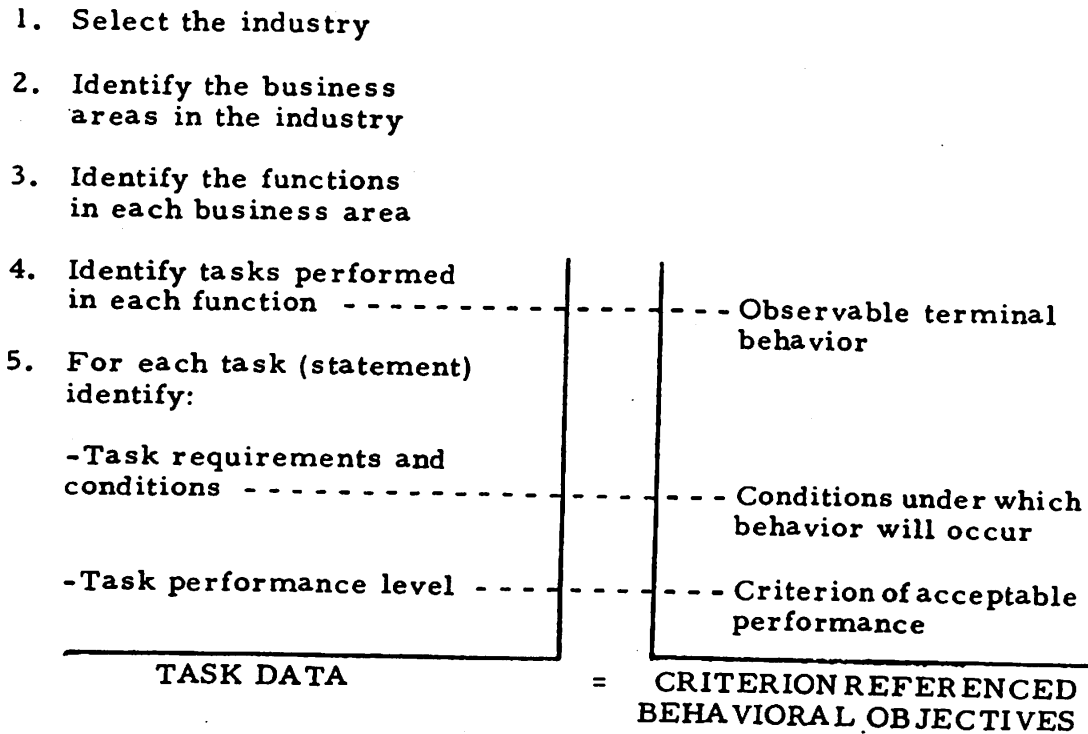


THE FUNCTIONS-TASK ANALYSIS METHOD OF DETERMINING
 BEHAVIORAL OBJECTIVES FOR OCCUPATIONAL
 EDUCATION

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FUNCTIONS-TASK ANALYSIS PROCESS



Criterion referenced behavioral objectives are now widely used in occupational education. Areas where this change to measurable objectives may be found range from state plans for occupational education, through occupational programs in public schools where student progress is measured in terms of objectives met, to performance contracts with the private sector where payment is contingent upon students achieving specified behavioral objectives. Criterion referenced objectives now provide the basis for accountability long sought for education.

However, in order for any objective to be of value it must be relevant as well as measurable. In occupational education--indeed, in all education as the career education models are implemented, objectives should be based on the knowledges, skills, and abilities needed by persons for successful and satisfying careers in the world of work. The task data developed through the functions-task analysis approach can provide criterion-referenced behavioral objectives relevant to worker competencies required in business and industry.

The functions-task analysis model described in this article was developed through a study of the ornamental horticulture industry in New York State. The study was jointly sponsored by the New York State Department of Labor, Division of Employment, and the New York State College of Agriculture and Life Sciences at Cornell University. Examples used throughout the article will relate to the ornamental horticulture industry.

THE FUNCTIONS-TASK ANALYSIS PROCESS

The functions-task analysis process involves a total industry analysis consisting of five major steps:

1. Select the industry. Example, the ornamental horticulture industry.
2. Identify the business areas in the industry. Retail florists and greenhouse production are examples of business areas in horticulture.
3. Identify the functions in each business area. Examples of functions in the nursery production are sales, propagation, and management.
4. Identify tasks performed in each function. In the sales function an example of a task statement is "taking orders for sales or service by telephone" and "ball and burlap roots of trees and shrubs" is a task under the harvesting function.
5. For each task statement identify:
 - a. Task requirements and conditions. The requirements for task performance include strength, type of physical activity (e.g. sight, talking, climbing), supervision level and extent of association with other workers. Working conditions include location, temperature, noise, and hazards involved.

- b. Task performance level. Examples of performance measures are units/hours specific industry standards, and employer or customer satisfaction for tasks involving aesthetics or interpersonal relationships.

The task statements together with the task requirements and conditions and the task performance level make up the task data. As illustrated on the diagram of the functions-task analysis process, the task data contains the three elements necessary for stating criterion referenced behavioral objectives. Thus, relevant behavioral objectives for occupational education are direct output of the functions-task analysis process.

In the sections that follow, the major steps of the functions-task analysis process are described in greater detail.

Selection of the Industry

The industry to be analyzed is selected on the basis of three criterion: (1) overall importance in terms of job opportunities; (2) the current supply of trained workers; and (3) the availability of relevant objectives upon which to base needed programs of occupational education.

Identification of Business Areas in an Industry

A business area is defined as any group of businesses having characteristics which separate them from other businesses in the same industry. For example, retail florists and nursery production are two business areas in the horticulture industry. Criteria for identification of business areas include existence of specialized economic units, similar products and services, trade organizations representing the area and classification code.¹

Identification of Functions in Each Business Area

The functions performed in business areas are defined as a process involving closely related tasks within a single business area which is essential for the success of the industry. Some examples of functions are sales, service, management, design, and propagation. Experts in the field may be used to validate functions identified. Another check is if tasks can logically be clustered under the functions identified.

Identification of Task Data

Task data contains three elements: (1) the task statement; (2) conditions and requirements for task performance; and (3) the acceptable level of task performance.

A task is defined as any group of activities performed at about the same time or in close sequence, and sharing a common work objective.² Task requirements include equipment used, lifting and physical activities required, and extent of supervision and association with other workers. Conditions for task performance are the situational factors of location, noise, heat, fumes, and hazards.

The acceptable level of proficiency includes both the quantitative (how many) and qualitative (how well) aspects. Where industry standards exist, production per unit time is easily defined. A similar situation exists where industry standards prescribe the qualitative criteria (the greenhouse temperature for example). In cases where standards for task proficiency are varied and/or subjective e. g. designing a corsage or a landscape plan, the evaluation is limited to employer or customer satisfaction.

The identification of task data is accomplished in two steps: (1) compilation of an initial list of task statements; and (2) final employer identification of task requirements and conditions, and performance levels. The initial list of task statements is compiled through consultation with industry experts and reference to the U.S. Department of Labor Dictionary of Occupational Titles. Previous studies and curriculum guides provide further clues to identification of tasks. As the list of task statements is compiled, tasks are classified under the function to which performance of the task contributes. The initial task list should be comprehensive and stated in the language of the industry.

In the second step, a representative sample of industry employers in each business area provide task data by selecting from a list of responses on a survey instrument. This step is crucial to identification of data relevant to the industry. A representative sample of employers can be obtained by selection from each geographical area where firms of a business area are concentrated. Employers selected for interview within concentration areas are chosen on the basis of a large number of employees and up-to-date business practices as judged by industry experts. Personal interviews are most appropriate for employer interviews to identify task data as this method provides 100 percent response and the opportunity to fully explain identification objectives and procedures.

Summary and analysis of task data are most easily done through use of a computer. Calculation of the model employer response provides a consensus representing the majority of employment situations in which tasks would be performed.

Task Data as Behavioral Objectives

Task data includes the three elements³ necessary for stating criterion referenced behavioral objectives. The observable terminal behavior is provided by the task statement. The conditions under which the terminal behavior is to occur is determined by the requirements and conditions for performance of the task. The acceptable level of performance which serves as the evaluation criterion for the objective is supplied by the task proficiency level. Thus, it becomes apparent that task data can readily be translated directly into relevant criterion referenced behavioral objectives for a wide range of occupational education programs.

In public and private occupational programs, vocational and technical level curriculum may be developed or updated. Employee in-service and on-job training can be organized to meet the desired objectives and a basis for negotiating performance contracts with private agencies is provided.

Behavioral objectives from task data can readily be updated by advisory groups. Representatives from business and industry can be used to identify the objectives relevant to employment opportunities and requirements in their respective occupational areas. Continuing use of qualified advisory groups is necessary for relevant occupational education programs and the comprehensive nature of the behavioral objective output from functions-task analysis facilitates this step.

Recruiting Workers by Task Data

Task data has considerable potential for matching worker qualification with job requirements. In the future, employers may recruit workers in terms of tasks to be performed rather than by job title. This could provide both prospective employees and recruitment agency personnel with a realistic picture of the qualifications desired by employers. The employee job satisfaction and retention results could well be considerably improved by employees clearly understanding before employment the kind of tasks involved in the job.

The use of task data as measurable behavioral objectives in occupational education programs allow reports of student achievement to be in terms of objectives met rather than by traditional letter grades. With employer recruitment also based on task data, worker qualifications could readily be matched with jobs requirements.

Using Task Data in Career Counseling

Task data by industry can be a valuable resource for career information counseling at all levels. Both the counselor and the counselee are provided with a comprehensive and realistic picture of the kind of work performed in the various industries. This knowledge allows counselors to counsel effectively in a wide range of occupations and prospective workers to make career choices based on the real world of work.

Task data found to be common to more than one industry can be used in guiding persons for career options in broad occupational clusters. This "core" data may also be useful in the awareness and exploration phases of career education. For students preparing for specific occupations in the local area, employer advisory groups can readily be used to identify the tasks that entry level workers would be required to perform.

Summary

Functions-task analysis of an industry involves identification of business areas, functions, and data on tasks performed to fulfill the functions. The task data identified can then serve as criterion referenced behavioral objectives for occupational education programs. Task data also serve as a valuable source of information in career counseling and may readily be updated and/or modified to local employment conditions by employer advisory groups. Recruitment of workers based on tasks rather than job titles may be another use for task data.

FOOTNOTES

¹Office of Statistical Standards, Standard Industrial Classification Manual, Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 1967, 615 pages.

²Raymond M. Clark and Donald O. Meaders. Function Approach to Identifying Curricular Content Approach to Vocational-Technical Education Programs. College of Education, Michigan State University, 1968, p. 1.

³Robert F. Mager, Preparing Instructional Objectives, Palo Alto, California 94306, Fearon Publishers, Inc., 1962, p. 12.