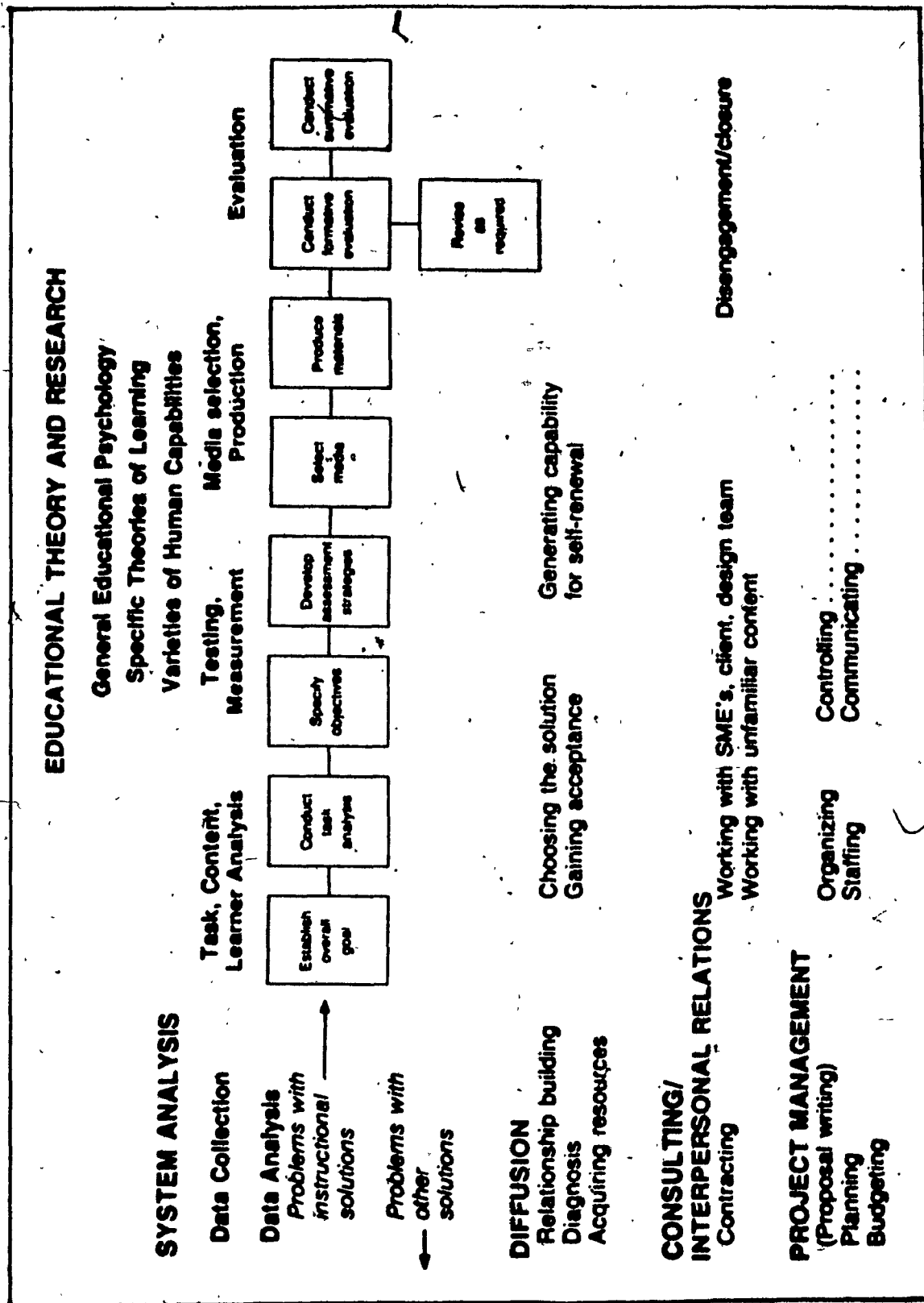


Figure 9. Instructional Systems Design (Schiffman, 1986).

industry (and in education for that matter). However, "these skills are often presented as peripheral or even optional to ISD skills. This is unfortunate because the field is made to appear less than it is unless the mutually dependent interaction of these areas is emphasised" (Schiffman, p. 20).

Since a brief discussion of the literature on educational theory and research, and system analysis has been presented in the context of a basic ID model, we will now look at the concepts of diffusion, interpersonal relations, and project management and their importance in an expanded view of instructional design since "in short, the proper practice of ISD brings all the skills, knowledge, and attitudes [shown in Figure 9] to bear on the problems of a particular system in an orderly and precise manner. Furthermore, there is (or should be) a symbiotic relationship between the major categories" (p. 17).

Diffusion

Schiffman's addition of diffusion to the model is based on the six steps necessary to bring about change in an organization proposed by Havelock (1973). She states that a well-designed system analysis incorporates four of these steps:

- a) a good relationship with the client is built and the designer's credibility established;
- b) the problem(s) of the system are diagnosed;
- c) all relevant resources are acquired; and
- d) members of the system potentially affected

by the innovation view the idea favorably because they (or at least key personnel) have been involved in the system analysis phase in some way. Once the solution for the project is chosen, the designer must see that the new instructional product or program can be maintained easily by the system (p. 19).

Gaining acceptance, however, requires an understanding of the process of change, and resistance to change, so the designer can work sensitively and persuasively with the various people involved, from the client to production specialists.

According to Schiffman, every designer at some point will be faced with the task of trying to assure successful adoption of whatever they have produced. Therefore the importance of diffusion cannot be underestimated. "While luck, persuasiveness, and managerial mandate may aid the 'diffusion-less' designer, the history of innovation would suggest these as highly unreliable techniques" (p. 17).

Consulting/Interpersonal Relations

While interpersonal relations skills are certainly not unique to the ID situation, it is critical they be addressed in any comprehensive model because of the prevalence of this type of activity in instructional design work. Such skills prepare designers to work successfully with subject-matter experts, clients and other designers or people otherwise involved in the project. As for consulting, Schiffman says that the phases involved in consultancy parallel somewhat the diffusion steps but emphasise the professional, and possibly contractual, relationship between the designer and

client. The most important of these skills are "determining the style of consultancy for a particular client, and knowing how to disengage from and conclude a consulting agreement" (p. 19).

Project Management

The five stages of project management listed by Knirk and Gustafson (1986) are included in Schiffman's model. These are planning, organizing, staffing, budgeting, controlling and communicating. General writing ability rounds out these managerial, organizational, and communication competencies. Again, these skills are not unique to the ID situation. As in other positions, they are an integral part of 'doing the job', particularly in industry.

Schiffman makes the point that, usually, no single designer is expected to have ALL the knowledge and skills shown in Figure 9. However, when instruction is being designed, all the major categories (educational theory and research, system analysis, diffusion, consulting/interpersonal relations, and project management) are called into play.

Obviously, therefore, the smaller the design team, the more skills each person must have. In the case of this project, Carl Johnston and I had more knowledge about educational theory and research (he has an MA in Psychology) and systems analysis than the others. At the beginning of the project I was notably lacking experience in the other areas, particularly relationship building, gaining

acceptance for ideas, working with SME's, and controlling certain areas of the project.

Conclusions and Recommendations

Basically these models sensitize the designer to the importance of project management, communication, and dissemination. Had I realized the extent to which these factors influence the basic instructional design model (because they account for such a large portion of the duties involved), I would have been better prepared to tackle the project. It is simply naive to enter a corporate environment with an idealized vision of implementing an academic model and expect it to work as it might for a course/project.

This realization, although obvious in hindsight, ties in with Goldstein's suggestion that training cannot be developed in isolation, separate from the larger system.

Although Holden's explanation of the ITU model attracted me because of its apparent simplicity and ease of application, in retrospect it does not provide the same detail and background information which rounds out the model Romiszowski (1981) proposes. "Without a broad-based foundation ... the practice of ISD becomes narrowly focussed on means (the steps in the systems model) rather than on the rightful end (learning)" (Schiffman, 1986, p 18). In comparison, while the Romiszowski descriptive 'model' is not prescriptive and therefore arguably more difficult and involved to 'follow', I would suggest that its comprehensive approach provides a superior theoretical and practical

foundation in instructional design.

I would recommend, therefore, that the 'expanded' Schiffman instructional systems design view be used with Romiszowski's model in place of the more systematic flowchart she uses to represent the 'basic' ID process. In fact, although I would recommend the Romiszowski model in this context, (particularly if trainers have no formal ID background), if instructional designers have tested and feel comfortable with other models, then perhaps they should continue to use them and simply expand upon them by incorporating these additional aspects.

This modification to the Schiffman model does not change it sufficiently for me to claim to have created anything new (although as Andrews & Goodson, 1980, state this heavy borrowing and subsequent creation of new models has contributed to the confusion of educators faced with such a "bewildering array" from which to choose). As such, I will not present an amended version or reformulation of the model to reflect this recommended change.

Use of ID in Corporations Not Using such Techniques

Although corporations are beginning to use a more systematic process in solving human performance problems, perhaps more so in the United States than Canada, there are many who continue to use the more traditional approaches - particularly in the area of needs analysis. For example, many of these companies still have a 'corporate curriculum' that is, a set of available management courses for which employees can register. Such a curriculum approach assumes

that employees and their managers have sufficient interest and ability in needs analysis, since they are the ones that determine the need and how to bridge it. This is obviously an inadequate approach (Romiszowski 1981).

The problem with this, and other situations like it, is that if a company has traditionally used these methods and they are entrenched in the organization, then attempting to change this prevailing philosophy of 'if it ain't broke don't fix it' is extremely difficult. This is particularly true if the proponents of such traditional methods view new techniques as a threat. New techniques are a threat, of course; not just because they are new but because, by using an ID model and expounding its virtues an implicit statement is made about the adequacy of the existing system. This was particularly sticky in this situation since there was an existing course in basic supervision available in the corporate curriculum. It was difficult to explain that the course (which was very generic and supported mostly by lecture material); while good as a theoretical base, was somewhat less than ideal in addressing a supervisor's needs on the job. As a result, some department members not directly involved in the project certainly felt threatened and this caused some tension.

An additional issue in this project was that no other member of the department really knew exactly what was transpiring during the project, although some presentations were made at a later date. While this was not deliberate in any way, it may have appeared to be overly secretive.

Recommendations to Other Students

Based on my experience, I would like to offer some suggestions for students contemplating either an internship or permanent work in instructional design/ evaluation in industry.

At this point in time, the term instructional design (and more particularly educational technology) are not household words in the majority of industrial settings. Many managers in these departments simply do not know or understand what instructional design entails or how it can benefit them. When a company thinks they want a 'trainer' for example, they are generally looking for a subject-matter expert who can write appropriate materials and teach rather than an 'instructional designer'. While this situation will inevitably change (we are probably in the region of five to ten years behind the United States in this area), in the meantime there are only two choices; either try to find work in an organization currently using ID techniques or attempt to adapt in an organization that does not. Obviously, if you enter a company where the instructional systems approach is the norm it will be much easier to practice. This first choice is the only logical way to proceed if the integrity of the ID process is a paramount consideration for you.

In the second option, the possibilities as a change agent are huge and potentially very exiting. With little or no work experience however it is very difficult to act as a such a change agent because as a student or recent graduate, you have little credibility (at least initially) and no

formal or informal power base.

One possible way around this dilemma might be to try and convince the person hiring you, of the merits of designing and producing training materials using the ISD approach. The basis of your appointment may then be your expertise in the area, and with the backing of the manager, you may have enough credibility to implement changes if necessary.

More likely though, you will be hired on the basis of the manager's perception of what you do. In this case:

- 1) Avoid being overly critical, you can hope to achieve nothing by denigrating the current system which has probably been in place for a long time and may be functioning adequately (or at least is seen as functioning adequately);
- 2) Attempt to educate other people in the department without being too aggressive or too pedantic. For example, it may be possible to explain the types of information which can be collected from a needs analysis and how this could be useful in the current system;
- 3) Implement any ID process you can and forget the rest. Instead of worrying about what you are not doing, learn everything you can from other members who are more experienced in other areas.

CHAPTER 6

CONCLUSION

This thesis originally started out as an empirical investigation of the effectiveness of an ID model. Because it was recognized at the outset that concessions to industry might involve adaptations to the model, particular emphasis was to be placed on the final evaluation phase in order to ascertain whether these concessions had any overall effect (detrimental or otherwise) on the product produced.

However, as is obvious from the chronology of events outlined in the preceding chapter, the proposed model was not followed with sufficient integrity for this thesis to be a real investigation either of model itself or its adaptability to adapt to any project. Some of the reasons for this were explored later in the last Chapter. As a result of these deviations and the subsequent lack of complete summative evaluation data, it is extremely difficult to draw any significant conclusions regarding the effectiveness of the product that resulted from using this modified model/method.

Having said that, however, there is no doubt that the concepts, however loosely applied, did produce a product which was new, exciting, and very well received. So well received in fact, that it has become a prototype for similar courses not only in Cargo but also in other departments within the airline. The fact that other departments were even aware that the course existed attests to its high profile during the development phase and the subsequent

dissemination of the reactions to it by the people involved.

In the author's opinion, the main reasons for the success of the course are as follows.

- 1) That fact that it was specific to the target audience.
- 2) It's practical approach, that is, that it focussed on issues directly relevant to the job identified as problematic by subject-matter experts.
- 3) It's emphasis on the application of knowledge and skills in an active way. That is, the emphasis was on doing rather than listening.
- 4) Client/supervisory input and ownership of the product together with the additional high profile additions which gave it prestige.
- 5) The attempt to provide trainee support by including an organizational development component.

These reasons, while not particularly revelational to anyone involved in ID, were brand new concepts in training at the managerial level in the company since a corporate course curriculum approach had traditionally been utilized. As a result, the contrast between the basic supervisory course offered through this curriculum (which was lecture/theory based and taught by a training manager) and the one developed specifically for Cargo was huge.

While many of the points outlined earlier regarding why the course was so successful are mostly common sense (for example, Carl Johnston wrote the guidelines for its production with less knowledge of ID than the author) some of this success can be attributed to the author's

sensitisation to instructional requirements through her exposure to instructional design theory and methodology.

However, an important point needs to be made here. The impression has been given that the course was extremely successful. Given that there is no hard summative data to substantiate this claim, what is being discussed here is, in fact, perceived success based on the reactions of the individuals involved.

Whether this perceived success is true success remains moot as far as the Company was concerned since everybody involved was happy with the product because it was superior to the type of courses offered in the past. However, this perception of the quality of the course does not address the type of questions that need to be answered from an academic (or indeed corporate) viewpoint. The obvious questions remaining unanswered concern whether the course actually met its objectives. Were supervisors able to solve 80% of the problems and issues they confront on the job? Was there any positive behavioural change as a result of the course (i.e., where the knowledge and skills taught transferred to the job)?

While the Design Team members were dedicated to helping provide the statistical data required for such an analysis, the lack of commitment principally from the managers in the field (perhaps as a result of poor administration procedures by the author), together with the strike situation (in the Fall of 1987), were probably the main reasons for the lack of the second set of summative evaluation data. Somewhat surprisingly, this lack of follow-up data was not perceived

as a major problem by most of the people involved with the project. The feeling seemed to be that 'everyone loved it, therefore it must be good' - a perpetuation of the fallacy that reaction data is sufficient. As Kirkpatrick (1976) has pointed out, of the four levels of evaluation data (Reaction, Learning, Behaviour, Results - from a corporate viewpoint), this type of data generally has little, if any, meaning for a true evaluation.

Although the importance of conducting a summative evaluation was explained, I think this continuation of the evaluation procedure was perceived as interesting but essentially unnecessary. This may have been due to the fact that the project was also the author's thesis topic. In other words, although the contract stipulated an 'evaluation' of the product, the in-depth quasi-experimental design proposed was perceived as providing information required only for the thesis. That is, it was considered merely extra information which was collected in order for the author to fulfil an academic requirement for her, thesis even though it is an integral part of instructional design and would have provided valuable information for the Company as well.

This type of reaction to in-depth evaluation is not a unique situation: in fact, it is far from uncommon. Many articles have pointed out the absence of adequate evaluation, especially of management and supervisory training programs (Smith, 1980; Zenger & Hargis, 1982). Phillips (1983), reports the results of a Xerox Learning Systems study (date not given) on management training


practices. Of these results an editorial by Xerox states:

Amazing but true. Hard-line evaluation of management training is not being pursued on any widespread basis by training executives of American companies.

Only about 24% of the more than 3,100 respondents to the recent Xerox Learning Systems Management Training Survey say they evaluate results of management training by measuring on-the-job performance change. More than 52% rely on the highly questionable (from a reliability standpoint) practice of personal feedback from participants in training programs (p. 6).

Catalanello and Kirkpatrick (1968), in a survey of 154 firms, found that of the 110 respondents, 78 percent attempted to measure trainee reaction. Evaluations in terms of learning, behaviour, and results were being attempted by approximately one-half. Fifty percent seems fairly high but this may be atypical when one takes into consideration the fact that these firms were selected in the first place because of their interest in evaluation by their use of a instrument developed by Kirkpatrick for evaluating human relations training problems.

Although the course produced was successful because it was superior to what was already available, it is the author's opinion (albeit without hard data to support this assumption), that a more rigorous use of the a basic instructional design model could have resulted in a product superior again to the one produced. An examination of the differences between what the model proposes and what was actually done showed that some of the most critical aspects of the design process were compromised. These included the preliminary study (to a lesser extent), the job/task



analysis, objective setting, and the choice of instructional strategies. Other, perhaps less critical divergences, included arbitrarily deciding on the course length (resulting in 'filling' a prescribed amount of time); making assumptions about the target population, i.e., not doing a proper population analysis; and the failure to make proper use of subject-matter experts. In the author's opinion, the reasons for such a situation were twofold: the lack of knowledge of ID amongst the people involved in the project because it had not been used in the organization up to that point; and, perhaps more importantly, the failure of the author to adequately communicate the concepts (and therefore the importance of the process) of the systems approach to them. This failure may have also been due to the fact that, as a student, I had little credibility in terms of expert knowledge, and was there more to learn than to 'teach'.

This thesis has shown, through the literature, that the flexible use of expanded ID models can produce superior solutions to human resource performance discrepancies (through structured preliminary analysis) than traditional course curriculum type approaches. In addition, should training be required, ID models (even if not followed faithfully) can at least increase the odds that the products produced are efficient and effective. Efficient in the sense that training is only provided where necessary and only after other solutions have been considered thus ensuring that the money spent is justified. Effective in terms of ensuring that the course developed does what it was designed to do. Effective training contributes to corporate

goals and, in so doing, ultimately contributes to profits.

However, it is equally obvious that the use of ID in isolation is not as effective as when it is used in conjunction with a coherent, well-articulated training strategy. Basic decisions need to be made about the role of the training department; for example will it essentially provide internal consulting to line personnel? Once the strategy is in place, the role of ID within the department can be formalized. Will ID models be used as a basis for the production of training courses or also as a problem-solving/needs-analysis tool? In the author's opinion, it is not necessary to adopt a single model for use all the time. Rather, providing everyone in the department is familiar with the general concepts of ID, it is possible to mix and match in order to tailor one's approach for a particular situation. This provides more flexibility because in some cases it may be better (and even necessary) to provide a less than perfect solution for a given problem. From a corporate perspective (i.e. the larger system) it may sometimes be necessary to compromise on a full blown application of an ID model if this cannot be justified because of time and/or money constraints. For example, ID principles can be used to create good job aids as an alternative to training (if training cannot be conducted for some reason), or as stop-gap measure until a training program can be implemented.

Instructional design then, is not an end in itself, it is the means to an end.

Lastly, in terms of this project, the two most important outcomes were:

- 1) The training department learned something from the author, principally that there are alternative methods of designing and producing training materials.
- 2) In turn, I gained insight from a variety of people in the department about how organizations function and benefited tremendously from their knowledge and experience in translating academic ideas into concrete real-world processes and products. In particular, I gained valuable experience from them in project management, and interpersonal/communication skills. For which, I would like to thank those people involved.

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APPENDIX A

Daily Formative Evaluation Form and Instructions

EVALUATION / FEEDBACK

INSTRUCTIONS

Your feedback/evaluation is IMPORTANT. It will help us to improve this course for subsequent participants. Please take the time to fill it in carefully. Above all, please be honest.

Please rate each activity on a scale of 1 - 7 in terms of:

| | |
|-----------------|---|
| LEARNING | The extent to which you felt you learned the material presented. |
| PRACTICALITY | Whether the material was something which you felt needed to be taught. |
| APPLICABILITY | Whether the material can be applied back home. |
| APPROPRIATENESS | Whether the method that was chosen was an appropriate way to present the material (e.g. case, role play). |
| USEFULNESS | How useful the material was for you to know. |
| PROCESS | How easy or difficult was it for you to understand what you had to do. Were the instructions confusing for example? |
| LEADER | The extent to which he taught and explained the material in an interesting and easy to understand way. |
| ENJOYMENT | The extent to which you enjoyed the material. |
| OVERALL | In general, taking everything into consideration, how you would rate the material. |

1 = LOWEST -> 7 = HIGHEST

EXAMPLE

If you thought that CASE 1 (Shift Planning) excellent in terms of what you LEARNED, you would put a high rating, perhaps 6 or even 7, in the column under LEARNING.

If however, you found that it was difficult or confusing to understand the instructions put a correspondingly low number (say 2 or 3) under PROCESS.

Do the same for each of the categories of evaluation. If one or more of the categories does not apply to a particular activity, simply put N/A in the appropriate space.

| CONTENT | LEARNING | PRACTICALITY | APPLICABILITY | APPROPRIATENESS | USEFULNESS | PROCESS | LEADER | ENJOYMENT | OVERALL |
|-----------------------------------|----------|--------------|---------------|-----------------|------------|---------|--------|-----------|---------|
| Baja Praderia (Generic Ex) | | | | | | | | | |
| Tell My Wife ... (Film) | | | | | | | | | |
| Performance Problems (Case 6) | | | | | | | | | |
| Play Your Hand (Film) | | | | | | | | | |
| EAP (Lecture) | | | | | | | | | |
| Performance Problems (Discussion) | | | | | | | | | |
| In the Customer's Shoes (Film) | | | | | | | | | |
| Late Acceptance of Goods (Case 7) | | | | | | | | | |
| Lost Shipment (Case 8) | | | | | | | | | |
| The Unorganized Manager 3 (Film) | | | | | | | | | |

COMMENTS

APPENDIX B
Overall Formative Evaluation Form

FINAL EVALUATION OF COMPLETE COURSE

INSTRUCTIONS: Circle the number that you think best answers the question.

1) The amount of pre-work was: (Circle one).

1 2 3 4 5 6 7

Not enough

Way too Much

Comments _____

2) Was the pre-work written in a style that was appropriate?

1 2 3 4 5 6 7

Not at all

Extremely

Comments _____

3) How many times did you meet with your manager?

1 2 3 4 5

Comments _____

4) How much time IN TOTAL did you spend discussing the pre-work with your manager? (Write in the appropriate space).

Comments _____

5) How much time would you have liked to have had to complete the pre-work?

1 week 2 weeks 3 weeks 4 weeks

Comments _____

6) Did you benefit from talking with your manager about the material in the pre-work?

1 2 3 4 5 6 7

Not at all

Enormously

Comments _____

7) Do you think that including the manager in the supervisory course should be kept as a feature of future program offerings?

No

Yes

Don't Know

Comments _____

8) Was your manager supportive during his role in the pre-work?

1 2 3 4 5 6 7

Not At All

Very

Comments _____

9) Rate the 12 Modules below from BEST (1) to WORST (12). (Place the number 1 next to the Module you thought was best, 2 next to the one for second best, etc.)

____ Role of Supervisor
____ Working with Employees
____ Communication
____ Planning & Organizing
____ Problem Solving
____ Personnel Policies and Regs.
____ Union Contract
____ Customers
____ Cost Appreciation
____ Products
____ Planning of the Load
____ ACCESS

Comments _____

10) Which Modules (if any) would you discard in future offerings of the course and why?

11) What (if any) other information/materials would you recommend be included in the pre-work and/or the course itself?

12) Were the exercises at the end of each Module appropriate?

1 2 3 4 5 6 7

Not at all

Extremely

Comments

13) Did this program meet your needs for basic supervisory training?

1 2 3 4 5 6 7

Not At All

Completely

Comments

14) What overall rating would you give the course?

1 2 3 4 5 6 7

Very Poor

Excellent

Comments

15) The proportion of pre-work to course work was:

Too Much

Too Little

About Right

Comments

16) Did you like the way the material was presented during the course? (i.e. less emphasis on lectures and more on applying skills to 'real' situations).

Yes

No

Don't Know

Comments _____

17) How much of an impact do you expect this course will have on making you a 'better' supervisor?

1

2

3

4

5

6

7

None at all

A Lot

Comments _____

18) How much do you think this course would have helped/prepared you to do a better job if you had taken it PRIOR to your first acting supervisory position?

1

2

3

4

5

6

7

None at all

A Lot

Comments _____

19) Do you think that this course could eventually be used to help managers determine whether a direct would make a good supervisor?

Yes

No

Don't Know

Comments _____

20) Do you think that this course would benefit supervisors who have many years experience?

Yes

No

Don't Know

Comments _____

APPENDIX C

Summary of Final Formative Evaluation Results

FINAL EVALUATION SUMMARY

- 1) AMOUNT OF PRE-WORK WAS (1 = not enough 7 = way too much)

Av = 4

- 2) PRE-WORK WRITTEN IN APPROPRIATE STYLE? (1 = no 7 = extremely)

Av = 6

- 3) HOW MANY TIMES DID YOU MEET WITH YOUR MANAGER?

Av = .9

- 4) TOTAL TIME SPENT DISCUSSING PRE-WORK WITH MANAGER

Av = 80 mins

- 5) HOW MUCH TIME WOULD YOU HAVE LIKED TO DO THE PRE-WORK?

Ave = 3.9 weeks

- 6) DID YOU BENEFIT FROM DISCUSSING WORK WITH YOUR MANAGER?
(1 = not at all 7 = enormously)

Av = 3.2

NOTE: Many comments re: not enough time available.

- 7) SHOULD INCLUDING THE MANAGER BE KEPT AS A FEATURE OF FUTURE COURSES.

Yes = 11

No = 0

Don't Know = 1

- 8) WAS YOUR MANAGER SUPPORTIVE IN HIS ROLE IN THE PRE-WORK?
(1 = not at all 7 = very)

Av = 4.7

Note: Time constraint again!

9) PRE-WORK MODULES RATED FROM BEST TO WORST (1 = best 12 = worst)

✓ = # times mentioned

Role of Supervisor
 Working with Employees
 Communication
 P & O
 PS & DM
 Personnel Policies
 Union Contract
 Cost Appreciation
 Customers
 Products
 Load Planning
 Computer System

| RATING | | | | | | | | | | | | |
|--------|----|----|----|---|----|----|---|---|---|---|---|---|
| 1 | ✓✓ | ✓✓ | ✓ | ✓ | | ✓✓ | | | ✓ | | | |
| 2 | ✓✓ | ✓ | ✓ | | ✓ | | | ✓ | ✓ | | | ✓ |
| 3 | ✓✓ | ✓✓ | ✓ | | ✓ | ✓ | | ✓ | | | ✓ | |
| 4 | ✓✓ | ✓ | ✓✓ | ✓ | | ✓ | | | ✓ | | | |
| 5 | | ✓ | ✓ | ✓ | ✓✓ | | ✓ | ✓ | ✓ | ✓ | | |
| 6 | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | ✓ | |
| 7 | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | |
| 8 | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 9 | | | | ✓ | ✓ | | ✓ | | ✓ | | ✓ | |
| 10 | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| 11 | | | | | | | ✓ | ✓ | | ✓ | ✓ | ✓ |
| 12 | | | | | | | | ✓ | | ✓ | ✓ | ✓ |

10) WHICH MODULES SHOULD BE DISCARDED?

10 = None

1 = Access (only applicable to Cargo Agents)

1 = Questions on Motivation

11) OTHER INFORMATION/MATERIALS WHICH SHOULD BE INCLUDED.

1 = More on Labour Relations

1 = Agenda

1 = Costs (how to read the charts)

12) EXERCISES AT THE END OF EACH MODULE APPROPRIATE?

(1 = not at all 7 = extremely)

Av = 5.5

- 13) DID PROGRAM MEET YOUR NEEDS FOR BASIC SUPERVISORY TRAINING?
(1 = not at all 7 = completely)

Av = 5.5

- 14) OVERALL RATING? (1 = very poor 7 = excellent)

Av = 6.3

- 15) PROPORTION OF PRE-WORK TO COURSE WORK WAS:

Too much = 0

Too little = 1

About right = 11

- 16) DID YOU LIKE THE PRESENTATION OF MATERIAL (LESS EMPHASIS ON LECTURES AND MORE ON APPLYING SKILLS TO "REAL" SITUATIONS?)

Yes = 12

No = 0

Don't Know = 0

- 17) HOW MUCH OF AN IMPACT WILL THE COURSE HAVE ON MAKING YOU A "BETTER" SUPERVISOR? (1 = none at all 7 = a lot)

Av = 5.8

- 18) HOW MUCH WOULD COURSE HAVE HELPED IF YOU'D TAKEN IN PRIOR TO 1ST ACTING POSITION? (1 = none at all 7 = a lot)

Av = 6.8

- 19) COULD COURSE BE USED TO DETERMINE IF A DIRECT WOULD MAKE A GOOD SUPERVISOR?

Yes = 10

No = 1

Don't Know = 1

- 20) DO YOU THINK THIS COURSE WOULD BENEFIT SUPERVISORS WHO HAVE MANY YEARS EXPERIENCE?

Yes = 10

No = 1

Don't Know = 1

PARTICIPANT RECOMMENDATIONS RE SUPERVISOR'S COURSE

HIGHLIGHTS

Times
Mentioned

- 3 Bernie Miller
- 3 Labour Relations
- 3 EAP
- 1 Baja Praderia
- 1 Operational Safety
- 2 Cost Appreciation
- 2 Unorganized Manager
- 1 Group Discussions
- 1 Emergency Procedures

ADDITIONS

- 2 More time for Labour Relations
- 2 More time for Cost Appreciation
- 1 More role plays
- 1 Coaching and Counselling
- 1 Time Management
- 1 How to handle your manager!

WEAK SPOTS

- 3 Security lecture
- 2 Discussion (tighter control needed)
- 1 More pre-preparation for role plays
- 1 More time for pre-work
- 1 Pygmalion

DELETIONS

- 1 Joe Doodlebug
- 2 Situational Leadership video

APPENDIX D

Summative Evaluation Questionnaire (Manager's Copy)

QUESTIONNAIRE

(Manager's Copy)

This questionnaire is to try and determine the effectiveness of your supervisor in doing his or her job. It will also help to determine the type of supervisory training provided in the future.

NOTE

You should be filling out this questionnaire on THE SAME supervisor you completed it for originally.

If you did not complete a similar questionnaire before, or if you did so but are now being asked to evaluate a different supervisor for whatever reason, please do not fill in this questionnaire, please let ED BOWNES (Manager, Training & Quality) know.

When completed, please return in an envelope marked "CONFIDENTIAL" to:

JULIE FREEMAN, CARGO, PAC 263.

You should not show the completed questionnaire to anyone else.

IMPORTANT

All questions relate to the job classification SUPERVISOR (i.e. the shift supervisor working directly under you) and not your direct superior.

What you write here will NOT be seen by anyone else except the person doing the evaluation. It is COMPLETELY CONFIDENTIAL. DO NOT put YOUR name on this sheet unless you want to.

YOUR SUPERVISOR'S NAME

HOW TO ANSWER THE QUESTIONS

EXAMPLE

My supervisor communicates well.

0 1 2 3 4 5

Never Always

The 0 always represents NEVER, and the 5 represents ALWAYS.

So, in response to this statement, if you feel that your supervisor communicates well about half the time, put an X on the part of the line that represents 2 and a half.

You can put an X on any part of the line.

In this case, if you put an X on the line above the zero, it would mean that you think that your supervisor NEVER communicates well.

If you put an X on the line between 4 and 5, it would mean that you think your supervisor communicates well almost all the time.

My supervisor is positive and non-critical when giving 'negative' feedback to his subordinates.

0 1 2 3 4 5
Never Always

My supervisor makes SURE his subordinates fully understand what they are expected to do.

0 1 2 3 4 5
Never Always

My supervisor allows his subordinates to make decisions without his express authority in certain situations.

0 1 2 3 4 5
Never Always

My supervisor impresses upon his subordinates the importance of treating customers well.

0 1 2 3 4 5
Never Always

My supervisor lets his subordinates know how they are doing on the job.

0 1 2 3 4 5
Never Always

My supervisor's subordinates know the difference between when he is "joking" and when he really means what he says.

0 1 2 3 4 5
Never Always

My supervisor passes relevant information and explanations down to his subordinates so they know "what's happening" and why.

0 1 2 3 4 5
Never Always

My supervisor allows his subordinates to use their initiative in helping a customer even if it means "bending the rules."

0 1 2 3 4 5
Never Always

When my supervisor gives instructions, he also specifies the results which he expects.

0 1 2 3 4 5
Never Always

My supervisor adjusts how he says something depending upon who it is he is talking to.

0 1 2 3 4 5
Never Always

My supervisor encourages his subordinates to question him if they do not understand something.

0 1 2 3 4 5
Never Always

My supervisor finds it hard to deal with "difficult" customers.

0 1 2 3 4 5
Never Always

He finds himself apologizing for being the boss when he has to assert his authority.

0 1 2 3 4 5
Never Always

He is careful to make sure that his tone of voice matches what he is saying.

0 1 2 3 4 5
Never Always

When he is dealing with a customer he treats him as though he is important.

0 1 2 3 4 5
Never Always

He encourages his subordinates to go to him for help and advice.

0 1 2 3 4 5
Never Always

He sets a good example for his subordinates when dealing with customers.

0 1 2 3 4 5
Never Always

He gets impatient when he has to repeat himself.

0 1 2 3 4 5
Never Always

He makes sure that his Cargo Agents represent the best possible image of the Company to customers.

0 1 2 3 4 5
Never Always

He knows and could use the procedures for tracing lost shipments if he had to.

0 1 2 3 4 5
Never Always

He praises his subordinates for work well done.

0 1 2 3 4 5
Never Always

I find that he says things like:

"... but I thought I made it clear that you had to..."

"... if only you'd listened more carefully..."

"... what do you mean you thought that..."

0 1 2 3 4 5
Never Always

He acts more like "one of the guys" than the boss.

0 1 2 3 4 5
Never Always

I would say that he has a good working relationship with his subordinates.

0 1 2 3 4 5
Never Always

He clearly describes the standards of performance he expects from his subordinates.

0 1 2 3 4 5
Never Always

He shows customers that he cares about their problems.

0 1 2 3 4 5
Never Always

He is able to give work assignments and instructions without causing resentment.

0 1 2 3 4 5
Never Always

He has a tendency to act unnecessarily important, as though he is "above" his subordinates.

0 1 2 3 4 5
Never Always

His subordinates respect him.

0 1 2 3 4 5
Never Always

He uses his subordinates talents and abilities to the fullest.

0 1 2 3 4 5
Never Always

He responds quickly to aircraft type or guage changes when it affects the movement of cargo.

0 1 2 3 4 5
Never Always

He is able to motivate his subordinates.

0 1 2 3 4 5
Never Always

If at all possible, he tries every other approach before resorting to formal discipline.

0 1 2 3 4 5
Never Always

He asks his crew for suggestions and feedback regarding what happened during the shift if it was not a normal operation.

0 1 2 3 4 5
Never Always

I have confidence in his problem solving ability.

0 1 2 3 4 5
Never Always

He meets work-related deadlines.

0 1 2 3 4 5
Never Always

When necessary he can get information he needs out of the ACCESS system himself.

0 1 2 3 4 5
Never Always

He explains things clearly and concisely.

0 1 2 3 4 5
Never Always

The decisions he makes are the right ones under the circumstances.

0 1 2 3 4 5
Never Always

He is able to determine if he has "lost" someone when he is talking.

0 1 2 3 4 5
Never Always

The feedback he gives his subordinates is related strictly to their work performance.

0 1 2 3 4 5
Never Always

He often jumps to conclusions about things because he doesn't have all the facts.

0 1 2 3 4 5
Never Always

He "goes to bat" for his subordinates when he thinks they're right.

0 1 2 3 4 5
Never Always

He makes prompt, firm decisions.

0 1 2 3 4 5
Never Always

He treats his subordinates fairly.

0 1 2 3 4 5
Never Always

He seems to have more crises on his shift than other supervisors because of poor planning.

0 1 2 3 4 5
Never Always

He closely monitors the ULD equipment control process.

0 1 2 3 4 5
Never Always

he is warm and friendly to those who work under him.

0 1 2 3 4 5
Never Always

He monitors the pallet build-up process to ensure effective
downline connection.

0 1 2 3 4 5
Never Always

He encourages his subordinates to try and solve work related
problems before going to him.

0 1 2 3 4 5
Never Always

He often has to push his people to meet schedule deadlines
because of poor planning.

0 1 2 3 4 5
Never Always

He is open to feedback from his subordinates regarding the kind
of job he is doing as a Supervisor.

0 1 2 3 4 5
Never Always

He knows when to refer someone to the Employee Assistance
Program.

0 1 2 3 4 5
Never Always

He knows and can apply the rules laid out in the Union Contract.

0 1 2 3 4 5
Never Always

He puts off duties that he doesn't like doing.

0 1 2 3 4 5
Never Always

He informs his subordinates of exactly what is going to be happening (to his knowledge) during the shift.

0 1 2 3 4 5
Never Always

He spots deviations from 'normal' quickly.

0 1 2 3 4 5
Never Always

Whenever possible, He "requests" his subordinate do something, rather than "order" it.

0 1 2 3 4 5
Never Always

He will go back on a decision he has made if one of his subordinates shows him a better one.

0 1 2 3 4 5
Never Always

I find that I he has confrontations with his subordinates.

0 1 2 3 4 5
Never Always

He makes sure his crew is fully prepared for every aircraft arrival.

0 1 2 3 4 5
Never Always

In general, I would say the morale of his work group is high.

0 1 2 3 4 5
Never Always

I feel that he is effective in his job.

0 1 2 3 4 5
Never Always

If it is necessary to discipline someone, he does it in private.

0 1 2 3 4 5
Never Always

He tends to "blow his top" when something goes wrong.

0 1 2 3 4 5
Never Always

He is in control of the situation during his shift.

0 1 2 3 4 5
Never Always

He treats his subordinates with respect.

0 1 2 3 4 5
Never Always

He is willing to "bend the rules" in order to help a customer if the situation warrants it.

0 1 2 3 4 5
Never Always

He can solve any work related problems that arise.

0 1 2 3 4 5
Never Always

I would say that he successfully resolves _____ per cent of the OPERATIONAL problems and issues that he confronts on the job

I would say that he successfully resolves _____ per cent of the PERSONNEL problems and issues that he confronts on the job.

In the last 4 months (that is, since the beginning of June 1987 until now), please indicate whether you have noticed any POSITIVE change (if any) in the way your supervisor does his or her job.

For the following statements, simply put an X on the part of the line that you think represents the degree of change.

0 represents no positive change (i.e. your supervisor acts the same way now as he did before June.)

His general attitude towards the people working under him (his relations with employees).

-----1-----
0 1 2 3 4 5

His ability to solve problems and make decisions.

0 1 2 3 4 5

His communication skills.

0 1 2 3 4 5

His ability and willingness to handle difficult customers.

0 1 2 3 4 5

His general effectiveness as a supervisor.

0 1 2 3 4 5

If you have any other comments, or would like to expand/explain your responses to the above questions relating to any change you have noticed, please feel free to do so (anything you write here will remain completely confidential).

(Please use the next page for your written comments). Even if you have no comments, please answer "pre-work" questions at end.

PRE-WORK

While it is understood that the circumstances at the time compromised using the pre-work package as outlined, we would like to receive your feedback on this component of the course.

How many weeks prior to the supervisor's course should the material be received in order to give you time to work with your supervisor?

- 2 weeks
- 3 weeks
- 4 weeks
- more than 4 weeks

Did (or will) the course on Situational Leadership help you in your coaching and counselling role?

Yes

No

Don't Know

Please explain

.....
.....
.....

Do you feel that you as well as the supervisor benefit from being involved in the pre-work?

Yes

No

Don't Know

How many hours of your time do you think it would take to do a good coaching and counselling job with your supervisor on the pre-work material?

... 5 or less

... 5 - 7

... 7 - 9

... over nine

How many hours would you being willing/able to devote to this task?

... 5 or less

... 5 - 7

... 7 - 9

... over nine

Please explain
.....
.....
.....

Do you feel that being involved in the pre-work in the manner outlined at the time should be kept as a future feature of the course?

Yes

No

Don't Know

Please explain
.....
.....
.....