



THE JOB/TASK ANALYSIS/SKILLS AND KNOWLEDGE MARRIAGE (PART II)

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 This paper (Part II) illustrates input and eventual employment of model "tasks, skills and knowledges" in the front-end job/task analysis subsystem of NEPDIS (Naval Enlisted Professional Development Information System). The four-part matrix displayed in Part I reflects a hierarchy with the task at the top and the associated knowledge elements at the bottom. The task-to-task element-to-component skill-to-component knowledge continuum provides an audit trail for the use of the training program or curriculum developer, whether the matrix is added to the existing master job/task inventory or provided as an ancillary data bank for specialized use.

The principal goal is to set up a functioning audit trail (to justify a body of job-related technical information as actually component to or clearly underlying task performance). A secondary goal is to set up an occupational-field data bank and computerized retrieval methodology to support this aim. The outputs of front-end job/task/skill analysis can then be used both to describe (even construct) jobs/billets and the tasks performed by their incumbents, and to describe the skills and knowledge requirements for job incumbency, certification, advancement, and associated training.



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This paper (Part II) illustrates the input and eventual employment of model "tasks, skills and knowledges" in the front-end job/task analysis subsystem of NEPDIS (Naval Enlisted Professional Development Information System). The principal goal is to justify a body of job-related technical information as actually component to or clearly underlying task performance; a secondary goal is to set up an occupational-field data bank and computerized retrieval methodology to support this aim.

The initial input into the model (Figure 1) is a comprehensive inventory of job/task statements consisting of specific actions to be performed on (or with) actual, real-world (not generic) task objects with conditions, standards and supporting descriptive factors. It cannot be over-emphasized that until all the above data as a minimum have been collected, no total and thorough analysis can be completed. The term "front-end analysis" as used in this paper is intended to portray an analysis of all data collected at the front end of any particular occupational data acquisition and analysis project. It is not applicable to any system which collects only a portion of the required data, conducts a portion of the analysis, and then returns to the same (or additional) sources for another round of data collection.

Once the data have been collected, a computerized analysis can sort tasks into skill levels, pay grades, or any other desired distribution based on the inherent complexity of the supporting descriptive factors (Figure 2). This first computer sort produces a crucial product by selecting from the total inventory those tasks most appropriate for assignment to a particular group of job incumbents (Figure 3). The initial list of selected tasks then serves as an input into other computer algorithms which produce lists of billet-specific tasks and a list of rating-specific skills (Figure 4). The skills are then further analyzed to determine knowledge requirements.

The billet-specific tasks can serve useful roles in determination of manpower requirements, assignment of personnel, identification of specific training requirements, advancement in rate, and certification and evaluation of workers' performance on the job. Rating-specific skills serve as the standard to which all members of a rating (regardless of billet to which assigned) must be able to function in order to perform the tasks of a specific pay grade, skill level, or other distribution structure. Knowledge requirements serve to support absolute standards for advancement in rating and for certification in work qualifications.

Once skills and knowledges have been identified and extracted from the tasks, the selection of training sites and methods becomes the area of primary concern (Figure 5). Skills and knowledges can be prioritized for training; and those with highest priority would be assigned to a schoolhouse setting (for instance a class "A" school). The remainder would appropriately be assigned to correspondence courses and other self-study modes. In most cases the training manuals used as the basic text for schoolhouse courses would also be used for follow-on self-study and correspondence courses.

Tasks, like skills and knowledges, can be prioritized for training. Those with high priority would be assigned to schoolhouse settings (for instance, class "C" and class "F" schools), while those of low priority would be assigned to formal on-the-job training.

A total training continuum based on the above assignment to the various training settings would ensure that a worker reporting to a new assignment would have completed training for the skill and knowledge requirements established as necessary to perform in his particular pay grade. It would also ensure that he had been trained to perform tasks peculiar to his particular billet. He would report to his work site already prepared to perform useful work and after a brief period of formal on-the-job training, would be fully billet-qualified and able to perform all tasks assigned his billet.

Job certification and advancement are other areas which would also be served by an automated analysis of occupational data (Figure 6). A task-specific billet description for a worker's next billet and the three elements of training--tasks, skills, and knowledges are the input items for the algorithm. A worker's ability to perform tasks and skills would be evaluated by hands-on performance tests and his possession of adequate knowledge requirements would be evaluated by paper and pencil tests. Once he had demonstrated proficiency in the three elements required for a new billet, he would become eligible for advancement. He could then advance into the new billet and begin functioning as a fully qualified and certified incumbent; upon meeting other requirements such as military leadership, time-in-rate, etc. he could automatically be advanced to the next pay grade commensurate with the billet. The Service as well as the individual would receive fair and equitable compensation.

RATING = AE PACKAGE = 0001 TASK = 0020 DUTY SUBCATEGORY = 01

TASK STATEMENT = PERFORM MAINTENANCE CHECK ON ROTATING BEACON ASSEMBLY 44126

PLATFORM = P-3 A/B (APBC)
 SYSTEM = LIGHTING SYSTEM (44000)
 EQUIPMENT = EXTERIOR LIGHTING (44100)
 COMPONENT = ROTATING BEACON ASSEMBLY (44126)

COMPLEXITY = 1.67

MAJOR ACTION CATEGORY = MAINTAIN
 DUTY SUBCATEGORY (01) = CHECK/TEST/INSPECT
 TASK ACTION (PMC) = PERFORM MAINTENANCE CHECK

CUE.....REPAIR COMPLETE
 STANDARD.....IAW REFERENCE PUBLICATION
 REFERENCE.....NA-01-75PAA-2-12
 TOOL.....COMMON HAND TOOLS, SPECIAL HAND TOOLS
 SUPPORT MATERIAL.....FUSE/SWITCH
 SUPPORT EQUIPMENT.....POWER UNIT 2BV 400HZ
 TEST EQUIPMENT.....RPM GAUGE, AMMETER, MULTIMETER

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
GENERAL.....	2	1	3	1	1	1	1	2	0	0	0	0	0	0
DUTY SUB 01.....	2	3	2	0	1	3	1	0	0	1	0	0	0	0
SKILL 1 (REFERENCE).....	2	1	1	1	1	0	0	0	0	0	0	0	0	0
SKILL 2 (TOOL).....	3	3	2	1	0	0	0	0	0	0	0	0	0	0
SKILL 3 (SUPPORT MATRL).....	2	0	0	0	0	0	0	0	0	0	0	0	0	0
SKILL 4 (SUPPORT EQUIP).....	1	1	1	0	3	0	0	0	0	0	0	0	0	0
SKILL 5 (TEST EQUIP).....	3	2	2	3	2	2	2	1	3	0	0	0	0	0

Figure 1. SAMPLE TASK FROM JOB TASK INVENTORY

RATIONALIZATION OF JTI DISTRIBUTION INTO SKILL LEVEL/PAY GRADE GROUPS

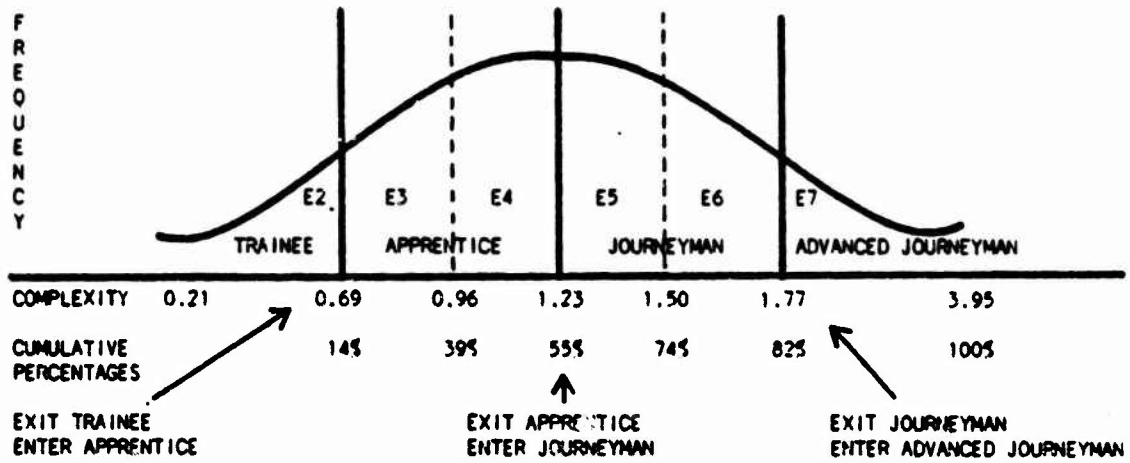


Figure 2. TASK DISTRIBUTION HISTOGRAM

DISTRIBUTION OF JOB TASK INVENTORY INTO SKILL LEVEL/PAY GRADE GROUPS

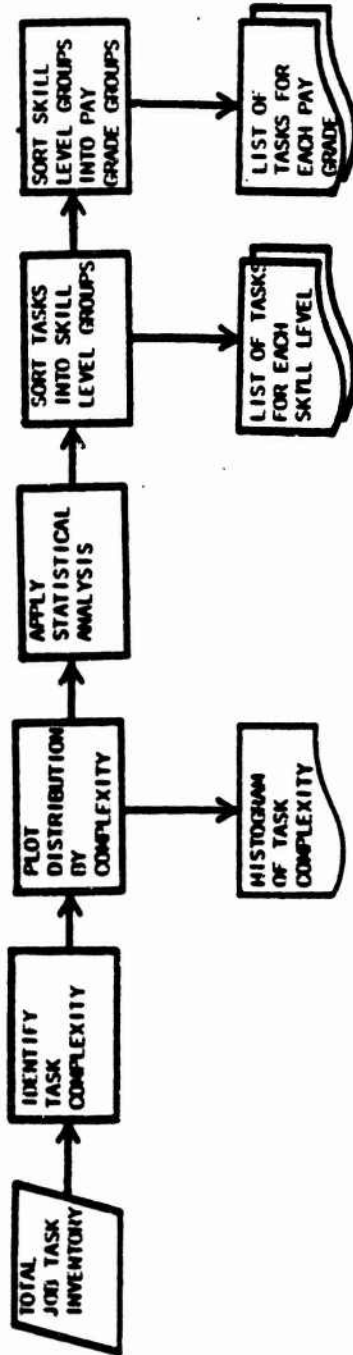


Figure 3. FLOW CHART OF SKILL LEVEL/PAY GRADE SHERED-OUT

IDENTIFICATION OF BILLET-SPECIFIC TASKS, RATING-SPECIFIC SKILLS AND RATING-SPECIFIC KNOWLEDGE REQUIREMENTS

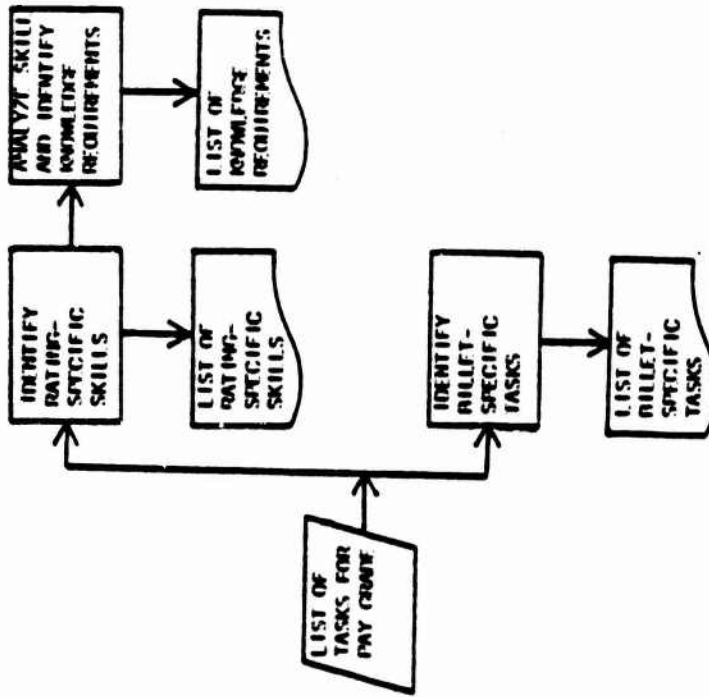


Figure 4. FLOWCHART, IDENTIFICATION OF TRAINING REQUIREMENTS

ASSIGNMENT OF TASKS, SKILLS AND REQUIREMENTS TO TRAINING SETTINGS

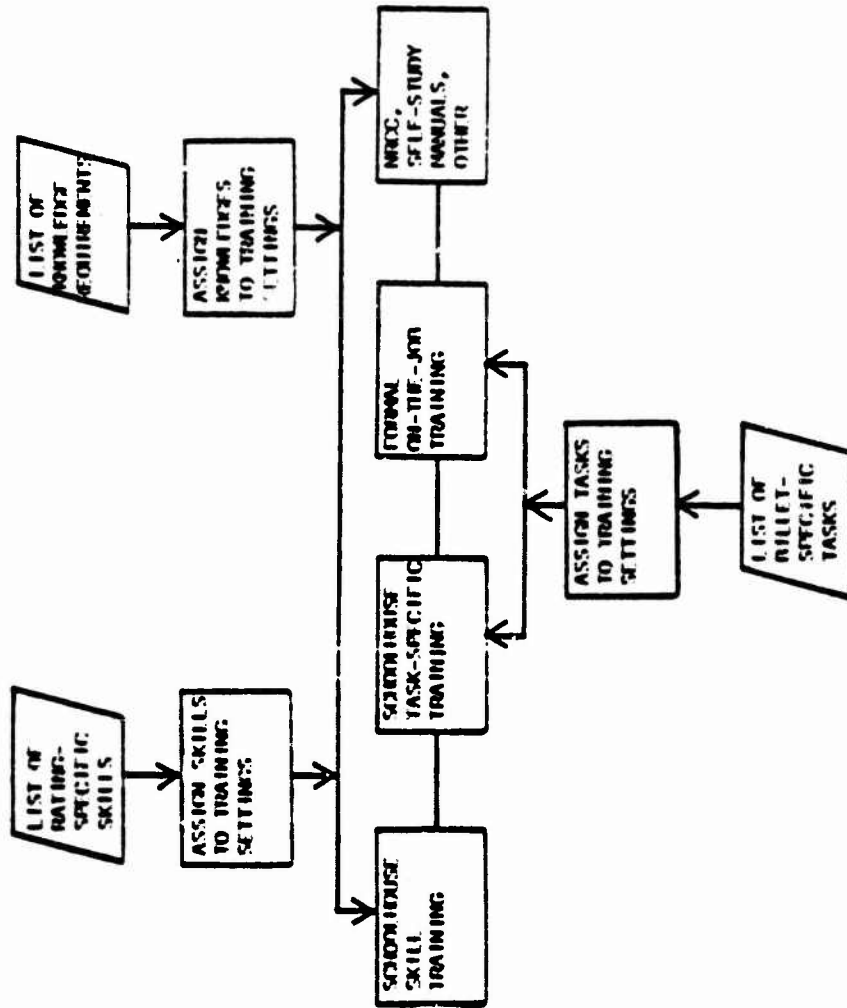


Figure 5. FLOWCHART, MATCHING TRAINING REQUIREMENTS WITH TRAINING SETTINGS

NRB CERTIFICATION AND ADVANCEMENT

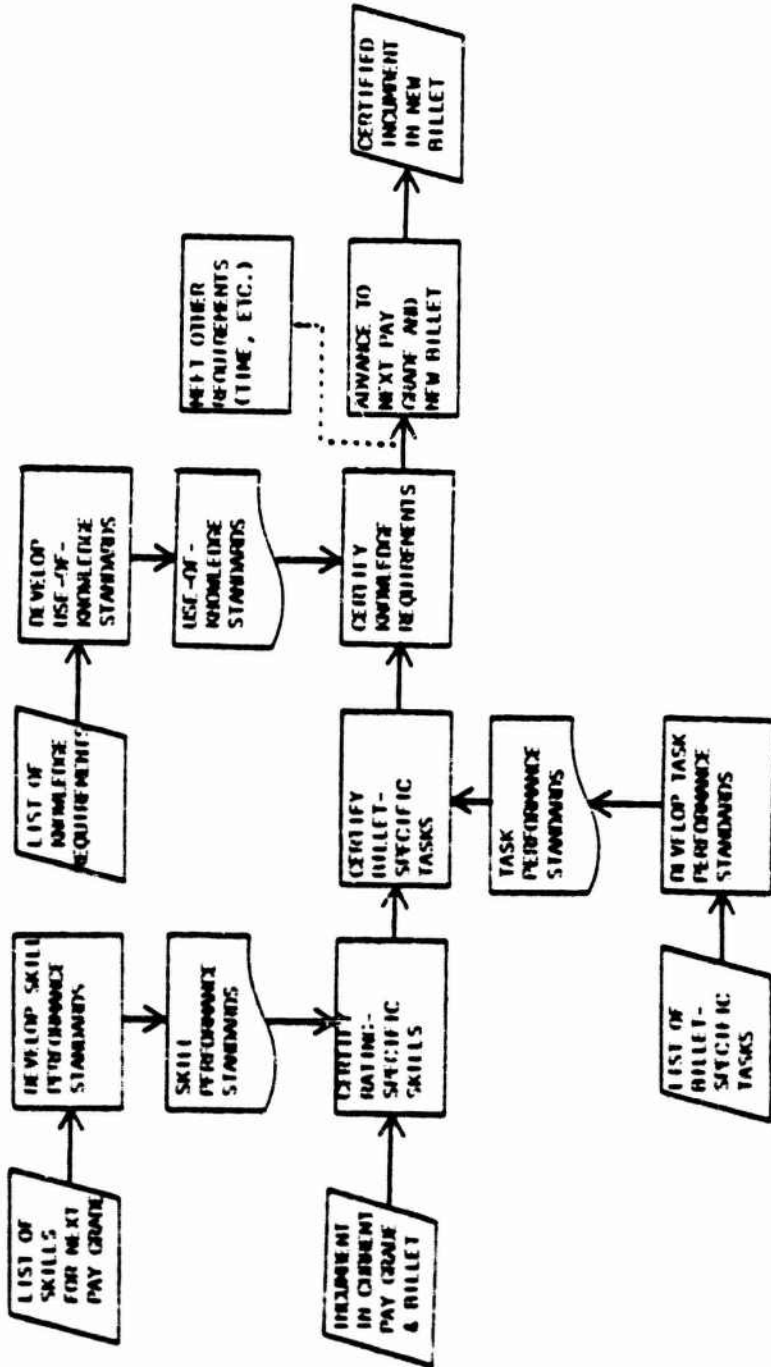


Figure 6. FLOWCHART, CERTIFICATION AND ADVANCEMENT

