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ABSTRACT

This paper describes two methodologies designed to address deficiencies in training literature, i.e., procedures which empirically evaluate the content validity of training programs, and strategies linking training programs to needs reassessment and program redesign. In section 1, a methodology for establishing the job relatedness of a police recruit training program is presented. A description of the program is given and the design issues faced by the researchers are described in detail (strategies for linking content validity with a modified job element approach to job analysis) including identification of content domains, and evaluation of job relatedness. In section 2, a methodology for establishing the critical link between training evaluation and training program reassessment and redesign is presented. The technique, matching training emphasis and training needs, is conceptualized and presented graphically in a series of figures. A reference list and a series of nine tables illustrating the steps discussed in the two methodologies are also included. (PAS)

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A Content Validity Ratio Approach To Determine Training Needs

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As noted by Goldstein (1980) in his review of the training literature, no procedure currently exists which empirically evaluates the content validity of an established training program. Unfortunately, the existing training literature also fails to provide strategies which link training evaluation with training needs reassessment and program redesign. The goal of this presentation is to describe methodologies which address both deficiencies in the literature. First we present a methodology which links a job element approach to job analysis with Lawshe's (1975) content validity ratio approach to establish the job relatedness of a police recruit training program. Next we discuss a methodology which matches training needs with training emphasis in order to link training evaluation information to training needs reassessment and program revision. Two illustrative examples of this matching process -- one involving a police recruit training program and another involving a supervisory skills training workshop -- are presented.

SECTION I

LINKING JOB ELEMENTS WITH A CONTENT VALIDITY RATIO APPROACH TO ESTABLISH JOB RELATEDNESS

In the first section, a methodology for establishing the job relatedness of a police recruit training program is presented. As background for this section, a description of the police training program is given and the design issues faced by the researchers are described.

Police Training Program

The objective of the recruit training program is to prepare entry level officers to perform the police patrol function. Therefore, the curriculum has been developed to instill the knowledges, skills and attitudes necessary for efficient and equitable patrol operations. To best meet its stated objective, the recruit training program has been expanded over the last few years from a three month program to a six month, 800 hour program. Courses have been added

or dropped and course lengths increased or decreased based primarily on the needs perceived by training staff members or administrative officials. This project qualifies as the first systematic evaluation of the training program since its expansion.

Design Issues

After a thorough review of the relevant literature it was decided that the goals of the project to establish job relatedness and determine training needs could best be met by linking a content validity strategy with a modified job element approach to job analysis.

Job Element Approach. The job element approach requires the specification of the knowledges, skills, abilities and other personal characteristics (KSAO's) that are necessary for job performance. This approach is normally applied to determine the content validity of tests by directly matching test items to the job elements. Since the police recruit training academy attempts to instill or impart certain knowledges, skills and attitudes to the recruits, a job element approach seems especially applicable in determining job relatedness. In addition, the comprehensive analysis of the KSAO's taught in the training academy provided the level of specificity needed to determine training needs and initiate program revisions.

Content Validity as a Strategy. The notion of content validity as one aspect of the more general notion of validity, refers to an evaluation of the representativeness or adequacy of sampling the content domain of the job (Ebel, 1977; Tenopyr, 1977). As a strategy to determine job relatedness, it has generated theoretical debates (Guion, 1978; 1980; Tenopyr, 1977) and legal case support (Kleinman and Faley, 1977). It is not our purpose to review this controversy. Instead, it is noted that the Division 14 Principles for Validation (American Psychological Association, 1980) and the Uniform Guidelines (Equal Employment Opportunity Commission, 1978) state that selection procedures which purport to measure knowledges, skills or abilities (KSAO's) may be justified

by content validity if the procedure can be operationally defined and if the KSAO's are prerequisites to successful job performance. The selection procedure in our case is a police training program which purports to train certain KSAO's which police officials consider prerequisites to successful job performance. Therefore, a content validity strategy was seen as well suited for the purpose of determining the job relatedness of the training program.

A content validity strategy for a training program consists of demonstrating the extent of relationship between the content of the program and the content of the job. The first step in this process is to identify the content. A second step is to evaluate the content. For this project, the content was identified through a job element approach while a content validity ratio approach (Lawshe, 1975) was used to evaluate the content.

PROJECT DESIGN

An overview of the project design is presented in Figure 1. To describe how the goals for this project were addressed, the project is divided into two

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Present Figure 1 about here

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phases. The first phase consisted of the identification of the training and job content domains. For the second phase, the job relatedness of the training content domain was evaluated through a content validity ratio approach.

Phase One: Identification of Content Domains

Identification of the Training Content Domain

The first and most important aspect of this project was to accurately identify the content domain of the training program. The content domain was defined in terms of the knowledges, skills, abilities and other personal characteristics (KSAO's) currently taught or developed in the training program. To insure comprehensiveness, the KSAO's were derived from a three step process

structured around a series of panel sessions and a large scale survey (see Table 1).

Present Table 1 about here

Step 1: Generation of KSAO Statements. In the first step, three independent panels were created and held responsible for generating a list of KSAO's that was an accurate and comprehensive reflection of training content. Two of the panels consisted of Training Academy staff members and instructors and the third panel consisted of members of the most recently graduated recruit class. Each panel met for 3 four-hour sessions or a total of 12 hours.

Panel sessions were conducted according to a modified brainstorming approach (e.g., see Primoff, 1975). Members were asked to generate lists of KSAO's that were currently taught or developed in the training program. The process was loosely structured in which panel members suggested relevant statements or topic areas. Panel members then discussed and refined the suggested statements before they were recorded. Midway through the sessions, the training program syllabus and training materials were introduced to stimulate discussion and insure comprehensiveness. A total of 963 KSAO statements were generated by this process across the three panels.

Step 2: Revision of KSAO Statements

For the second step, the three lists of KSAO's were combined, the statements were categorized into subgroups and duplicates were eliminated. A KSAO Revision Panel of training staff members was then formed to refine the list of categories and to edit, reword and combine the existing statements to insure comprehensiveness and reduce ambiguities. The final list of KSAO's, as revised by the Revision Panel, and the research staff, consisted of 393 KSAO statements.

Step 3: Training Content Domain Survey

For the third step, a survey was developed to insure that the training content domain had been accurately and comprehensively identified. The survey, called the Training Content Domain Survey, consisted of the 393 KSAO statements identified through the panel sessions. Participants were asked to respond to each KSAO statement in terms of whether the KSAO was taught or developed in the training program. Analysis of the "taught" scale helped to solidify the identification of the training content domain. Participants who completed the survey included 15 training staff members and 35 police officers from the most recent recruit class.

As a result of the survey, 10 KSAO statements were eliminated as not actually being taught or developed in the training program. Consequently, the content domain of the training program was defined as consisting of 383 KSAO's.

Job Content Domain

Another component in the first phase of the project was to define the content domain of the patrol officer's job in terms of the knowledges, skills, abilities and other personal characteristics (KSAO's) needed to perform. This information could then be used to identify areas in which the training program was deficient or in which training content was overemphasized. The job domain was also specified through a three step process (see Table 2).

Present Table 2 about here

Step 1: Initial KSAO List

To develop a comprehensive list of KSAO's needed to perform on the job, two independent sources of KSAO's were available. The first source was the indepth analysis of the training content domain previously discussed. Since the training program is geared to training recruits to be patrol officers, the 383 KSAO statements provided a logical and reliable source of information. A cond independent list of KSAO statements which could define the patrol offi-

cer's job was then drawn from job analyses from other police jurisdictions which utilized a KSAO approach. After the elimination of duplicates, a total of 373 KSAO statements remained from this second source of statements.

Step 2: Combination and Revision of KSAO Statements

For the second step, two panels of 11 officers and sergeants were formed. Each panel met on three separate occasions for a total of 10 hours for each panel. The major objectives of the session were to review, edit and revise the 373 KSAO statements derived from other police job analyses to insure their relevancy to the patrol officer's job in the target city. As a result of the panel sessions, 80 KSAO statements were eliminated and 38 were added. Consequently, 331 KSAO's were identified as possibly defining the job of patrol officer in this midwestern city.

At this point the research staff had two independent lists of KSAO statements which could define the content domain of the patrol officer's job; i.e., the 383 KSAO's from the training content domain and the 331 KSAO's from other police job analyses. For the purposes of the project, it was necessary to develop one comprehensive list which defined the job content domain.

To develop one comprehensive list to define the job content domain, independent panels of officers placed the two lists of KSAO's into job relevant major categories and a number of subcategories (see Table 3). Since there was a large degree of overlap between the two lists of KSAO's, it was decided

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Present Table 3 about here

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to use the training content domain as a starting point for defining the job content domain. The research staff independently rated whether a KSAO statement from the other police job analyses was similar or identical in content to one of the 383 KSAO's that defined the training content domain. Using these ratings to help come to a group consensus, those considered a duplicate were eliminated from further consideration. Through this review process, 57 KSAO

statements were identified as being unique in content from the existing training content domain. As a result, the job content domain of patrol officers was tentatively defined as containing the 57 unique KSAO's and the 383 training content KSAO's for a total of 440 KSAO statements.

Step 3: Job Content Domain Survey

For the third step, the 440 KSAO statements which tentatively defined the job domain were used to form a KSAO inventory called the Job Content Domain Survey. The Survey was administered to 296 patrol officers and 31 patrol sergeants from the target city. Patrol sergeants and officers were asked to read each KSAO statement and to decide if the KSAO was required to perform the patrol officer's job. This information was then utilized to finalize the identification of the job content domain. Results of the analyses indicated that three items that were part of the 57 unique KSAO's were not relevant to the job. Therefore, the job content domain was defined as consisting of 437 KSAO statements.

Phase Two: Evaluation of Job Relatedness

In phase one, it was found that the 383 KSAO's which defined the training content domain were also required to perform the job of patrol officer. In addition, 54 KSAO statements were identified which were required for job performance but not incorporated into the training program. The fact that only 54 of the 437 KSAO's which defined the job content domain were unique, provides descriptive support for the job relatedness of the training content domain. A more systematic assessment of the job relatedness of the training content domain was established through a content validity ratio approach (Lawshe, 1975).

Content Validity Ratio Approach

The content validity ratio approach was initially introduced by Lawshe to aid the development of content valid test items. The approach, though, appears to be especially well suited for evaluating the job relatedness of the training content domain.

The technique requires the use of "subject matter experts" - people who have a thorough knowledge of the job - who rate the importance or essentiality of each item (KSAO) for job performance. Two assumptions of this approach are that any item which is perceived by more than 50% of the experts to be important has some degree of job relatedness and that as more experts beyond 50% perceive the item as important, the greater the extent or degree of content validity. Table 4 presents the formula for calculating a content validity ratio (CVR) and some defining characteristics of the ratio.

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The ratio is calculated by simply taking the number of experts who state that an item is important, subtracting from that number the number of experts who state the item is not important, and dividing by the total number of experts. As you can see from the table, a CVR will be negative when fewer than half the experts say an item is important, positive when more than half say an item is important and zero when exactly half the experts believe an item is important to job performance. As a final note, an overall summary of the content validity of the training program can be generated by taking the mean of all the CVR values. This summary statistic also presented in Table 4 is called the Content Validity Index (CVI). A statistical test of significance for CVR values has also been developed by Lawshe (1975) and Schipper (Note 1). The statistic is based on the probabilistic notions in that CVR values are examined to determine if they depart significantly from a CVR value of 0 (i.e., where half the experts agree the item is important while half agree the item is unimportant). Table 5 presents the minimum CVR values necessary for a one-tailed test ($p < .05$) for various sample sizes. As you would expect, as sample

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size increases the minimum CVR values needed for the traditional declaration of significance decreases. For example, with 20 experts a CVR value above .42 is considered significant while with a sample size of 60 a CVR value of .23 is required.

Application of CVR Approach

For the present project, three sources of "subject matter experts" were used for a total sample size of 114. The experts included 64 experienced patrol officers who trained recruits on the job (Field Training Officers), 31 patrol sergeants and 20 police personnel from similar sized communities outside the target city. The experts independently rated the importance of each KSAO in the training content domain for job performance (the 54 additional KSAO'S in the job content domain were also rated for importance by the sergeants and the police personnel from the other communities). The importance ratings were made on a seven point scale which ranged from "no importance" to "extreme importance". A decision rule was enacted whereby KSAO's with ratings of five, six or seven were considered important or essential while KSAO's with ratings less than five were considered relatively unimportant. The degree of consensus among the experts was than quantified by calculating a content validity ratio for each KSAO statement.

Results

Figure 2 presents a frequency distribution which represents the number of KSAO statements for various CVR values. As can be seen from the figure, there

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was a large range of CVR values from -.85 to +.93 with a modal response within the +.47 to +.57 interval. With a sample size of 114, the CVR significance level is approximately .17. Of the 383 KSAO's defining the training content domain, 237 or 62% of the KSAO's were above that significance level.

Table 6 presents the mean CVR value of the 383 KSAO's, i.e., the content

Present Table 6 about here

validity index (CVI) for the target city sample and the outside city sample. As can be seen from the table, the CVI's for both samples were significant. For the total combined sample of 114 experts, the content validity index was .27 ($p < .05$). The results demonstrate that the content of the training program has a significant degree of job relatedness.

Whenever experts make judgements, a crucial question is the quality of their judgements. If the three sources of experts do not agree regarding the importance of the KSAO's, serious questions about the usefulness of the results can be raised. When they do agree, we must conclude that the experts are either "all wrong" or "all right" (Lawshe, 1975). Because the experts in this case are performing the job in question or are in direct supervision, there is little basis for refuting strong agreement. Table 7 presents the intergroup correlations for the officer, sergeant and outside city police rating groups. The results indicate that patrol sergeants and patrol officers as well as police personnel from outside cities have very similar perceptions of how important the various job elements are to job performance. This high level

Present Table 7 about here

of intergroup agreement ($r \geq .80$) supports the quality of the data collected.

SECTION II

LINKING TRAINING EVALUATION TO TRAINING NEEDS REASSESSMENT AND PROGRAM REDESIGN

As often happens in organizations, pressures to develop and quickly implement a training program to address perceived deficiences prevent a thorough analysis of training needs. In addition, once a program is established, training needs may change over time. Such a situation indicates a critical need to not only evaluate the effectiveness of an existing training program, but also to link that evaluation to a reassessment of training needs and a redesign of the training program. A model of this evolutionary process is presented in Figure 3. Unfortunately, little attention has been given to methodologies which establish

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Present Figure 3 about here

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this critical linkage, allowing the training process to evolve from Phase IV, training evaluation, to Phases V & VI, reassessment and redesign. This section describes one method for establishing this linkage - the matching technique of matching training needs with training emphasis.

The matching technique is conceptualized in Figure 4 as a matrix in which training emphasis is directly compared to training needs. Such a comparison

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Present Figure 4 about here

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is a powerful method as it allows for the identification of training "hits" and "misses." The hits refer to those content areas, such as KSAO's, where the emphasis received in training is confirmed or justified. Areas that need to be trained are trained; areas that do not need to be trained are not trained.

The training misses can be separated into two types: deficiencies and excesses. Of the two, deficiencies would generally be a more critical concern. Training deficiencies are content areas whose high training needs suggest more emphasis is required than is currently received in training. The extreme case would be a training omission, where a training need is not emphasized at all in training. On the other hand, training excesses are areas receiving an excessive amount of emphasis, relative to their need to be trained.

The greater the number of misses uncovered, both deficiencies and excesses, the less effective the program and, therefore, the greater need for refinement or redesign. This matching technique provides information as to what specifically in the training program should be changed and in what way. As an example, training needs and training emphasis will be matched first within the context of the Police recruit training program. To demonstrate the versatility of the technique, it will also be further applied within the context of a supervisory skills workshop in an industrial setting.

Application to a Police Training Program

The job relatedness of the training program has been established through a content validity ratio approach. Equally important the range of CVR values for the training and job content domains provides an empirical base to systematically reassess training needs for program revision.

During the evaluation phase of our project, the KSAO statements were separated into the seven major categories and the number of minor categories presented earlier (see Table 3). These categories reflect the core curriculum taught in the training program. The appropriate KSAO CVR's were then averaged to calculate a CVI for each category and subcategory.

Initially, these CVR and CVI values were used to determine job relatedness. For the matching technique, since they indicate importance to job performance, these same CVR and CVI values can be used to determine training needs.

Training emphasis consisted of the class time devoted to each category and subcategory in the training program. Finally, both the needs and emphasis scales were divided into quartiles, based on the range of CVI values and class time, respectively.

As the first step in the matching process, Figure 5 matches the CVI's for the seven major categories and the class time devoted to each category. The results indicate major support for the time spent on the various content areas. Only two categories -- Laws (1) and Divisional Directives (3) -- deviate even slightly from a perfect linear relationship. Since training deficiencies are the more critical concern, the sole deficient category of laws requires further investigation.

Present Figure 5 about here

Figure 6 illustrates the same matching technique but at a more detailed level of specificity to discover why the Law Category was slightly training deficient. Training time and the CVI values are matched for the six law subcategories. Results indicate a close match, but less so than in Figure 5. A major training excess occurs in the content area of Criminal Laws, suggesting less emphasis be placed there. Conversely, there are three subcategories that are slightly deficient, which in combination resulted in the Law Category's slight overall deficiency. Among the three areas, more deficiencies occurred in Rules of Evidence, suggesting more emphasis be placed in teaching Rules of Evidence.

Present Figure 6 about here

Table 8 presents information about what KSAO's should be the focus of the increased emphasis on Rules of Evidence. The CVR values are listed for the nine KSAO's grouped under Rules of Evidence. Higher CVR values suggest greater

emphasis.

Present Table 8 about here

This information is not only useful for allocating time within courses but also provides information to evaluate and revise testing procedures. For example, the rules of evidence exam given recruits can be examined to insure that the knowledge items with high CVR values (e.g., Knowledge of what is or is not evidence) are emphasized on the test, while knowledge items with low CVR's (e.g., Knowledge of privileged communications) are given relatively little emphasis on the test.

In addition to ratings of training needs (CVR), each KSAO was rated by the police training staff and recent recruits in terms of training emphasis. This information allowed for a direct comparison of emphasis with training needs which resulted in a scatterplot of the 383 training content KSAO's. The correlation of the emphasis and needs ratings were quite high ($r = .68$, $p < .001$) indicating a large proportion of "hits," or training confirmations, with few KSAO's seen as being highly deficient or excessive. Nevertheless, as discussed previously, the job content domain had been identified as consisting of 54 KSAO's which were not included in the training program. These training omissions were examined in terms of their trainability within the constraints of the recruit training program. The trainable KSAO's have recently been incorporated into the training program while other KSAO's have become emphasized to a greater extent in the field training recruits receive once completing the academy training program.

Application to a Supervisory Skills Workshop

The matching of training needs to emphasis can also be successfully applied

to an industrial setting. The training program to be reassessed and redesigned is a supervisory skills workshop at Ethyl Corporation called "TIPS" -- Training in People Skills. Unlike the police academy, which is a comprehensive job training program, the content domain of the TIPS workshops is a subset of a supervisor's required job skills, specifically, a subset of 15 interpersonal situation skills (see Table 9). The method for training these skills is a "participatory" applied learning approach (Wroten, Note 2).

Present Table 9 about here

Initially, TIPS was designed from an informal assessment of needs, based on talks with plant managers and the supervisors themselves. However, as in the police study, there was the opportunity to incorporate into the training evaluation process the means to reassess training needs for program redesign purposes. Thus, training needs were more systematically determined by getting subordinate, managerial and self ratings. They rated the perceived effectiveness of the supervisor on each of the 15 interpersonal situation skills. Based on the average for all untrained supervisors, the skills were then divided into the top, middle and bottom third in terms of needing training.

The training emphasis given to each situation skill was determined from training evaluation results (Wroten, Note 2). In an analysis of covariance, the difference between trained and untrained supervisors was determined on each situation skill. A bigger difference (i.e., F-value) implies a bigger emphasis or impact of the training in that situation skill. Thus, the 15 situation skills could then be divided into the top, middle and bottom third in terms of emphasis received in training.

Figure 7 presents the matrix matching the training needs of the untrained supervisors and the training emphasis of the TIPS workshops. The matrix indicates that the overall fit of the training program to the average supervisor's needs is relatively good, with few extreme training deficiencies or excesses.

Present Figure 7 about here

Nevertheless, an advantage of the matching technique is to further refine a training program by identifying relative extremes. Thus, the emphasis on skill 10 - "handling a complaint or grievance from an employee" - (and to a lesser extent skills 4,6 and 14) could be reduced and other skill areas (1,3,7,9 and 12) could be emphasized more.

Another key advantage of the matching technique lies in its potential for customizing training programs to better meet the needs of organizational subunits, such as individual plant locations. Once the match is determined for each plant, the training program can be refined and conducted at the plant to maximize effectiveness. To illustrate this advantage, Figure 8 presents the matrix for supervisors at one Ethyl plant. The results indicate that the training

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emphasis in the current program is not in tune with the training needs of the supervisors at that particular plant. Since the skills workshop was specifically structured in terms of training modules, it is flexible enough to make adjustments in content based on such analyses. Therefore, in this plant, the training program could be customized to increase the emphasis given to seven skills (1,3,8,9,11,12 and 15) while five skills (5,6,7,10 and 14) could be deemphasized or perhaps eliminated from the program.

Decisions on how to further refine the program -- such as which of the many deficiencies should receive the most emphasis -- can be aided by a dollar impact analysis that supplements the matching technique. The dollar impact analysis consisted of measuring the dollar effect of the overall changes in the supervisor, as estimated by the supervisor's raters. This was correlated with how much that supervisor changed on each situation skill, as observed by the raters. Changes in seven of the 15 situation skills are significantly correlated ($p < .10$, $N = 66$ supervisors) with the overall dollar effect of those changes. They are skills 1,3,4,5,8,9 and 10.

These results indicate which changes in situation skills would have a greater dollar impact and should therefore receive greater attention. Applying this to the results of the matching technique, three of the five training excesses are not related to dollar impact, suggesting emphasis be shifted away from skills:

6. Conducting a follow-up discussion with an employee about poor performance or work habits.
7. Motivating and encouraging a poor or average performer; recognizing average, but not outstanding work.
14. Dealing with peers.

Instead, the emphasis should be shifted especially to the four, out of the seven, training deficiencies that are related to dollar impact:

8. Setting performance goals or standards and reviewing performance with an employee.
3. Delegating tasks, responsibilities and authority.
1. Coaching and giving on-the-job training.
9. Handling disciplinary matters.

By basing such redesigns of a training program on such reassessments of current training needs, the training program will be better fit to address the organization's needs, thus assuring the training program's survival and its continuing to further evolve.

Conclusion

As stated at the beginning of this presentation, very little research has been conducted which offers methods which (1) establish the content validity of a training program, and (2) translate training evaluation information into training needs for program revision. We have offered a methodology of linking a job element method of job analysis with a content validity ratio approach to establish job relatedness. In addition, we have offered a methodology of matching training needs with training emphasis to link training evaluation with training needs reassessment.

To quote Cascio (1978), "if you don't know where you are going, any road will get you there, but if you do know where you are going, you increase your chances of actually getting there" (p. 282). While our approaches certainly have some weaknesses, it is our hope that we have presented methodologies which offer new roads to travel and spur further efforts to opening more roads in the training literature so as to increase our chances of actually getting somewhere.

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Table 1

TRAINING CONTENT DOMAIN - Identify the knowledges, skills, abilities and other personal characteristics taught or developed.

STEP 1: Generation of knowledges, skills and abilities
- Panel sessions with Training staff, instructors and recent recruits.

STEP 2: Revision of KSAO Statements
- Panel Sessions and Research Staff

STEP 3: Completion of Training Academy Content Survey

A. Survey Participants:
- Training Staff n= 15
- Recruit Class n= 35

B. Information From Survey
- Taught or not

Table 2

JOB CONTENT DOMAIN - Identify the knowledges, skills, abilities and other personal characteristics necessary to perform the patrol officer's job.

STEP 1: Initial KSAO List
- A. Training Content Domain
- B. Other Police Job Analyses

STEP 2: Combination and Revision of KSAO Statements
- A. Panel Sessions with Police Personnel
- B. Combination of lists by Research Staff

STEP 3: Completion of Patrol Officer Knowledges and Ability Survey
- A. Survey Participants
  - Patrol Officers
  - Patrol Sergeants
- B. Information from Survey
  - Required for Job Performance

Table 3

Training Academy Content Domain: Categories For KSAO Statements

1. Laws

   A. Criminal Laws
   B. Traffic Laws
   C. Arrest, Search, and Seizure
   D. Rules of Evidence
   E. Liability
   F. Procedural Law (warrant, subpoenas, summons, complaints)

2. Investigation and Observation

   A. Traffic and Accident
   B. General Crime and Crime Scene
   C. Observation and Surveillance

3. Divisional Directives

   A. Policies and Procedures (non-mandated by law)
   B. Military Conduct
   C. Division Organization and Operations

4. Courts

   A. Court Structure
   B. Court Appearance and Testimony
   C. Court Room Procedures

5. Physical Characteristics and Situations

   A. Physical Attributes and Fitness
   B. Firearms
   C. Intermediate Weapons
   D. Special Tactics
   E. Arrestee Control and Use of Force
   F. Officer Safety and Survival
   G. Equipment Use and Operation

6. Communication

   A. Verbal/Oral Communication
   B. Non-Verbal Communication
   C. Written Communication

7. Human and Community Relations

   A. Crisis Intervention
   B. Media Relations
   C. Community Services and Other Relations
   D. Assessment & Management of Persons & Situations
   E. Personal and Self-Management

Table 4

Quantification of Content Validity[a]

A. CONTENT VALIDITY RATIO FORMULA

$$CVR = \frac{N_i - N_u}{N_T}$$

Where: number of

N_i = Experts rating KSAO as important

N_u = Number of experts rating KSAO as unimportant

N_T = Total number of experts

B. CHARACTERISTICS

1. CVR is NEGATIVE when fewer than half say an item is "important"
2. CVR is ZERO when half say item is "important"
3. CVR is POSITIVE when more than half say item is important
4. CVR is ONE when all experts say item is important

C. CONTENT VALIDITY INDEX

$$CVI = (\overline{CVR})$$

[a]From Lawshe (1975)

Table 5

Minimum Value of CVR[a]

One Tailed Test P = .05

N	Minimum Value
5	.99
7	.97
9	.78
10	.62
15	.49
20	.42
25	.37
30	.33
35	.31
40	.29
50	.252
60	.229
70	.211
80	.196
90	.185
100	.175
*110	.166
120	.158
130	.152
140	.146
150	.141

[a]From Schipper (1980)

Table 6

Overall CVI's By Subgroup

Sample	Overall CVI (383 KSAO's)	Minimum CVI For significance
Target City Sample (N=99)	.22	.19
Outside City Sample (N=20)	.49	.42
Total Combined Sample (N=114)	.27	.17

Table 7

Correlations Among Subgroup Samples
On the CVR Ratings[a]

	Target City Officers (N= 64)	Target City Sergeants (N= 30)	Outside City Personnel (N= 20)
Target City Officers	---		
Target City Sergeants	.85	---	
Outside City Personnel	.80	.80	---

[a]All correlations are significant, $p > .001$, N= 383 KSAO's.

Table 8

CVR Values for KSAO's
in Rules of Evidence Subcategory

KSAO	CVR
• Knowledge of rules of evidence.	(.54)*
• Knowledge of how to maintain chain-of-custody for evidence.	(.58)*
• Knowledge of the legal rationale behind various rules of evidence.	(-.10)*
• Knowledge of "corpus delicta" and what evidence should be presented in association with the crime committed.	(.42)*
• Knowledge of different types of forms of evidence (such as, real, circumstantial and direct evidence; declarations and confessions).	(.19)*
• Knowledge of privileged communications.	(-.07)
• Knowledge of what is or is not evidence, and what constitutes its admissibility, relevancy and competency.	(.78)*
• Knowledge of who shall, when to, and how to legally obtain evidence at the scene.	(.66)*
• Knowledge that a judge rules on relevancy and competency of evidence.	(.15)

* $p < .05$; $N = 114$

Table 9

Ethyl's "TIPS" Workshops (Training in People Skills) :
15 Supervisory Interpersonal Situation Skills

1. Coaching and giving on-the-job training.
2. Correcting a situation immediately and then explaining to the employee what the problem was.
3. Delegating tasks, responsibilities and authority.
4. Dealing with an employee's performance problem (such as a drop in quality).
5. Dealing with poor work habits (such as excessive lateness).
6. Conducting a follow-up discussion with an employee about poor performance or work habits.
7. Motivating and encouraging a poor or average performer; recognizing average, but not outstanding, work.
8. Setting performance goals or standards and reviewing performance with an employee.
9. Handling disciplinary matters.
10. Handling a complaint or grievance from an employee.
11. Overcoming an employee's resistance or resentment to changes or unpopular decisions.
12. Counseling on personal or career matters.
13. Chairing and conducting meetings or participating in meetings or project groups.
14. Dealing with peers.
15. Dealing with superiors.

Figure 1

Project Design

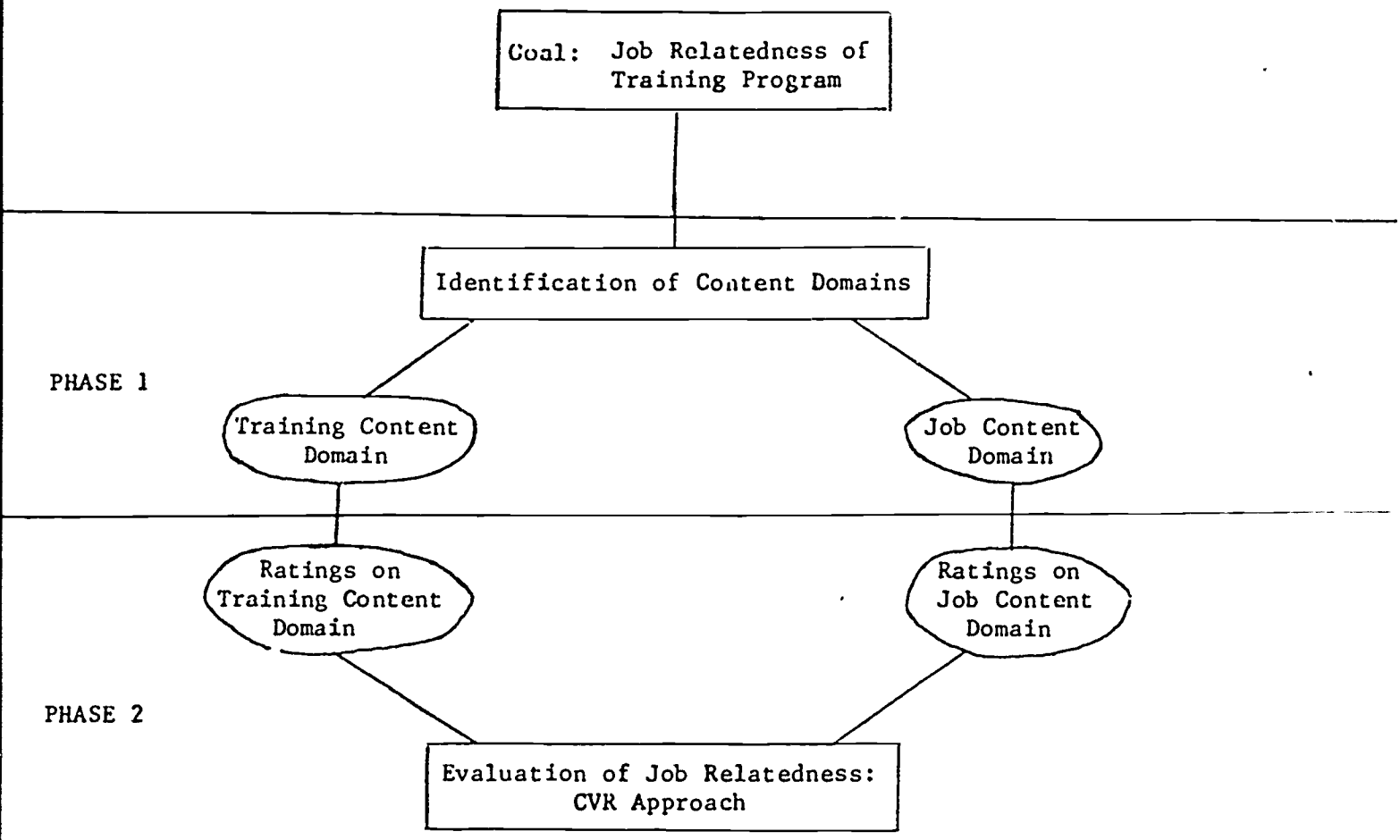
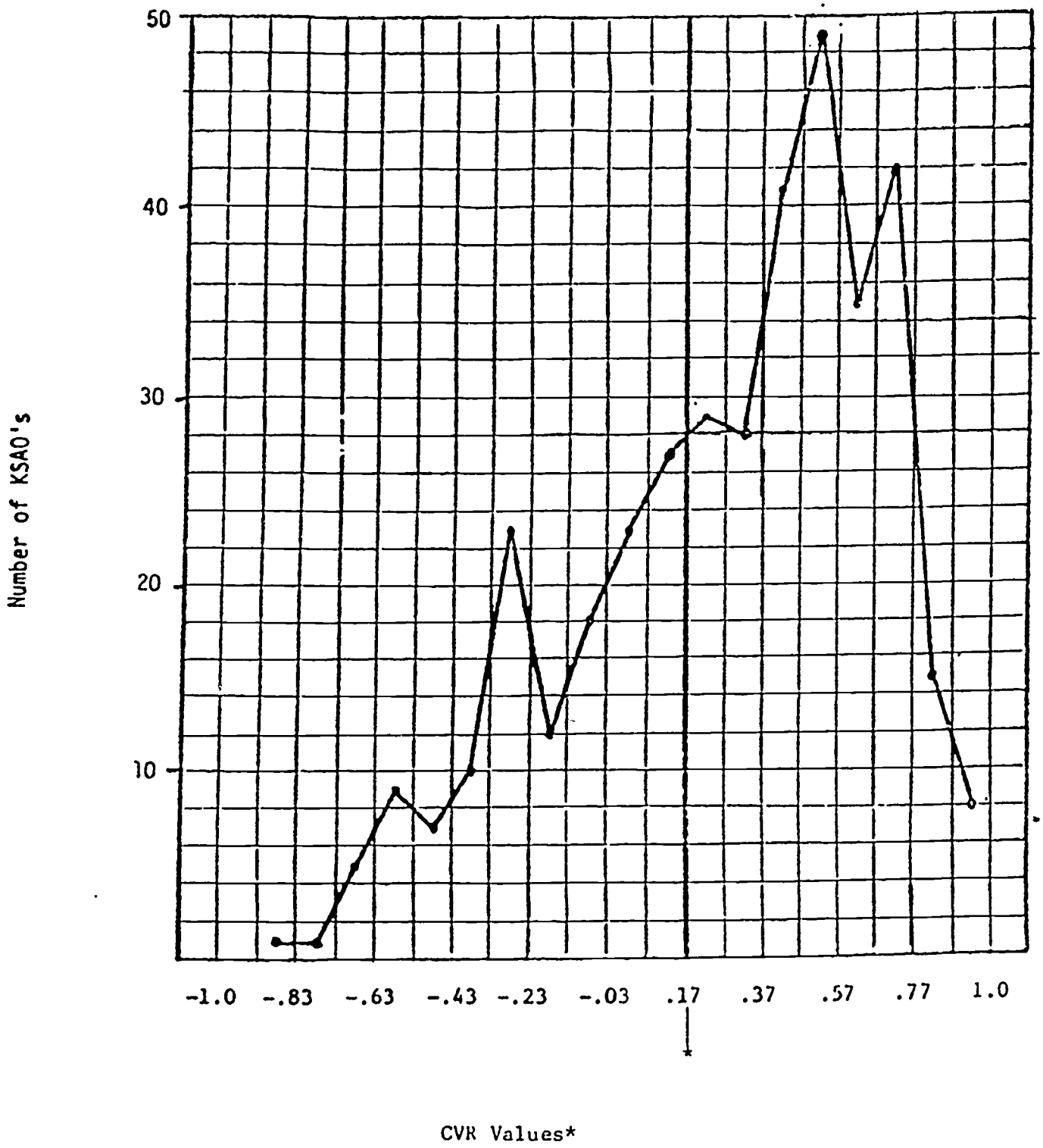


Figure 2

Frequency of KSAO CVR's for Total Sample (N = 114).



*CVR $\geq$ .17 is significant ($p < .05$; N = 105).

Figure 3

THE EVOLUTION OF THE TRAINING PROCESS

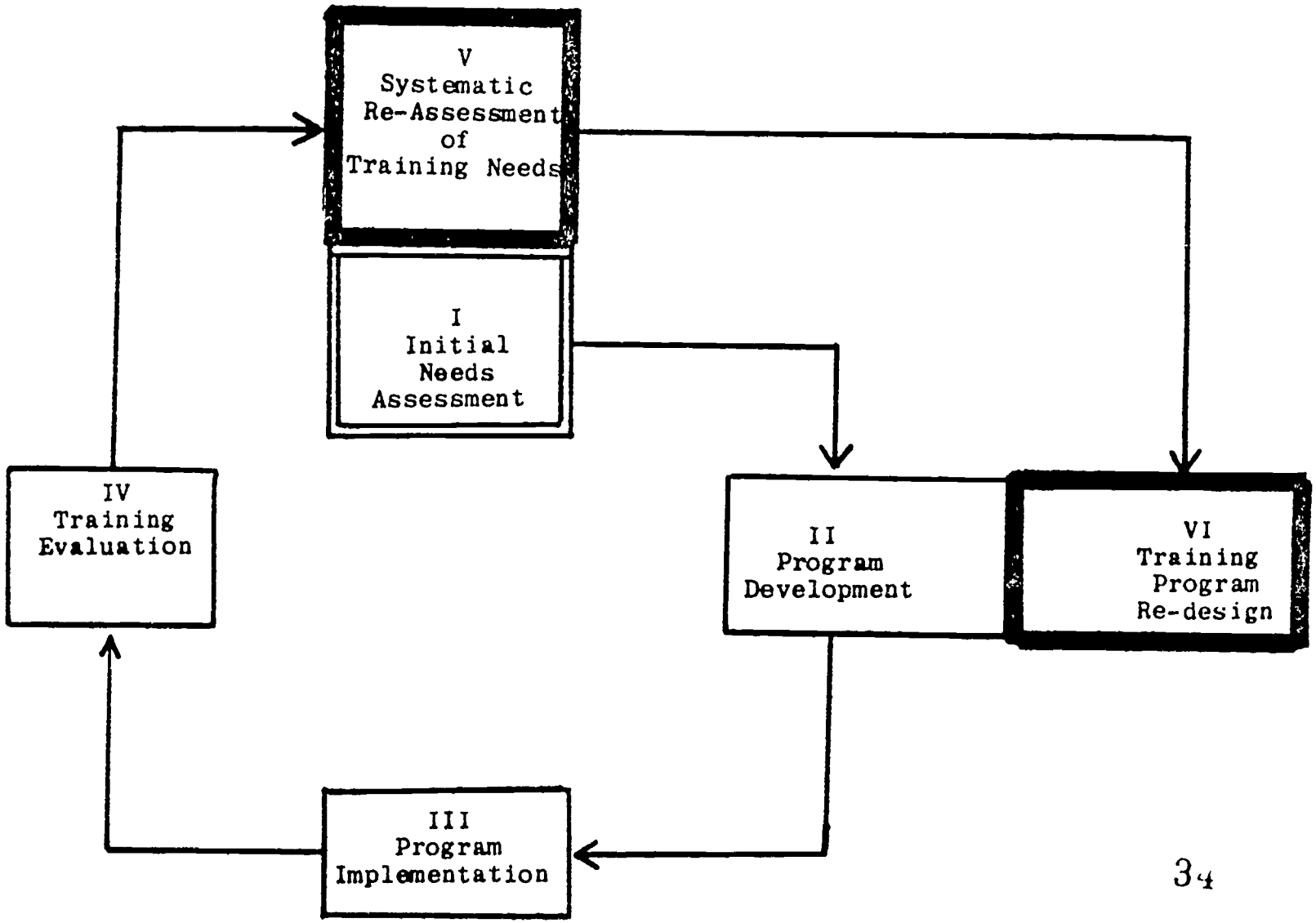


Figure 4

Matching Technique:

Matching Training Needs to
Training Emphasis

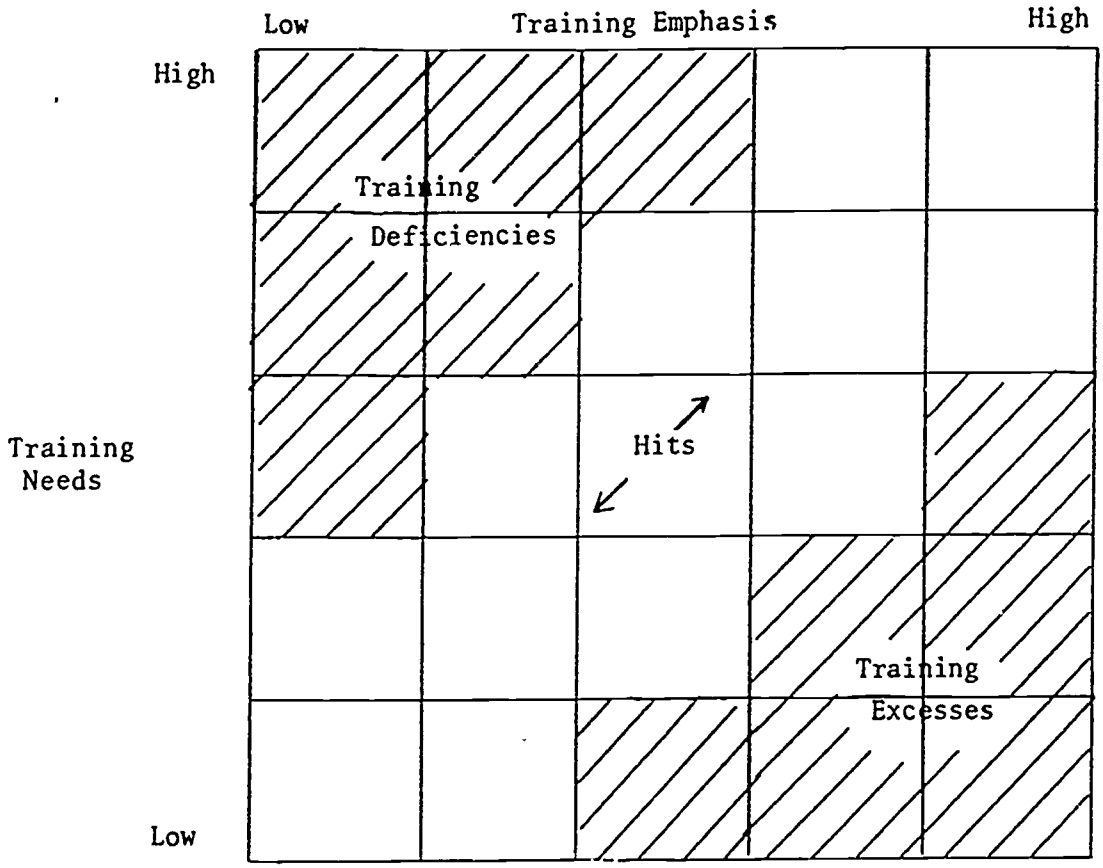


Figure 5

Matching Technique for 7 KSAO Categories[a]

TRAINING EMPHASIS
(Hours)

TRAINING NEED (CVI's)	LOW 0 – 50	50 – 100	100 – 150	150 – HIGH 200
HIGH .5 – .4			1	5,7
.4 – .3			2	
.3 – .2		6		
.2 – LOW 0	4	3		

[a] The numbers in the matrix indicate the 7 major KSAO categories (see Table 3).

Figure 6

Matching Technique for 6 Law Subcategories[a]

TRAINING EMPHASIS
(Hours)

TRAINING NEED (CVI's)	LOW 0	12	25	38	HIGH 50
HIGH .8					C
.6	D				
.4	E,F	B			A
.2					
LOW .0					

[a] The letters in the matrix indicate the 6 subcategories of the Law Category (see Table 3).

Figure 7

Matching Technique for
15 Interpersonal Situation Skills[a]

Training Needs	Training Emphasis: Low	Training Emphasis:	Training Emphasis: High
High		1,7,12	5,13
	3,9	2	6,14
Low	8,11,15	4	10

[a]The numbers in the matrix represent the 15 interpersonal situation skill areas. For circled numbers 1,3,4,5,8,9 and 10, changes in those situation skills are significantly correlated ($p < .10$) with the overall dollar impact of training.

Figure 8

Matching Technique for 15 Interpersonal Situation Skills at One Plant Location[a]

Training Needs	Low Training Emphasis		High Training Emphasis
High	3,8,11	1,12	13
	9,15	2,4	14
Low		5,7	6,10

[a]The numbers in the matrix represent the 15 interpersonal skill areas. For circled numbers 1,3,4,5,8,9 and 10, changes in those situation skills are significantly correlated ($p < .10$) with the overall dollar impact of training.