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SKILL STANDARDS REPORT PD
VOCATIONAL TRAINING ASSISTANCE

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By

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INTRODUCTION

Background of the Report

This report describes the activities of Dr. Ralph O'Brien, short-term consultant, performed between August 9 and August 30, 1981. The purpose of these activities was related to the establishment of occupational skill standards for the Vocational Training Corporation. The consultant visit was part of a larger project that involves not only short-term assistance to the VTC in several areas but also training of VTC officials at the National Center for Research in Vocational Education.

The establishment of occupational skill standards is of central importance to the process of developing and implementing a fully functional occupational classification system. The capability of Jordan's apprenticeship training program to prescribe results in terms of competence levels on an achievement continuum will be significantly enhanced by a relevant, yet simplified, occupational classification system.

This report addresses an essential process; that of defining skill standards in terms of worker performance responsibilities which utilizes a structural system of assessing skills acquisition. A reliable system of assessing acquired skills must be standardized and representative of valid training criteria.

Skill Standards Development in the VTC

Research and development efforts by the VTC have resulted in comprehensive plans for developing vocational training programs. The system of categorizing skills, by level, into bands of proficiency allows for the inclusion of occupational titles within each band to cover the range of job responsibilities. The proficiency bands beginning with limited skill as the most basic, progress through the increasing responsibility levels of skilled worker, craftsman, technician and professional to form a competency continuum. The VTC has developed its occupational classification system to categorize occupations broadly into families. Within each family of occupations, job titles are respectively subcategorized and job duties are described in terms of general responsibilities. The prepared job description provides an interpretive statement that can be introduced into the training program as a developmental curriculum base. As the occupational classification system is established and expanded, job titles are thus included within families on a horizontal format with the vertical skill level continuum providing training direction and appropriate employment classification of employers.

The VTC training philosophy is appropriately suited for meeting performance requirements of the workplace. Training supervisors are assigned to groups of trainees at the work setting to monitor individual progress as apprentices perform production duties. This direct supervision allows trainees,

the employer, and the training supervisor to improve work procedures and to solve technical problems collectively. On-the-job supervision also yields training data useful for related classroom instruction and technical information essential for curriculum development.

The training philosophy embodied within the VTC is perhaps best exemplified by the sound approach to curriculum design. Each job title is considered for its occupational family identity and examined for its inherent skill-level characteristics. The job title becomes a manageable curriculum component when it has been described in terms of worker functions essential for responsible job effectiveness and required tasks which, when properly sequenced, enable the worker to perform the essential functions. The employment-based criteria of worker tasks and functions are combined with essential, related technical information and planned into a sequential instructional format by VTC training specialists. The VTC director general and his staff have developed syllabi outlining the technical content of many jobs represented in Jordanian business and industry. These syllabi are prepared as instructional modules which relate in sequence to cover adequately the scope of a given job description and therefore constitute a course of study within the apprenticeship system. A necessary next major developmental goal for the VTC training officers will be to establish a system of linking the elements of training to the job performance requirements through a standardized system

of assessing acquired skills. The effectiveness of the national apprenticeship training programs can be ultimately realized with a full-cycle of training, assessment, skill standards, and occupational classification.

CHRONOLOGY OF ACTIVITIES

At the National Center, the project coordinator provided a thorough introduction to the general nature of the project and specifically to the importance of establishing occupational skills standards to the development of the VTC apprenticeship training programs. Direction and assistance was provided in locating related reference materials by several members of the research staff of the National Center in advance of the consulting visit to Amman.

Upon arriving in Amman, assistance was provided by the U.S.A.I.D./Jordan Chief of Technical Projects and members of his staff. They were enthusiastic and informative as they explained the importance of the VTC programs development.

At the VTC, staff explained, in detail, the operating structure of the VTC and the extensive plans for improving the functions and future goals of the corporation. Excellent direction was provided for the mission of curriculum development for technical training programs and the necessity of assessing skills and establishing skills standards.

A detailed explanation of the VTC rationale and methodology of curriculum development was given. Direction and advice was

supplied by VTC staff throughout the consultant visitation. This staff was responsible for organizing and directing the National Technical Committee which met to provide technical information and advice to the VTC.

A key area of review and information was related to the system of instruction as it currently operates and the future plans for achieving a more appropriate balance of related (classroom) instruction and on-the-job training. VTC staff also participated in the technical committee proceedings.

Three days of visitations to industry in and around Amman gave the opportunity to meet with employees and employer-supervisors as well as trainers and trainees. These were especially valuable experiences in that they provided the opportunity to observe on-the-job training and production, and to ask questions pertinent to the apprenticeship programs. Visitations were made to the following places of employment: The Ministry of Public Works, Sendan Metal Fabrication Company, Amman Metal Fabrication Company, Alfaris Metal Company, and the Damir Metal Industry.

Following the employment visits, planning sessions were held with VTC staff to prepare for the technical committee meetings. It was during these sessions that the following plan was established.

First Committee Meeting

Staff presented the purpose and goals of VTC in terms of the necessity of meeting the needs of employers. Also presented was a consultant overview of the relationships of job descriptions, job classification, and skills testing.

Second Committee Meeting

The role of the technical committee to establish a rationale and procedure of relating curriculum and training guidelines of the VTC apprenticeships program to Jordan's manpower requirements was addressed. The VTC approach to establishing a national occupational classification system was also outlined.

Third Committee Meeting

This consultant urged the technical committee to establish a system of assessing technical performance skills in relation to the occupational classification system and the essential skills standards of employment and training. The issue of comprehensive competency testing was included.

Following the three days of technical committee meetings, a half-day debriefing session was held with VTC staff to review the procedures of the consultancy.

A debriefing session was also held with U.S.A.I.D./Jordan staff.

RECOMMENDATIONS

VTC Goals

The VTC and other appropriate government agencies should declare as a firm goal, the development of a valid occupational classification system. Other occupational classification systems will not be suited to Jordan's workforce. The system should be designed with simplicity and flexibility to permit new and emerging occupational titles to be entered and classified while allowing for obsolete titles to be discarded or deactivated.

An occupational classification system designed within traditional formats could quickly become nonfunctional for Jordan, where technology will continue to have an impact on the workscene at an ever-accelerating pace resulting in significant changes in job description and duties and immediate demands upon workers to alter and/or upgrade their acquired sets of skills.

Competency Levels

In order for a skill standards system to yield data useful in determining the training curriculum, levels of competence must be established. The levels of competence should be determined by measuring the required minimal acquisitions of each critical concept and the function and/or task included in a given job description. This should be done before awarding the label of "competent" to individual trainees. The measureable

levels of competence within each band of skill levels will yield a data base which VTC officers must have to give longitudinal descriptions to the various jobs as they integrate (overlap) within each skill level band. The results of measuring levels of competence will also provide dimension of the hierarchy of job titles as they are sequenced within skill level bands. The VTC training officers will find competence measures essential for planning instruction and for implementing curricular elements which provide for trainee growth within skill levels and as they progress through bands of skill levels.

Working Committees

It is recommended that working committees be established to examine VTC prepared curriculum to initiate the process of identifying critical competencies within related occupations. The most essential competencies yield the content basis for developing occupational competency tests.

The VTC would benefit from extending its working committee representation to include practicing craftsmen and apprentice trainees. The input of technical information plus examination and sharing of ideas related to curriculum content and training methodology among technical committee members would have a significant influence on the validity of curriculum content.

Training Plan

Training assignments are individualized and diversified, therefore each trainee needs a training plan (a set of

objectives that he or she desires to achieve). Trainees should prepare a report at the end of a defined training period that provides a personal assessment of their progress. The report should be based on the projected training plan, focusing on the goals and objectives prepared when the training period began. The report should provide a summary of the on-the-job learning experiences and related learning acquired in the classroom phase of the learning period. The objectives, log, and final report should be reviewed and evaluated by VTC training officers and by employment supervisors. These planning, reporting and evaluating procedures will provide direction in developing a defined training procedure that will directly relate to the establishment of skill standards.

Training Log

It is recommended that each trainee prepare a statement at the completion of each work day for entry into a training log. This log entry should describe his/her accomplishments on-the-job as relates to training growth through acquisition of knowledge and skills essential to reenforce acquired competencies and gaining new work experience. The log provides an experiential record of the on-the-job phase of training and aids work supervisors and VTC training officers in evaluating trainee achievements.

PROPOSED OBJECTIVES FOR WORKING
SESSIONS INVOLVING
TECHNICAL COMMITTEES AND THE VTC

Job Description Procedures

- To introduce the concept of describing a job.
- To distinguish between job and occupation.
- To introduce the concept of various jobs being sub-categorized within an occupational family.
- To introduce a workable method of identifying:
 - occupational families
 - job titles
 - general job duties.

Job Classification Procedures

- To examine the concept of apprenticeship training related to employer manpower needs.
- To establish a system of classifying basic apprenticeable trades (jobs).
- To provide for expansion of the job classification system for identification of related occupational families.
- To examine jobs and duties within the occupational classification system for purposes of determining requirements of trainee progress.
- To examine jobs within the classification system for identification of desired worker (trainee) characteristics, traits, and aptitudes.
- To examine jobs within the classification system for purposes of sequencing in a logical order the OJT skills required for trainees.
- To relate the tasks and functions within the desired skills acquisition sequence for sub-categorization within each classified job.
- To examine each classified job and its sub-categories for determining the desired trainee related-information skills. Examples: communicative, numerical, technical, scientific, evaluative.

Skills Testing

- To introduce the concept of standardization when testing skill performance.
- To introduce examples of how skill tests can be prepared.
- To introduce the concepts of evaluating process and product within skill testing.
- To introduce the concept of using skill testing results to monitor trainee progress.
- To introduce the concepts of discrete skill tests (evaluating the acquisition of tasks and functions as a modular system) and comprehensive skill tests (evaluating the acquisition of a completed series of functions).
- To discuss how skill test results can be useful in establishing job classifications and levels.

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NTIS Item Descriptions: Eight selected references (ref. USER 969 10 June 1981). The Ohio State University, The National Center for Research in Vocational Education, Columbus, Ohio, 1981.

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Modules

Instructional Modules for Vocational Education. Occupational Title: Machinist. Bureau of Vocational Education, State Department of Education and Department of Vocational Education, College of Education, University of Kentucky.

Modules Provided as Samples:

- Module MS-1A Sketching and Dimensioning
- MS-2 Measuring With The Machinist's Scale
- MS-13 Laying out the Work Piece
- MS-14 Cutting and Filing Metal Stock By Hand
- MS-16 Threading With Taps and Dies
- MS-18 Identifying Basic Layout Tools
- MS-19 Maintaining the Lathe
- MS-21 Facing on the Lathe
- MS-22 Turning on the Lathe
- MS-23 Drilling and Reaming on the Lathe
- MS-47 Performing End Mill Operations
- MS-49 Milling Key-Seats
- MS-56 Milling an Angle

Document Abstracts

ED 061 308
Electronics Mechanic

ED 063 387
Construction-Equipment Mechanic

ED 069 632
Machinery Erector

ED 072 047
Structural Steel Lay-out Man

(A test development program of validating USTES Aptitude Test Battery against many occupations. A description of the validation samples and a personnel evaluation form included.)

Monograph

Condensed Version of the Taxonomy of Educational Objectives (Cognitive Domain) From: Taxonomy of Educational Objectives, Benjamin S. Bloom, Editor, David McKay, Publishing Company, New York.

Report submitted by Dr. Ralph O'Brien - Short-term Consultant.