THE DERIVATION OF LEARNING HIERARCHIES AND INSTRUCTIONAL OBJECTIVES IN ACCOUNTING WITH IMPLICATIONS FOR DEVELOPING INSTRUCTIONAL SYSTEMS FOR POST-HIGH SCHOOL PROGRAMS

Thesis for the Degree of Ph. D.
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PETER KIMON PETRO
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This is to certify that the

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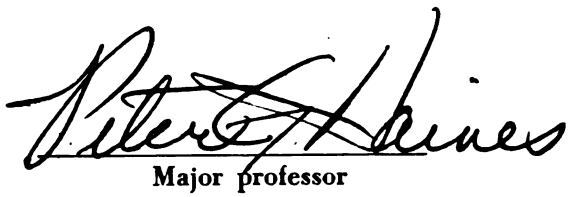
presented by

Peter Kimon Petro

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Education



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ABSTRACT

THE DERIVATION OF LEARNING HIERARCHIES AND INSTRUCTIONAL OBJECTIVES IN ACCOUNTING WITH IMPLICATIONS FOR DEVELOPING INSTRUCTIONAL SYSTEMS FOR POST-HIGH SCHOOL PROGRAMS

by Peter Kimon Petro

The problem in this study was to derive a set of instructional objectives for education in technical accounting which could provide the basis for designing the learning structures of instructional programs for prospective accounting technicians. More specifically, this investigation attempted: (1) the demonstration of the feasibility of a given model for the derivation of instructional objectives of technical accounting programs, and (2) the establishment of a set of instructional objectives which describe desired terminal student behavior and which would be suggestive of appropriate learning sequences for the fulfillment of the specific objectives of technical accounting programs.

Procedures

Data regarding accounting activities performed by accounting technicians was obtained by reviewing a recent study. The set of thirty-five accounting activities selected was considered to be representative of the larger set of technical accounting activities identified by this recent study.

The procedure for the derivation of instructional objectives for technical accounting programs included the following sequence of steps: (1) re-writing of each of the accounting activities in terms of the specific activity performed by the accounting technicians and the analysis of each accounting activity into concepts, skills, and operations; (2) construction

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of flow diagrams which established the inter-relationships of the component concepts, skills, and operations of each accounting activity, as well as the relationship of these component concepts, skills, and operations to Gagné's hierarchical categories of learning tasks; (3) writing of instructional objectives based on the flow diagrams of each of the accounting activities.

Verification of the usefulness of the derived instructional objectives involved asking a jury panel of post-high school accounting instructors to determine whether the instructional objectives were stated in a manner as to be suggestive of instructional activities or experiences which might lead to the accomplishment of the student behavior described by the objectives.

Conclusions

1. The given model for deriving instructional objectives is operational, and the procedures specified by the model can be implemented by an individual researcher.

2. The operational step of the model described as "fractionating" is a crucial and significant stage in the objectives-deriving model as implemented in this study because it permits the inclusion of data regarding definitions, purposes and uses, operations, and skills about each accounting activity from a variety of texts, documents, and related research.

3. Relating the component concepts, definitions, purposes and uses, operations, and skills of each accounting activity performed by accounting technicians to the Gagné hierarchical categories of learning tasks does help to distinguish the inter-relationships and interdependence among these components. These components can then be ordered into sequences consisting of underlying concepts, principles, and higher-order principles.

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4. The construction of flow diagrams for each job activity performed by accounting technicians permits the illustration of the hierarchy of concepts and principles comprising the job activity and facilitates the hierarchical ordering of the instructional objectives derived for each job activity.

5. Reference to the Mager criteria for deriving valid and useful instructional objectives enables the researcher to focus on defining and describing the behavior that accounting technicians should be capable of demonstrating upon completion of instruction.

6. Statements which describe job requirements of accounting technicians can serve as the basis for deriving instructional objectives which, in turn, can accurately specify the behavior a student should be capable of demonstrating in the classroom to meet the requirements of the job.

7. The derived instructional objectives which describe desired student behavior are suggestive of appropriate sequences for the learning structures comprising the instructional program for accounting technicians.

Educational Implications

A tentative plan for the use and application of the research procedure and findings of this study suggested the following: (1) a research model useful to occupational educators for the development of instructional structures; (2) development of teaching aids; (3) developing auto-tutorial and programmed instructional materials; (4) developing individualized instructional sequences and providing for advanced placement of students in accounting course sequences; and (5) construction of evaluative devices.

THE DERIVATION OF LEARNING HIERARCHIES AND INSTRUCTIONAL OBJECTIVES IN ACCOUNTING WITH IMPLICATIONS FOR DEVELOPING INSTRUCTIONAL SYSTEMS FOR POST-HIGH SCHOOL PROGRAMS

by

Peter Kimon Petro

A THESIS

Submitted to
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College of Education

1969

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ACKNOWLEDGMENTS

The author wishes to express his sincere gratitude to the individuals who offered assistance and contributed to the completion of this dissertation.

The author is indebted to Dr. Peter G. Haines, chairman of the doctoral committee and director of this investigation, for giving generously of his time and assistance, as well as his guidance in the formulation and completion of this study. The author wishes to acknowledge the valuable assistance and suggestions for improvement contributed by Dr. Ted Ward, Dr. Gardner Jones, and Dr. Max Raines.

I wish to thank the jury panel of colleagues for their counsel and cooperation in reviewing the findings of this study.

To my wife, Patricia, go those words of feeling for her understanding nature and patience, and for her love and words of encouragement without which the entire doctoral program and this dissertation would not have been completed.

A special word of thanks goes to my children who had to endure a part-time father and forego many things a father would normally have done with his children.

Finally, I offer my gratitude to my parents for having started me on this path.

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CHAPTER I

THE PROBLEM OF THE STUDY

STATEMENT OF THE PROBLEM

The problem in this study was to derive a set of instructional objectives for education in technical accounting which could provide the basis for designing the learning structures of instructional programs for prospective accounting technicians. Technical accounting programs are defined as those curricula offered within post-high school educational institutions intended to lead to direct employment as a technical accountant.[1]

This study was motivated by a series of instructional movements and developments which have their origin in the concepts expressed nearly three decades ago by Tyler and his associates who advocated the specification of the goals of education in terms that would be meaningful to the classroom teacher.[2] The basic notion of this behavioral approach is that by specifying the expected outcomes of the instructional process in terms of what the student should be capable of doing upon the completion of instruction, the

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[1]A technical accountant is referred to as one who performs accounting-type activities for which training in accounting beyond high school is a requisite, but for which a baccalaureate degree in accounting is not a prerequisite for employment. The activities are those usually included in the accounting cycle that deal with computing, recording, summarizing, classifying, and reporting accounting information such as: computing costs, payroll, etc.; recording information in ledgers and books of original entry; analyzing accounts such as receivables, payables, cost, etc.; classifying information for easy retrieval; and making such financial statements as the balance sheet, income statement, schedules, division of capital, funds statement, etc.

[2]Harry L. Ammerman and William H. Melching, The Derivation, Analysis and Classification of Instructional Objectives, (HumRRO Technical Report 66-4, 1966), p. 13.

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teacher is provided with a goal-setting situation and the focus for attaining the goal as well as gaining insights on evaluating student performance. As Lindvall states:

> ". . .statements of the purposes of education are truly meaningful only when they are made so specific as to tell what a pupil is to do after he has had a given learning experience. Such statements are rather typically referred to as specific instructional objectives. Logically they may be considered as being derived from the broader and more general statements of 'purpose' or 'philosophy'."[1]

One of the more recent movements which was influenced by this behavioral approach was concerned with establishing procedures for describing and analyzing job tasks. This system evolved from the need of the military services to train men to operate and maintain large and complex military weapons systems. Under the sponsorship of the United States Department of Defense, Smith and others have proposed models for the development of instructional systems based on concepts of systems analysis.[2] Another of the recent movements concerns the concept of programmed instruction which made very clear the need to provide specific guidance on the specification of instructional objectives.[3, 4] In addition to the educational developments cited above, the studies[5, 6] conducted by Bloom and Krathwohl and their colleagues and

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[1]C. M. Lindvall (ed.), Defining Educational Objectives (University of Pittsburgh Press, Pittsburgh, Pennsylvania, 1964), p. 3.

[2]Robert G. Smith, Jr., The Design of Instructional Systems (HumRRO Technical Report 66-18, 1966).

[3]James E. Espich and Bill Williams, Developing Programmed Instructional Materials (Palo Alto, California: Fearon Publishers, 1967).

[4]Robert F. Mager, Preparing Instructional Objectives (Palo Alto, California: Fearon Publishers, 1962).

[5]Benjamin S. Bloom (ed.), Taxonomy of Educational Objectives, The Classification of Educational Goals, Handbook I, Cognitive Domain (New York, New York: David McKay Company, Inc., 1956).

[6]David R. Krathwohl, Benjamin S. Bloom, and Bertram B. Masia (editors), Taxonomy of Educational Objectives, The Classification of Educational Goals, Handbook II: Affective Domain (New York: David McKay Company, Inc., 1964).

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[3]Lawrence M.
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[4]Ibid.

the learning system proposed by Gagné[1] strongly influenced the problem of this study.

During the past year, a model[2] for the derivation of instructional objectives for selected areas of office and distributive education was proposed and described. It was the intent of the authors of this objectives-deriving model to combine the best features of a variety of procedurally distinct approaches for deriving instructional objectives. This model provides the vehicle by which to structure the solution of the problem of this study.

In a study[3] completed in 1967, Ozzello analyzed accounting activities performed by technical accountants and developed a set of "evaluative criteria"[4] which could be used to evaluate or determine content of technical accounting programs. The Ozzello study established a comprehensive inventory of the component knowledges, skills, and aptitudes which defines the work performance situation of the accounting technician.

DEFINITION OF TERMS

Accounting-type Activities. Refers to those normal accounting duties required to complete the established accounting cycle and its related functions. It does not include such tasks as: answering the telephone, filing

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[1]Robert M. Gagné, The Conditions of Learning (New York: Holt, Rinehart and Winston, Inc., 1965).

[2]Peter G. Haines, Ted Ward and Jeanne Hollingsworth, "The Development of a Model for Vocational Objectives Derivation Based Upon Occupational Demand," (Research Proposal, College of Education, Michigan State University, East Lansing, 1968)

[3]Lawrence M. Ozzello, "An Analysis of Accounting-Type Activities Performed by Technical Accountants in Firms Manufacturing Durable Goods With Implications for Evaluation of Post-High School Terminal Accounting Programs," (Unpublished Ph.D. dissertation, Michigan State University, East Lansing, 1967)

[4]Ibid., pp. 125-130.

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[1]Ibid., p.

[2]Bloom, op.

[3]Ibid., p.

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data, running errands, attending meetings, human relations, and so forth, that technical accountants may at times perform.[1]

Affective Domain. Includes objectives which describe changes in interest, attitudes, and values, and the development of appreciations and adequate adjustment.[2]

Cognitive Domain. Includes those objectives which deal with the recall or recognition of knowledge and the development of intellectual abilities and skills. Cognitive reactions also refer to solving an intellectual task by determining the problem and rearranging material with ideas, methods and procedures known to the learner. Cognitive behavior may be simple recall or synthesizing new ideas into original combinations in creative ways. This is the domain in which most of the work in curriculum development has taken place and where the clearest definitions of objectives are to be found phrased as descriptions of student behavior.[3]

Community College. An educational institution offering instruction for persons beyond the age of the normal secondary school pupil, in a program geared to the needs and interests of the local level. It is further defined as a post-high school educational institution offering a two-year program either of a terminal nature or as a preparation for further training in a college or university.[4]

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[1] Ibid., p. 9.

[2] Bloom, op. cit., p. 7.

[3] Ibid., p. 7.

[4] Carter V. Good (ed.), Dictionary of Education, Second edition, (New York: McGraw-Hill Company, 1959), pp. 108, 305.

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[1]Ozzello, op

[2]Mager, op.

[3]Ibid., p. 5

[4]Haines, op.

Durable Goods. Those goods and materials that are somewhat permanent in structure and depreciate over a period of years. They are primarily metal and wood products. They do not include fabrics or chemical substances.[1]

Enabling Objectives. Used interchangeably with "Instructional Objectives." (See "Instructional Objectives.")

Input Demand Data. Refers to the selected set of evaluative criteria developed by the Ozzello study, as well as statements regarding specific task performances of technical accountants as reported in recent studies and research, and general descriptive information regarding the nature of technical instructional programs at the post-high school level as found in professional literature.

Instructional Objectives. Refers to ". . .statements that describe intended outcomes of instruction."[2] Furthermore, such statements communicate the instructional intent in that they describe what the learner will be doing when demonstrating his achievement, and how those in charge of the instructional program will know that the learner is demonstrating the intended behavior.[3] Finally, an instructional objective, ". . .denotes a specific focus to the extent that a knowledgeable practitioner can see implicit in it one or more instructional procedures which could be designed and evaluated in terms of pupil learning."[4]

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[1]Ozzello, op. cit., p. 10.

[2]Mager, op. cit., p. 43.

[3]Ibid., p. 53.

[4]Haines, op. cit., p. 13.

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[1]Gilbert G. W

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[2]Bloom, op. c

Job Analysis. A detailed listing of duties, operations, and skills necessary to perform a clearly defined, specific job, organized into a logical sequence which may be used for teaching, employment, or classification purposes.[1]

Post-High School. A level of education beyond high school but less than a baccalaureate degree.

Psychomotor Domain. The educational objectives domain having to do with physical, muscular, or motor skills. Reactions in this area require the manipulation of materials and objects and deal mainly with neuromuscular coordination and activity.[2]

Task Demand Statement. Refers to the individual accounting-type activities identified by the Ozzello study. These statements represent the terminal behavior, or performance, that an accounting technician should be capable of demonstrating upon completion of instruction.

Taxonomically Classified Instructional Objectives. Refers to the classification of instructional objectives within the broad descriptions of the cognitive, affective, and psychomotor domains.

Technical Accountant. (Used interchangeably with Accounting Technician) One who performs accounting-type activities for which training in accounting beyond high school is a requisite, but for which a baccalaureate degree in accounting is not a prerequisite for employment. The activities were those usually included in the accounting cycle that dealt with computing, recording, summarizing, classifying, and reporting accounting information such as: computing costs, payroll, etc.; recording information in ledgers and books

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[1]Gilbert G. Weaver, (Chairman), Definition of Terms in Vocational Education (American Vocational Association, 1964), p. 16.

[2]Bloom, op. cit., p. 7.

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Technical Accounting Curricula or Programs. Refers to the program or programs offered within a post-high school educational institution which could lead to direct employment as a technical accountant.

Tri-County Area. Refers to three counties in Michigan (Clinton, Eaton and Ingham) that are the primary service areas of the Lansing post-high school educational institutions. This was the area surveyed by the Ozzello study.

Vocational Guidance. The process of assisting individuals to understand their capabilities and interests and to choose a suitable vocation.[2]

DESIRED OUTCOMES

The major outcomes desired from this study were:

1. The demonstration of the feasibility of a given model for the derivation of instructional objectives of technical accounting programs.

2. The establishment of a set of instructional objectives which describe desired student behavior and which would be suggestive of appropriate learning sequences for the fulfillment of the specific objectives of technical accounting programs.

Closely related to these two main desired outcomes of this study were the following secondary objectives :

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[1]Ozzello, op. cit., p. 12.

[2]Weaver, op. cit., p. 14.

1. To provide the basis for (a) guiding student progress toward achieving the behaviors specified by the instructional objectives, (b) evaluating student achievement of the instructional intent, and (c) evaluating the appropriateness and effectiveness of the instructional systems.

2. To provide the basis for the organization of courses for the preparation of accounting technicians and for the development of instructional materials that could be used for these courses.

3. To provide the basis for the preparation of data descriptive of the work of the accounting technician which could be used for the guidance and vocational counseling of individuals regarding the technical accounting area.

ASSUMPTIONS

This study was built on the assumption that the selected set of "evaluative criteria"[1] developed by the Ozzello study can serve as the source of input demand data for the derivation of instructional objectives for technical accounting programs. This research represented activities performed by accounting technicians in firms manufacturing durable goods in the Lansing (Michigan) Tri-county area.[2] It is assumed that there are other limited sources of data descriptive of the work of accounting technicians which could be similarly useful. However, in the absence of better defined data, the Ozzello list is assumed to be the most worthwhile for the purposes of this study.

It is also assumed that the model as described and proposed in the research project entitled, "The Development of a Model for Vocational Objectives Derivation Based on Occupational Demand,"[3] can serve as the objectives-deriving procedure.

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[1] Ibid., pp. 125-130.

[2] Refers to three counties in Michigan (Clinton, Eaton, and Ingham).

[3] Haines, op. cit.

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Finally, it is assumed that the derivation of instructional objectives which are relevant to the nature of the tasks performed by accounting technicians is the first step in determining the appropriate sequences for the learning structures of instructional programs for accounting technicians.

LIMITATIONS OF THE PROBLEM

The following constraints were imposed in this study:

Programs. This study deals with the derivation of a set of instructional objectives which could be used to assist in the development, implementation, and evaluation of instructional structures for technical accounting programs at the post-high school level. It does not include the development of instructional structures and aids for technical accounting programs.

Input Demand Data. The demand data used in this study is limited to a selected set of thirty-five (35) accounting activities obtained from the "evaluative criteria" list included in the Ozzello study.

Data relevant to general needs and demands of the world of work and the worker are not considered in this study.

Procedure. The procedures for deriving instructional objectives for this study are limited to those specified and described by the Haines, Ward, and Hollingsworth objectives-deriving model.

Instructional Objectives. This study is concerned only with the derivation of instructional objectives that could be classified within the cognitive domain as defined by the Bloom-Krathwohl taxonomies.

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[1]Clyde E
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[2]Ibid., p

[3]Norman
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NEED FOR THE STUDY

The role and responsibility for the education of technicians by community colleges and other post-high school educational institutions has undergone a significant reappraisal in view of the rapid technological changes that have occurred in business and industry and the increased sophistication and complexity of occupations at all levels. Blocker, Plummer and Richardson noted that it is in the area of technical training, ". . .that the opportunity so manifestly exists for the two-year college to make its unique contribution."[1]

The Need for Accounting Technicians

The need for technical manpower is well documented. Among the many projections for this need is an estimate that 700,000 new technicians will be needed in the decade 1960-1970.[2] Harris noted that there will be an annual need of some 25,000 new workers who possess technical and semi-professional competencies in the office occupations, a category which generally includes the accounting occupational grouping.[3] In the 1966-1967 edition of the Occupational Outlook Handbook, it was stated that the need for accounting and bookkeeping clerks is expected to exceed 75,000 each year as new jobs are created and replacements are needed for employees who

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[1]Clyde E. Blocker, Robert H. Plummer and Richard D. Richardson, Jr., The Two-Year College: A Social Synthesis (Englewood Cliffs: Prentice-Hall, Inc., 1965).

[2]Ibid., p. 215.

[3]Norman C. Harris, Technical Education in the Junior College, New Programs for New Jobs (Washington, D. C., American Association of Junior Colleges, 1964).

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[2]Ozzello, op.

[3]Clyde E. Bloc
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retire or stop working for other reasons.[1] One of the findings of the Ozzello study was that there was an anticipated need for an additional 208 technical accountants in tri-county firms manufacturing durable goods during the period ending in 1970, and that this need represented an increase or replacement of 94 per cent of that part of the work force.[2]

There is a paucity of data regarding enrollments in post-high school accounting classes, the number of technical accounting programs at this level of higher education, and particularly, the number of graduates of terminal accounting programs. However, it is possible to extrapolate the significant position of accounting courses in the two-year colleges by examining available statistics on national enrollments in two-year colleges, choices of major field of study made by entering freshmen, and national patterns of enrollments in occupational programs versus transfer programs in two-year colleges.

National statistics indicate that in the year 1965, 1,176,000 students were enrolled in two-year colleges which represents 20 per cent of the total U. S. enrollments in higher education.[3] Medsker observed that because only about a third of the entering students later transferred to four-year colleges and universities, the two-year college constituted the last full-time formal education for nearly two-thirds of this student group.[4] In a recent article concerned with the characteristics of junior college students,

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[1]U.S. Department of Labor, Occupational Outlook Handbook (Bulletin No. 1450, Bureau of Labor Statistics, Washington, D. C.: Government Printing Office, 1966).

[2]Ozzello, op. cit., p. 140.

[3]Clyde E. Blocker, "Purposes, Growth, and Transition of the Community College," National Business Education Quarterly, NABTE Bulletin 87, (December, 1967), p. 5.

[4]Leland L. Medsker, The Junior College: Progress and Prospect, (New York: McGraw-Hill Book Company, 1960), p. 24.

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Raines commented on the popularity of the field of business in relation to other fields of concentration. Twenty-three per cent of the entering freshman group in 1966 indicated business as their choice for major based on A. C. E. student profile data.[1] Based on the data cited above, it is conceivable that annually approximately 180,000 students may enroll in some accounting or sequence of courses. This assertion is based on the well-established belief of the need for some degree of exposure to accounting principles and terminology on the part of all students preparing for a career in the business world.

The Accounting Curriculum in the Community College

The accounting curriculum in community colleges and other post-high school institutions has, by tradition, been patterned after the requirements of a professional program in accounting leading to the baccalaureate degree. This pattern of development is due to several reasons. One reason is that the transfer function of the two-year college has tended to dominate the curricular offerings of the institution.[2] Therefore, because transferability of credit to a senior institution has been of prime importance, the accounting sequences have tended to be identical to those of the four-year institution. Another reason for this pattern could be due to the domination of the certification requirements of the field of public accounting which require a rather traditional sequence of accounting courses. Generally, if an individual wishes to prepare himself to enter directly into the world of

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[1]Max R. Raines, "Characteristics of Junior College Students," National Business Education Quarterly, NABTE Bulletin 87 (December, 1967), p. 16.

[2]Medsker, op. cit., p. 112.

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work as a bookkeeper, a high school bookkeeping sequence, enrollment in an accounting correspondence course, or several accounting courses at a two-year college have satisfied the employment requirements of the employers.

It appears that the increased use of automated equipment and the emphasis toward a post-high school education have contributed to significant shifts in the employment of accounting-type personnel.[1] There now appears to be emerging a level of employment in accounting that requires more preparation in accounting than the typical high school bookkeeping sequence offers but less concentration than that of a program leading to a baccalaureate degree. Furthermore, it appears that this intermediate level of preparation in accounting requires a relatively high level of technical knowledge and skill in application.[2] The term that best describes this type of specialized occupational education is technical education.

Technical Education and the Need for Defining Instructional Objectives

Blocker, Plummer and Richardson have described the characteristics of technical education programs succinctly when they stated:

1. The curriculum must be related closely to the requirements for skill, knowledges, and understandings of the occupation or a group of occupations.

2. Neither the traditional lower-division university curriculum nor the usual vocational-industrial curriculum is adequate in content or objective.

3. Nature, content, methods of instruction, and purposes of a technical curriculum should seldom, if ever, exactly follow lower-division pre-professional curriculum patterns.

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[1] Ozzello, op. cit., p. 2.

[2] Ibid., p. 7.

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[3]Ibid., p

4. The curriculum should be primarily occupation-centered. Transfer value should be of secondary importance. The technical curricula should be designed and conducted as ends in themselves.

5. Achievement levels and content should be based on job requirements rather than on a specified number of units and courses.[1]

In view of the apparent occupational trends cited above, and because of the need to structure technical education programs of instruction in terms of the realities of the occupation, it appears that there is a need for an evaluation of the objectives of accounting programs for terminal students at community colleges and other post-high school institutions. The determination and specification of the objectives of an instructional program is generally recognized to be a required first step in the total effort of designing instructional programs to ensure the appropriate and effective management of all aspects of the learning experiences.

Ammerman and Melching in their study of existing methods for the derivation and classification of instructional objectives distinguished between three general categories of student performance objectives--general, terminal, and enabling objectives.[2] They concluded that:

> It is most important to identify meaningful units of performance as prerequisites for stating terminal student performance objectives. This identification establishes a valid foundation for the determination of the necessary enabling objectives and for the organization and design of appropriate learning experiences.[3]

Identifying meaningful units of performance is an essential and required preparatory phase in the development of instructional objectives.

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[1]Blocker, Plummer and Richardson, op. cit., pp. 216-217.

[2]Ammerman, op. cit., p. 37.

[3]Ibid., p. 38.

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Mager and Beach stated that, "Course objectives are derived primarily from job and task analysis information. . ."[1] It seems reasonable to assume, therefore, that educators involved in designing and developing instructional systems for occupational curricula and courses should attempt to define the work performance situations for which students are being prepared to perform effectively after instruction. The definition of the work performance situation is a crucial step in the derivation of valid instructional objectives based on occupational reality for it is this definition that establishes the basis for identifying the important behaviors and standards of performance of the occupation.[2]

Ozzello concluded in his study that there existed an accounting position described as that of a technical accountant, that there is a great enough need to warrant an educational program in the Tri-county area for the training of technical accountants, and that a profile of identifiable accounting-type activities performed by technical accountants is potentially useful as a guide in the determination of content for terminal accounting courses. The study recommended that the list of "evaluative criteria" could be used to assist in the establishment of teaching goals for technical accounting courses.[3]

Gagné states that, "The most important condition of learning is the specification of what must have been previously learned. . .it becomes

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[1]Robert F. Mager and Kenneth M. Beach, Jr., Developing Vocational Objectives (Palo Alto, California: Fearon Publishers, 1967), p. 4.

[2]Ammerman, op. cit., p. 3.

[3]Ozzello, op. cit., p. 156.

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[2]Ozzello,

possible to work backward from any given objective of learning to determine the prerequisites."[1]

It is hoped that this study will contribute to the evaluation of existing accounting programs in community colleges and post-high school institutions, and will assist in the critical evaluation of the content of accounting courses and the preparation of instructional materials for technical accounting courses. In a post script to his study, Ozzello stated, ". . .much of that which is now normally taught from collegiate textbooks could be eliminated or altered."[2]

CONCLUDING STATEMENT

The material presented in this chapter was primarily background information considered necessary for understanding the remaining sections of the study. The chapter included the problem to be studied, the purpose of the study, the assumptions and justification of the study, and definitions of terms used in the study. Chapter II, which follows, reviews the literature and research which were considered pertinent to this study.

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[1]Gagné, op. cit., pp. 172-173.

[2]Ozzello, op. cit., p. 159.

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CHAPTER II

A REVIEW OF RELATED RESEARCH AND ASSOCIATED CONCEPTS

Chapter II is divided into two parts corresponding with the sources of research and literature underlying the purpose of this study--the derivation of a set of instructional objectives for education in technical accounting. The first part consists of a review of research and literature descriptive of the job activities performed by accounting technicians. The second part of this chapter includes a review of the literature and associated concepts which form the foundation for the objectives-deriving model demonstrated in this study.

JOB ACTIVITIES OF ACCOUNTING TECHNICIANS

The Ozzello Study

A preliminary step in deriving meaningful and useful instructional objectives is the identification of the work performance requirements of an occupation. The work performance requirements of accounting technicians were identified in a study completed recently by Ozzello. In this study, Ozzello established a list of 250 accounting-type activities which were based on a review of current texts, references, and dissertations which could be taught during the first two years of a post-high school accounting program. Data regarding these accounting-type activities performed by accounting technicians was obtained through personal interviews with ninety-nine randomly selected accounting technicians classified by their supervisors as: (1) employed full-time as technical accountants for which some post-high school education was necessary but for which a baccalaureate degree was not

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[1] Ozzell

[2] Ibid.

[3] Ibid.

a prerequisite; (2) having been employed as a technical accountant a minimum of one year; and (3) promotable.[1]

An analysis of the responses from the interviews was conducted to determine the proportion of accounting technicians performing each activity and how often they were performed in total and by size of firm. An "evaluative criteria" list of 170 accounting-type activities was established from the original group of 250 activities based on the following four analyses: (1) proportion performing each activity; (2) rank order by performance of the activities; (3) frequency of performance for each activity; and (4) the universality of performance of each activity by accounting technicians in all size of firm categories.[2]

The accounting-type activities included in the "evaluative criteria" list had these characteristics:

1. Were performed by more than one out of eight accounting technicians interviewed.
2. Ranked in the top 50 per cent by proportion performed.
3. Performed in all firm size categories.
4. Were given preferential treatment when performed primarily in medium-sized firms of 100 to 749 employees.

Some of the 250 accounting-type activities were not included on the "evaluative criteria" list because of the following reasons:

1. They were performed infrequently--quarterly, semi-annually, annually.
2. They were performed by less than one out of eight accounting technicians.
3. They were performed primarily in either firms having less than 100 or more than 750 employees.[3]

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[1] Ozzello, op. cit., p. 33.

[2] Ibid., p. 41.

[3] Ibid., p. 134.

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[1] Ibid.

[2] Ibid.

Utility of the "Evaluative Criteria" List. One of the purposes of the Ozzello study was to show how data could be selected from a list of job activities to form a set of criteria that could be utilized to assist in the evaluation of the content in the accounting courses of a post-high school terminal accounting program.[1]

Listed among the educational implications of the "evaluative criteria" list cited above was that of using this list to assist those involved with the planning of technical accounting programs in post-high school institutions in the establishing of teaching goals or objectives.[2] This list of accounting-type activities was utilized in this study as the source of demand data in the model for the derivation of instructional objectives for technical accounting programs.

Related Conclusions and Recommendations. Additional conclusions and recommendations made by Ozzello which were relevant to this study are:

1. A profile of the identifiable accounting-type activities performed most often by technical accountants in tri-county firms manufacturing durable goods is potentially useful as a guide in the determination of content for terminal accounting courses designed for initial training, in-service training, or upgrading of technical accounting employees for firms manufacturing durable goods.

2. The technical accountant does perform some activities which have been considered duties of a bookkeeper as well as some of which have been considered duties of a baccalaureate degree accountant but can basically be considered as a position somewhere in between the two. However, the activities are not completely common to all technical accounting positions but do tend to cluster according to size of firm.

3. There appears to be an ever-present need to evaluate continually the content and scope of the accounting courses in a terminal accounting program.

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[1] Ibid., p. 123.

[2] Ibid., p. 156.

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4. A technical accountant needs: (a) more contact and experience with everyday cost accounting problems and activities that deal with the reporting and controlling functions of business; (b) experience in completing governmental reports as well as miscellaneous management reports in reference to budgets, efficiency, and profits; and (c) experience in the basic systems and procedures of accounting so as to more understandably perform the daily functions and activities.

5. Much of that which is now normally taught from collegiate textbooks could be eliminated or altered. It appeared from this study that many of the concepts difficult for students to comprehend were little used in industry by technical accountants.

Related Literature and Research

There are many articles and research reports relating directly or indirectly to the content that should be included in high school bookkeeping courses and a few relative to the degree accounting program. Details of several articles and research reports are included here because of their value in defining and describing job activities performed by accounting technicians as defined by Ozzello. However, none of the research reports, other than the Ozzello study, have been directly concerned with the emerging level of post-high school accounting programs which are oriented toward employment opportunities requiring less than a baccalaureate degree but more than high school bookkeeping.

In 1965 the Honorable John H. Dent recognized the value of post-high school training for three accounting job classifications when he wrote about the new civil service requirements:

> The federal government has taken another constructive step forward through the continuing programs of the United States Civil Service Commission to place greater emphasis on the recruitment of high quality applicants for jobs in the federal service.
>
> The qualification standards for accounting clerk, supervisory accounting clerk, and accounting technician have been realistically revised so that educational substitutions of two years of post-high school education are fully substitutable for the GS-4 grade. In Transmittal Sheet No. 85, dated October, 1964, for inclusion in Civil Service Handbook X-118 the Civil Service Commission said (underline added)

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1. The qualification standards for Clerk GS-4/6 (in the GS-300 Group) and Accounting Clerk and Supervisory Accounting Clerk GS-4/6 (in the GS-500 Group) are reissued. (The educational substitutions have been revised so that 2 years of post-high school education is fully substitutable for GS-4. This will facilitate recruitment of graduates of junior colleges and commercial schools. The length of experience required tables have also been revised to avoid simultaneous increments in both the general and specialized experience.)

2. The qualification standard for the Accounting Technician Series, GS-525, is reissued. (The educational substitutions have been revised so that 2 years of post-high school education that includes bookkeeping or accounting courses is fully substitutable for GS-4. This will facilitate recruitment of graduates of junior colleges and commercial schools.[1]

Representative Dent continues by quoting an excerpt from the qualification standards of the Accounting Technician GS-525 series:

> Performance of work characteristic of positions included in the Accounting Technician option requires a detailed knowledge of, and ability to apply, generally accepted bookkeeping or accounting principles under accounting systems with few if any references to and little guidance by professional accountants, and, in addition: (1) understanding of and ability to apply established legal precedents of limited scope, such as those involving recognition of when title passes to personal property, the kinds of negotiable instruments and elements of negotiability, elements of a contract and others of comparable character; and (2) familiarity with and ability to execute a limited diversity of the less complex Federal and State tax forms such as those covering income tax withholdings, sales tax, and other comparable tax returns.[2]

The Dictionary of Occupational Titles[3] lists 17 positions related to bookkeeping and accounting for which either a high school diploma or a college degree is the basic educational requisite. In addition to the definitions of these 17 accounting positions, another potentially useful source for defining and describing job activities which could be considered within

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[1]Honorable John G. Dent, "New U. S. Civil Service Standards for Accounting Technicians," The Balance Sheet (May, 1965), p. 398.

[2]Ibid., pp. 398-399.

[3]U. S. Department of Labor, Dictionary of Occupational Titles: Definitions of Titles, Third edition, Volume I, 1965 (Washington: Government Printing Office, 1965).

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[2]Ibid., p

the realm of the position of the accounting technician is found in a publication of the Bureau of Labor Statistics.[1]

This source defines and describes five professional accounting positions, Accountant I through Accountant V, as well as the positions of Accounting Clerk I and Supervisory Accounting Clerk cited in the excerpts quoted above by Representative Dent. Definitions of the Accounting Clerk positions appear as follows:

> Accounting Clerk I. He is under supervision and performs one or more routine accounts operations such as posting simple journal vouchers or accounts payable vouchers; entering vouchers in voucher registers; reconciling bank accounts; and posting subsidiary ledgers controlled by general ledgers, or posting simple cost accounting data. This job does not require a knowledge of accounting and bookkeeping principles but is found in offices in which the more routine accounting work is subdivided on a functional basis among several workers.
>
> Supervisory Accounting Clerk. He is under the general direction of a bookkeeper or accountant and has the responsibility for keeping one or more sections of a complete set of books or records relating to one phase of an establishment's business transactions. Work involves posting and balancing subsidiary ledger or ledgers such as accounts receivable or accounts payable and examining and coding invoices or vouchers with proper accounting distribution. The job requires judgment and experience in making proper assignations and allocations. The job may involve assisting in preparing, adjusting, and closing journal entries and supervising accounting clerks I.[2]

It is noteworthy that the definitions of the first two positions of the professional accountant sequence include many of the job activities of the accounting technician as defined by the Ozzello study. Definitions of these two positions are:

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[1]U. S. Bureau of Labor Statistics, National Survey of Professional, Administrative, Technical, and Clerical Pay, June, 1967, Bulletin No. 1585 (Washington: Government Printing Office, 1968).

[2]Ibid., p. 57.

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> Accountant I. This is the beginning position on the professional accountant level. In this position, one works under the close supervision of an experienced accountant. The work requires professional knowledge of the theory and practice of recording, classifying, examining, and analyzing the data and records of financial transactions. Many of the activities may be nonprofessional in nature such as proving arithmetical accuracy, and conformance with specific accounting requirements; tracing and reconciling records of financial transactions; and preparing detailed statements and schedules for reports.
>
> Accountant II. The work requires professional knowledge of the theory and practice of recording, classifying, examining, and analyzing the data and records of financial transactions. A person in this position is assigned work to expand his practical experience and to develop his professional judgment in the application of basic accounting techniques to simple professional problems. Duties and responsibilities include preparing routine working papers, schedules, exhibits, and summaries indicating the extent of the accountant's examination and developing and supporting findings and recommendations. This includes the examination of a variety of accounting documents to verify accuracy of computations and to ascertain that all transactions are properly supported, are in accordance with pertinent regulations, and are classified and recorded according to acceptable accounting standards.[1]

A recent publication of the U. S. Office of Education[2] was concerned with establishing a closer relationship between vocational-technical education programs and occupations with regard to a common occupational language. One of the seven major vocational-technical areas which is identified and coded in this document is that of the Office Occupations. One of the instructional program categories within the Office Occupations area is that of the Accounting and Computing Occupations, U. S. O. E. code 14.01. Two major subdivisions of this category, Accountants and Bookkeepers, appear to be related to the general definition of an Accounting Technician. These subdivisions are defined as follows:

> Accountants. Programs concerned with the paraprofessional duties supporting the accountant in organizing, designing, and controlling numerical and financial data.

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[1] Ibid., p. 54.

[2] U. S. Department of Health, Education, and Welfare. Vocational Education and Occupations, Office of Education, Bulletin OE-80061 (Washington : Government Printing Office, 1969).

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[1]Ibid.,

[2]John E.
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pp. 121-125

Bookkeepers. Programs concerned with computing, classifying, and recording numerical data to keep financial records.[1]

In 1967 Clow conducted interviews with personnel directors and head accountants and compiled responses of questionnaires completed by 182 bookkeepers and accountants employed by 14 selected manufacturing firms in the DeKalb-Sycamore, Illinois, area in an attempt to determine the nature of the duties and qualifications of bookkeepers and accountants. Those findings relative to the writer's task of identifying job activities performed by accounting technicians were:

1. The accountants named course work as the source of learning more frequently than on-the-job training and experience for the duties of preparing many of the financial statements and related schedules, preparing many types of entries, reconciling the bank statement with the checkbook, recording items in a fixed asset register, and ruling and balancing accounts.

2. Duties performed by over 25 per cent of the accountants were: recording information in the general journal; preparing income statements, trial balances, work sheets, and comparative income statements; preparing adjusting, closing, reversing, correcting, deferral, and payroll entries; recording from records prepared by data processing equipment; operating the computer, and supervising employees.

3. Duties performed by over 25 per cent of the bookkeepers were: calculating and checking employee time records, operating a key-punch machine and a calculating and/or an adding machine, typing materials, filing materials, and pulling punched cards from a punched card file.

4. Most of the accountant positions (76 per cent) required six or more hours of post-high school accounting course work.

5. Dependability and accuracy were the most frequently named traits that bookkeepers and accountants should possess.

6. The skill of typewriting was required for a greater per cent of bookkeeper positions than for accountant positions.[2]

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[1] Ibid., p. 58.

[2] John E. Clow, "A Study of the Duties and Qualifications of Bookkeepers and Accountants in Manufacturing Firms in the DeKalb-Sycamore, Illinois, Area" (unpublished M. S. study, Northern Illinois University, DeKalb, 1967), pp. 121-125.

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Although Clow's study did not identify the position of the accounting technician as being separate and distinct from the bookkeeping and accounting positions, his findings tended to verify the Ozzello study with respect to the conclusion that the accounting technician does perform some activities considered duties of a bookkeeper as well as some of which have been considered duties of a baccalaureate degree accountant.

An example of research which alluded to accounting-type activities performed by clerical workers and other classes of workers is the study completed by Lauderdale. The problem of this study was to determine the levels of manual, mental, and social skills at which experienced clerical workers perform. Included in the occupational grouping of clerical workers were Dictionary of Occupational Titles categories such as billing, payroll, coding analyst, accounting and statistical clerk.[1]

The findings of the Lauderdale study were useful to this study because of the detail included in describing the job activities of each of the accounting job classifications. Furthermore, the data was obtained by personal interviews with each of the clerks involved in the study, a method similar to that used in the Ozzello study. Finally, the findings of the Lauderdale study are classified in a manner which enables the inclusion of data relevant to accounting job activities at various stages in the objectives-deriving model demonstrated in this study. This manner of classification of data regarding accounting activities includes such categories as machine and manual skills, mental abilities and knowledges, as well as social skill requirements of each of the accounting job classifications.

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[1]Frances Lauderdale, "The Levels of Skills of Specialized Clerical Employees in the Petroleum Industry" (unpublished Doctoral dissertation, University of Oklahoma, Norman, 1949), p. 29.

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[1] Ibid., p

Following are excerpts from the Lauderdale study which describe two of the categories of clerical employees:

> Accounting Clerk. The typical accounting clerk, as observed in the petroleum industry, uses his knowledge of percentage, fractions, and decimals in computing interest and discount on business papers. He performs these computations accurately and rapidly because he is skilled in the use of the calculator or the comptometer.
>
> The clerk is resourceful in finding information needed to determine accurately and quickly the prices for items on business papers. His knowledge of company equipment and materials aids him in evaluating inventory records. A knowledge of account classifications and of the terminology used in an office helps the clerk to post information to the correct accounts. The postings are made in neat, legible figures. In the preparation of invoices for payment, the clerk's attention to detail is helpful to him in examining and verifying information.
>
> An understanding of the accounting procedures of an office and the ability to analyze accounts aids the clerk in preparing financial statements and in summarizing statistical reports for management. The typical accounting clerk considers a knowledge of account classifications and of the terminology used in the office of first importance to the successful performance of his work. He knows that a practical knowledge of percentage, fractions, and decimals is necessary in order for him to accomplish many of the work activities of the accounting function.[1]
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> Statistical Statement and Report Clerk. The typical statistical statement and report clerk, as observed in the petroleum industry, is skillful in collecting, compiling, verifying, and analyzing statistical data. He knows how and where to find information. He makes compilations of statistical data by summarizing and classifying information. He analyzes and interprets information by exercising several skills. One of the skills which aids him in analyzing and interpreting data is a knowledge of the general classification of accounts and of the terminology used in the office. Another skill is a knowledge of the office procedures and the forms used by the company. Still another skill is a practical knowledge of percentage.
>
> The clerk is careful to verify and proofread all his work. He uses a comptometer or an adding machine to verify computations. In proofreading his work, the clerk is assisted by other clerical employees in the department.

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[1] Ibid., pp. 106-107.

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> He has many work relationships with other employees in the office. A file clerk helps him to get materials from the files. A clerk-typist typewrites reports and statements for him. A duplication clerk duplicates his statements and reports. Other departments such as accounting, production, personnel, and sales seek his services in preparing statements and reports. The statistical statement and report clerk understands the purpose of these reports.
>
> The typical clerk performs several related duties such as computing discount, posting information to books of records and personnel file cards, and composing and typewriting letters. He writes letters which make and answer requests for information.
>
> He considers a knowledge of the general classification of accounts and of the terminology used in the office of paramount importance to the successful performance of his work.[1]

Other studies which allude to accounting-type activities performed by workers of various job classifications are those by Stoner,[2] Lees,[3] Nicks,[4] and Van Derveer.[5] Details of these studies are not included here because they were not concerned specifically with job activities performed by accounting technicians.

Concluding Statement

The literature and research presented in this part of the study and under the section entitled, Need for the Study, support the conclusion that

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[1] Ibid., pp. 114-115.

[2] James Kermit Stoner, "An Analysis of the Accounting Systems and Practices of Small, Independent Retail Businesses" (unpublished Ed.D. dissertation, The University of Pittsburgh, Pittsburgh, 1953).

[3] George Lees, "An Analysis of Accounting Skills and Knowledges Used by Selected Experienced Electrical Engineers in Rhode Island" (unpublished Ph.D. dissertation, University of Connecticut, Storrs, 1957).

[4] Earl G. Nicks, "Bookkeeping Activities of Non-Bookkeepers" (unpublished Doctoral dissertation, New York University, New York, 1954).

[5] Elizabeth T. Van Derveer, "A Study of Patterns of Performance for the Most Frequent Duties of Beginning Clerical Employees" (unpublished Doctoral dissertation, New York University, New York, 1950).

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there does exist a general classification of worker entitled, accounting technician. This classification of workers performs a variety of accounting-type activities for which an educational program can be provided by post-secondary educational institutions.

The "evaluative criteria" list of the Ozzello study represents the best defined source of data descriptive of the job activities performed by accounting technicians for the purpose of deriving instructional objectives for the education of accounting technicians. Other research and literature is useful to the purpose of this study to the extent that it verifies and complements the "evaluative criteria" list.

DERIVATION OF INSTRUCTIONAL OBJECTIVES

Recent educational literature is replete with reference to the various aspects of educational and instructional objectives. Several of these references cited in Chapter I contributed to the statement of the problem of this study.[1] Additional excerpts are presented in this section for the contributions to the procedural aspect of this study.

Specificity of Student Behavior

The need for including a detailed description of the operations, behaviors, and activities that a student will be capable of demonstrating as a result of having achieved an instructional objective is emphasized by many writers in this field. This degree of specificity of student behavior is essential for it provides the needed clues to designing the instructional

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[1] See pages 2-3.

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[1]Lee J. Cr
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[2]Lindvall,

[3]Ibid., p.

[4]Edwin Gar
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sequences, establishes a goal-setting situation for the student, as well as providing a focus for evaluating student achievement.

Cronbach is emphatic concerning the need for precise instructional objectives when he states:

> Any educational objective which is to be studied experimentally must be defined by stating the situation which the person is expected to encounter, and the way he should respond.
>
> Such a clear definition of the objectives helps in planning and assessing the teaching far more than does a general aim.
>
> Defining objectives in terms of concrete, observable changes to be made in the student's behavior is a necessary preliminary to planning how to teach, choosing teaching materials and class problems, supervising practice, and evaluating the learner's success--all depend on a definition of the responses to be altered.[1]

Regarding the establishment of a goal-setting situation for the student, Lindvall states that "when the objectives are clearly defined and understood by the student, he can perceive what he is trying to learn."[2] He also suggests that when teachers can perceive what they are trying to teach by clearly defining objectives, they can teach better.[3]

The need for behavioral specifics in stating objectives with regard to teacher planning for the instructional program was emphasized by Knepper when he stated, "objectives stated in terms of desired behavior will help to determine the procedures required to secure the desired outcomes."[4]

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[1]Lee J. Cronbach, Educational Psychology (New York: Harper & Brothers, 1960), pp. 39-40.

[2]Lindvall, op. cit., p. 2.

[3]Ibid., p. 77.

[4]Edwin Garfield Knepper, Evaluating Competence for Business, National Association of Business Teachers, 1950 Yearbook, p. 9.

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[4] Ammerman

The Writing of Instructional Objectives

Mager presented a comprehensive set of guidelines describing the characteristics and qualities of instructional objectives in his book, Preparing Instructional Objectives.[1] These guidelines are potentially useful to those concerned with writing instructional objectives. Among the guidelines most useful to the problem of this study were the following:

1. An instructional objective is a statement that describes an intended outcome of instruction rather than a description of summary of content.

2. One characteristic of a usefully stated objective is that it is stated in behavioral, or performance terms that describe what the learner will be doing when demonstrating his achievement and how you will know when he is doing it.

3. To describe terminal behavior, or what the learner will be doing, (a) identify and name the overall behavior act, (b) define the important conditions under which the behavior is to occur, and (c) define the criterion of acceptable performance.[2]

The main purpose of the HUMMRO report by Ammerman and Melching was to "examine and clarify the troublesome issues involved in obtaining meaningful and useful performance objectives."[3] The study presented a complete analysis of the distinctions between general, terminal and enabling objectives, as well as a useful model for the development of instruction.

Figure 1[4] illustrates a sequence for the development of instruction as presented by Ammerman and Melching. The light shading represents the sequence frequently followed when only a topical outline of the course content is used to guide the development of instruction.

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[1] Mager, op. cit.

[2] Ibid., pp. 24, 43, 53.

[3] Ammerman and Melching, op. cit., p. 3.

[4] Ammerman and Melching, op. cit., p. 12.

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[1]Ibid.

Presentation of this sequence was considered relevant to this study for it helps to place in proper perspective the purpose of deriving instructional objectives. This purpose is, generally, to define the immediate learning goals of instruction in terms of desired student behavior, and to provide the basis for designing the learning experiences for the accomplishment of the desired terminal student behavior.

Among the conclusions of this report, the authors presented a series of criteria for evaluating the effectiveness of objectives-deriving methods which were particularly relevant to this study. Five factors for classifying and comparing terminal student performance objectives and which influence the utility and communicability of stated objectives are:

1. Type of performance unit
2. Extent of action description
3. Relevancy of student action
4. Completeness of structural components
5. Precision of each structural component

Seven questions valuable for evaluating the objectives-deriving method are:

1. Is the procedure applied systematically and consistently?
2. Does the procedure collect performance information for individual meaningful units of activity?
3. Is performance information actively sought from sources in the work performance situation?
4. Is performance information recorded?
5. Is performance information used systematically and consistently to identify critical instructional needs?
6. Does the procedure provide complete coverage of all likely aspects or occurrences of the desired work performance situation?
7. Does the procedure foster the derivation of performance actions, conditions, and standards that are relevant to those of the work situation?[1]

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[1] Ibid., p. 38.

Sequence i

Steps in Which Objectives are Developed

Step 1

Step 2

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Step 3

Step 4

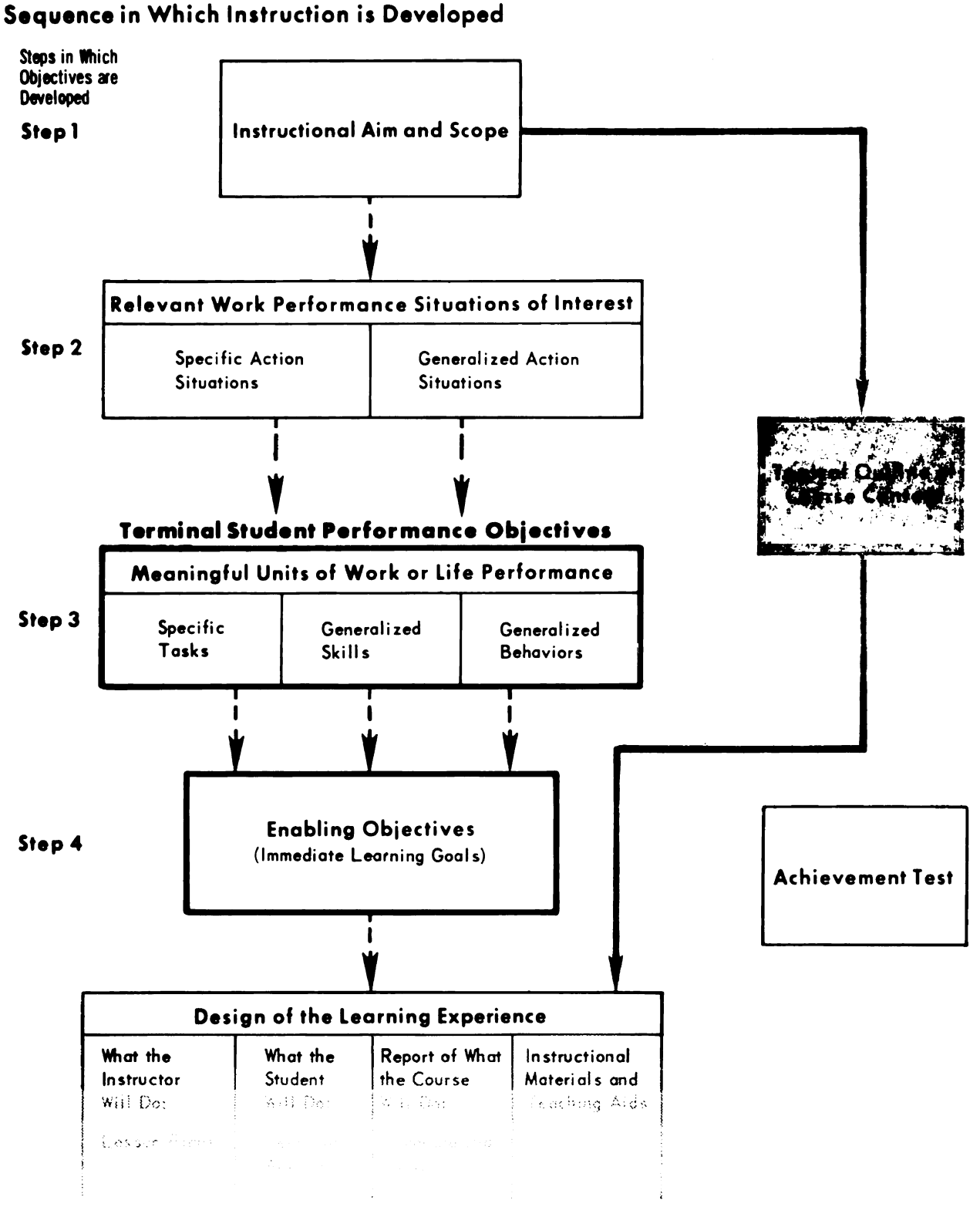

FIGURE 1. HumRRO Instructional Sequence

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[2]Lindvall

The Gagné Learning System

Gagné's categories of learning behavior are an integral part of the objectives-deriving model being demonstrated in this study and are, therefore, described in this part because of their relevancy to this study.

Gagné's eight categories are a blending of behavioristic psychology and cognitive theory; the lowest four in the hierarchy are related to the former, the upper four--the latter.[1]

THE LEARNING OF

Problem Solving and Strategy-Using

require the pre-learning of:

Principles

which require the pre-learning of:

Concepts

which require the pre-learning of:

Associations

which require the pre-learning of:

Chains

which require the pre-learning of:

Identifications

which require the pre-learning of:

Responses[2]

Gagné states that the proposed learning hierarchy is arranged according to the "factors which determine learning, derived insofar as possible from

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[1]David R. Krathwohl, "Stating Objectives Appropriately for Program, for Curriculum, and for Instructional Materials Development," The Journal of Teacher Education, March, 1965, p. 45.

[2]Lindvall, op. cit., p. 45.

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[1] Ibid.,

available evidence in controlled experimentation. By this means it will be possible to differentiate several kinds of learning, each requiring a different set of conditions for its occurrence."[1] Using Gagné's hierarchical categories enables one to arrange learning tasks according to the eight proposed types of learning from which instructional objectives can be derived.

The following description of the eight categories consists of excerpts from a detailed description prepared by Krathwohl:

Response Learning.

...basic form of behavior, "echoic behavior"
...response to a stimulus

Identification Learning (Multiple discrimination).

...capability of making different responses to different stimuli
...identify colors, late model cars

Chains or Sequences.

...long chains of responses, motor acts, short chains are parts of total
...a chain of two acts the first of which is an observing response
...knowing what a numerator is, and what to put there

Associations.

...a three step chain, containing in order: (1) an observing response which distinguishes the stimulus, (2) a coding response which usually is implicit, (3) the response which is to be expected as the outcome of the association

Concepts.

...a set of objectives or events different in physical appearance is identified as a class
...acquiring concepts consists mainly in establishing associations in which the variety of specific stimuli that make up the class to be acquired are represented

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[1] Ibid., p. 308.

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Principles.

...a chain of concepts of the form, if A, then B.
...previous learning of the concepts which make up the principles needed
...proposed chain of events (principle) is presented by means of particular objects representing the concepts making up the chain

Problem Solving.

...kind of learning by means of which principles are put together in chains to form what may be called higher-order principles
...induced from sets of events presented to the learner in instruction
...become the generalizations which enable the student to think about an ever-broadening set of new problems

Strategies.

...more complex behavior than principles and problem solving
...form of learned organization with which an individual approaches a problem
...mediating principles which do not appear directly in the performance of the task set to the individual, but which may nevertheless affect the speed or excellence of that performance
...strategies may be principles in their fundamental nature.[1]

Objectives-Deriving Model

The model which was demonstrated in this study, and which was used for deriving the instructional objectives for technical accounting programs, was the center of a research proposal authored by Haines, Ward and Hollingsworth at Michigan State University in 1968.

The problem posed for the project was:

What instructional objectives for selected areas of Vocational Education can be derived from the vast body of information and

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[1]Krathwohl, op. cit., p. 91.

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[2]Ibid.

> technical sources available to educators and can the objectives which are derived be continually revised on the basis of new and informational developments?[1]

The purpose of the project was to "derive instructional objectives for selected areas of office and distributive occupations."[2]

The proposed model for the derivation of instructional objectives consisted of ten operational steps and combined the best features of a variety of different approaches to deriving objectives including the Mager model, the Bloom and Krathwohl Taxonomies and Gagné's learning system.

A diagram illustrating the sequencing and interrelationships of the ten operational steps of the model is presented on page 40. A discussion of the applicability of the operational steps of the model to the procedure for deriving the instructional objectives for technical accounting programs is presented in the following section.

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[1]Haines, Ward and Hollingsworth, op. cit., p. 10. (The authors submitted the proposal to the United States Office of Education. It is reported that the proposal received a very favorable review but the United States Office of Education officials stated it could not be funded because of a Congressional reduction in funds.)

[2]Ibid., p. 2.

CHAPTER III

RESEARCH PROCEDURE AND METHODOLOGY

The procedure of this study consisted of three phases. These were:

1. Securing a list of job activities performed by accounting technicians.

2. Deriving and classifying instructional objectives based upon the job activities performed by accounting technicians.

3. Verifying the usefulness of the derived instructional objectives by a jury panel of community college accounting teachers.

Each of these procedural phases is described in a separate section of this chapter.

Phase I - Securing a list of job activities performed by accounting technicians.

The Ozzello study was examined to determine the types of job activities performed by accounting technicians. The "evaluative criteria" list was retrieved from the study to serve as the basis for the selection of a sub-set of accounting-type activities. The "evaluative criteria" list consisted of 170 accounting-type activities arranged under nine major accounting functions. The nine functions were:

Making Financial Reports and Schedules
Analyzing Financial Statements and Schedules
Maintaining Ledgers
Maintaining Journals
Preparing and Initiating Data
Recording or Posting Data
Making and Using Working Papers
Non-Classified Maintaining, Analyzing, or Performing Activities
Doing Specific Mathematical Computations

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The sub-set selected for the demonstration of the given model for the derivation of instructional objectives consisted of 35 accounting-type activities. The basis for the selection of the accounting-type activities to be included in the sub-set was frequency of performance. Those accounting-type activities performed by 40 per cent or more of the 99 accounting technicians interviewed by Ozzello were included in the sub-set. The accounting-type activities included in the sub-set can be classified according to the nine major accounting functions as follows:

Making Financial Reports and Schedules

Financial Statements

Balance Sheet
Income Statement

Schedules

Accounts Receivable
Accounts (Vouchers) Payable
Manufacturing Expense
Cost of Goods Sold
Materials Consumed

Tax Reports

F. I. C. A.
Employee Withholding
Federal Unemployment

Analyzing Financial Reports and Schedules

Accounts Receivable

Maintaining Ledgers

Accounts Receivable
Accounts (Vouchers) Payable
Payroll

Maintaining Journals

General
Sales
Cash Receipts

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Preparing or Initiating Data

Journal Entries or Journal Vouchers for

Normal transaction entries
Adjusting entries
Closing entries
Explanations on all entries

General

Expense accounts
Bank deposits and reconciliations

Recording or Posting Data

Normal transaction entries
Adjusting entries

Making and Using Working Papers

Trial balance
Financial Statements
Work in Process (Cost sheets)

Non-Classified Maintaining, Analyzing or Performing Activities

Verifying balances of Control Accounts with Subsidiary Ledger
Check postings and totals
Add, foot, and balance Ledger accounts
Add, foot, and balance and total columns in Special Journals

Doing Specific Mathematical Computations

F. I. C. A. taxes
Vacation and Holiday pay
Data for Adjusting Entries

Phase II - Derivation and Classification of Instructional Objectives.

The objectives-deriving model[1] demonstrated in this study (See Figure 2) involved ten steps in developing a categorized set of instructional objectives. In the model, the numerous steps, each dependent on the prior step, help to reduce the giant intuitive leaps between demand data and respective instructional objectives. Furthermore, the model provides a method for

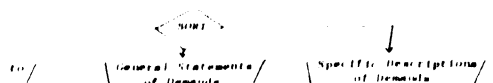
[1] Haines, Ward and Hollingsworth, op. cit.

Procedural Steps

1. Collect input data (Staff: writers)

2. Sort in terms of the level of specificity of each of the demands statements. (Staff: analysts)

Data file - references and conclusions from many SOURCES, concerning the DEMANDS PLACED UPON THE INSTRUCTIONAL SYSTEM OR UPON ITS PRODUCTS.

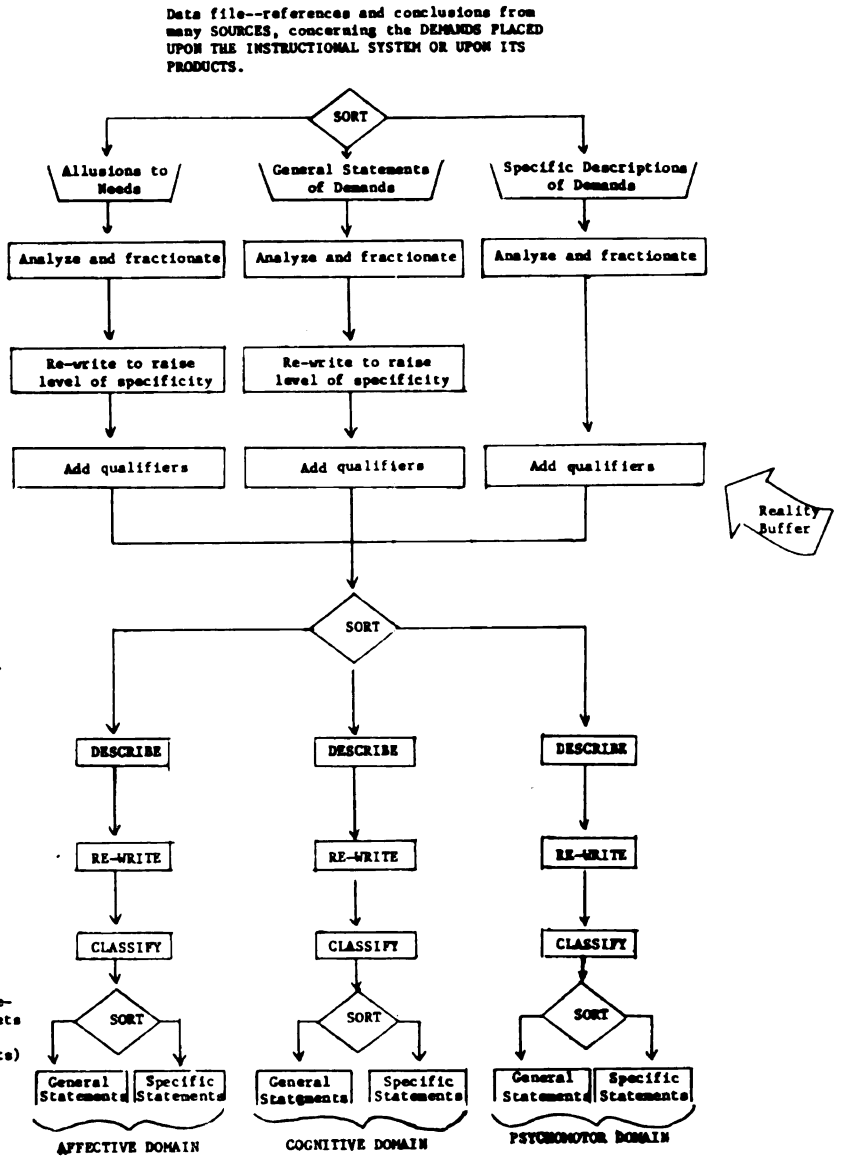


1. Card input storage of all input data statements, identifiable by source.

2. Additional descriptor attached to each statement; AVAILABLE PRODUCT of step 2: three sets of statements comprising demands as expressed in literature from outside sources.

Procedural Steps

1. Collect input data (Staff: writers)
2. Sort, in terms of the level of specificity of each of the demands statements. (Staff: analysts)
3. Analyze demands data items to fractionate into components implied; identify operations and skills involved. (Staff: analysts)
4. Rewrite to put in most specific terms consistent with the essence of each statement. (Staff: writers)
5. Add qualifiers which take into account learner-related constraints - e.g. developmental and environmental variables. (Staff: clinical teachers and project analysts)
6. Sort in terms of gross taxonomic distinctions. (Staff: analysts)
7. Describe each statement in terms of its implicit learning tasks (Gagne')(Staff: analysts)
8. Re-write each learning task in the form of an instructional objective. (Staff: writers)
9. Classify each learning task in hierarchical terms.
10. Sort in terms of more and less specific statements. Criterion: meets Mager's 3 criteria? Yes/No (Staff: analysts)



1. Card input storage of all input data statements, identifiable by source.
2. Additional descriptor attached to each statement; AVAILABLE PRODUCT of step 2: three sets of statements concerning demands as expressed in literature from outside sources.
3. New cards input to file the fractionated items.
4. New generation of cards to file re-written statements.
5. Additional verbal data added to each statement entry; OUTPUT PRODUCT AVAILABLE: three lists reflecting known demands of the "world of work" expressed in terms of potential responsibilities of the secondary school.
6. Additional descriptor to each statement added to reflect the taxonomic category.
7. New generation of cards to file statements of learning tasks.
8. New generation of cards to file rewritten statements.
9. Add descriptor to each statement to reflect hierarchical position of the statement.
10. Add descriptor to each statement to indicate whether or not statement meets Mager's criteria; PRODUCT: six lists of statements of instructional objectives, wherein each statement's origin and development can be readily traced.

*Input is made via data cards but is stored and searched on tape and disc files.

FIGURE 2. Objectives Deriving Model

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identifying an objective's origin and development throughout the derivation procedure as well as the resources for easy retrieval of the results.

Modification of the Model. Certain modifications of the specific procedures of the model were made by the researcher upon consultation with the members of the thesis committee. The need for these modifications follows.

1. Input Data. The research proposal, of which the model was an integral part, called for sources of input data to range widely from sociological, psychological, related observations of the world of work and the worker to performance task descriptions of specific jobs. For the purposes of this study, input data was limited to specific performance task descriptions of accounting technicians. The reason for this limitation was that such a list of performance task descriptions was readily available and had been developed as a result of a comprehensive study of accounting activities performed by accounting technicians of the durable goods industry.

2. Team Approach Specified by the Model. The model specified the use of a team consisting of a writer and an analyst, assisted by clinical teachers, in performing the indicated steps. For the purpose of this study, it was concluded that the researcher could act alone in the capacity of the individual roles suggested by the model considering his history of 17 years of involvement as an accountant, a teacher of various accounting courses, and as an administrator of a large business education division in a community college. Furthermore, it was considered worthwhile to demonstrate the feasibility of individual classroom teachers following the procedures specified for deriving instructional objectives to serve as the basis for designing the learning programs required for their individual classroom requirements.

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3. Sorting by Gross Taxonomic Distinction. The model specified that the instructional objectives be sorted according to the categories of the affective, cognitive, and psychomotor domains. This distinction was not necessary in this study because of the nature of the input data which consisted of descriptions of specific job demands required of accounting technicians. Analysis, or fractionating, of the job demands generated learning tasks which were exclusively within the cognitive domain. Furthermore, one of the constraints imposed in this study was that of limiting the findings to those which can be classified within the cognitive domain.

Procedures of the Model. Aside from the modifications indicated above, the steps and procedures specified by the objectives-deriving model were performed in this study as described in the following sections.[1]

1. Fractionating. Each of the 170 accounting activities performed by accounting technicians included in the "evaluative criteria" list was re-written to include the action verb indicated in the questionnaire utilized by Ozzello in his study. This step resulted in a set of accounting activities which indicates the level of action to be expected of an accounting technician. For example, several of the accounting activities included in the "evaluative criteria" list appeared as follows:

Balance Sheet,
Accounts Receivable Schedule,
Costs to Sales, and
Data for Adjusting Entries, etc.

These items were re-written to appear as follows:

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[1]See Appendix C, p. 133, for a complete illustration of the objectives-deriving procedure.

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Making a Balance Sheet,
Making an Accounts Receivable Schedule,
Determine and Analyze percent of Costs to Sales, and
Compute Data for Adjusting Entries, etc.

Each of the 170 re-written accounting activities (demand statements) was analyzed into the following specific components:

Concepts stated or implied

1. Definitions of terms
2. Relationships to purposes and uses
3. Associations in terms of sources of information

Skills involved or required

1. Physical-psychomotor skills
2. Computational and foundation skills in mathematics

Operations implied to demonstrate the accounting activity

1. Physical manipulation requirements
2. Procedural, paradigmatic sequences

The following question was posed in a consistent manner throughout the fractionating, or analysis, step:

> "What are the inherent concepts, operations and skills for the demonstration of the behavior described and implied by the demand statement?"

To aid the researcher in determining the concepts, skills, and operations described or implied by each of the accounting activity demand statements, a comprehensive library of 27 accounting texts was consulted.[1] This array of texts included the original, as well as later, editions of the texts referred to by Ozzello in constructing the questionnaire employed in his study. This library of textbooks included representative volumes from the fields of cost, general, and managerial accounting; systems oriented texts; tax texts, and texts which present uses of accounting information and statement analysis. Consultation of this array of accounting texts resulted in the representation of a variety of accounting text authors' views regarding each of the job tasks.

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[1]See Appendix A, p. 130.

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Although the sub-set of accounting activity task demand statements included 35 accounting activities performed by accounting technicians, the entire set of 170 task demand statements was analyzed in the manner indicated above. Thus, a complete set of component concepts, skills, and operations was available for referral in cases of overlap between the sub-set and the total set of 170 task demand statements as the remaining steps of the model were completed for the sub-set of 35 task demand statements. The fractionating step of the 170 task demand statements of the "evaluative criteria" list generated approximately 1200 component concepts, skills, and operations.

2. Design of Flow Diagrams. Each of the component concepts, skills, and operations was analyzed to identify the nature of the learning task according to the Gagné hierarchical categories of learning tasks. The individual accounting activities were assumed to represent problem-solving learning tasks.

Flow diagrams were constructed to assist in establishing the hierarchies of the learning tasks and to indicate the interrelationships and interdependence among the learning tasks associated with each accounting activity. This arrangement served to indicate the need for achieving the behavior described by a particular objective, or a group of instructional objectives, prior to attempting the achievement of the behavior described by a subsequent instructional objective of the hierarchy. This arrangement also served to indicate to prospective educators an appropriate teaching strategy.

3. Writing of the Instructional Objectives. The component concepts, skills, and operations identified in the fractionating step, along with the related statement describing the implied learning task, were re-written as instructional objectives. The guidelines expressed by Mager regarding

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characteristics and qualities of valid and useful instructional objectives influenced the development of the objectives in this step.

Phase III - Verification of the Usefulness of the Instructional Objectives.

The verification of the usefulness of the derived instructional objectives of instructional programs for prospective accounting technicians was accomplished by a jury panel of community college accounting teachers.[1]

Each member of the jury panel was given a set of the derived instructional objectives and was asked to respond to the following question:

> "Can you understand the statement well enough to describe some sort of instructional activity (experience) which might lead to the accomplishment of the objective?"

Those instructional objectives not meeting with a favorable response to the preceding question were re-written and submitted again to the respondent teacher.

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[1]See Appendix B, p. 132.

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CHAPTER IV

THE FINDINGS, PART I

LEARNING TASK HIERARCHIES FOR A SELECTED SET OF ACCOUNTING ACTIVITIES PERFORMED BY ACCOUNTING TECHNICIANS

One of the procedural steps of the objectives-deriving model demonstrated by this study is that of describing each demand statement in terms of its implicit learning tasks. Gagné's learning task categories are reported in Chapter II and a description of this procedural step is included in Chapter III. Included in this chapter are flow diagrams for each of the task demand statements.

Task Demand Statement Flow Diagrams

Of the thirty-five task demand statements analyzed in this study, twenty-six, Figures 4 through 29, were directly related to the accounting cycle steps of recording, classifying and preparation of financial statements. Five of the demand statements, Figures 30 through 34, were concerned with routine procedures related to the normal accounting cycle. The remaining four demand statements, Figures 35 through 38, involved the preparation of miscellaneous tax reports. Figure 3 shows the interrelationships among the demand statements.

The use of flow diagrams enables the sequential ordering of the learning tasks and their component concepts and principles for each of the task demand statements. The diagrams also facilitate the identification of higher-order principles which require the prior learning of principles and related concepts. Furthermore, a hierarchy of task demand statements is

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established which enables the identification of a series of related instructional sequences.

The fractionating, or analysis step, described in Chapter III served as the source of information for developing each of the flow diagrams included in this chapter.

Certain terms were used consistently in all the flow diagrams to denote certain categories of the Gagné learning condition hierarchy. These terms are defined at this point.[1]

Flow Chart Terminology	Gagné Learning Condition Hierarchy
Task Demand Statement	Problem Solving
Identify, Compute, Record, Post, Verify	Principles and Higher Order Principles
Define	Concepts, Multiple Discriminations

On the following pages the flow diagrams for each of the thirty-five task demand statements are presented.

[1]See Appendix C, p. 137, for an illustration regarding flow chart terminology and symbols.

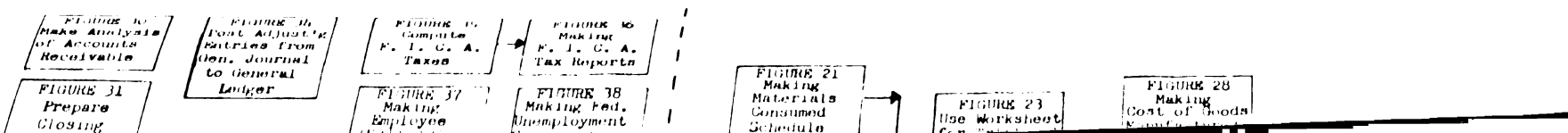
FIGURE 30
Make Analysis
of Accounts
Receivable
FIGURE 31
Prepare
Closing
FIGURE 36
Post Adjusting
Entries from
Gen. Journal
to General
Ledger
FIGURE 37
Making
Employee
FIGURE 38
Making Fed.
Unemployment
FIGURE 35
Compute
F. I. C. A.
Taxes
FIGURE 35
Making
F. I. C. A.
Tax Reports
FIGURE 21
Making
Materials
Consumed
Schedule
FIGURE 23
Use Worksheet
FIGURE 28
Making
Cost of Goods

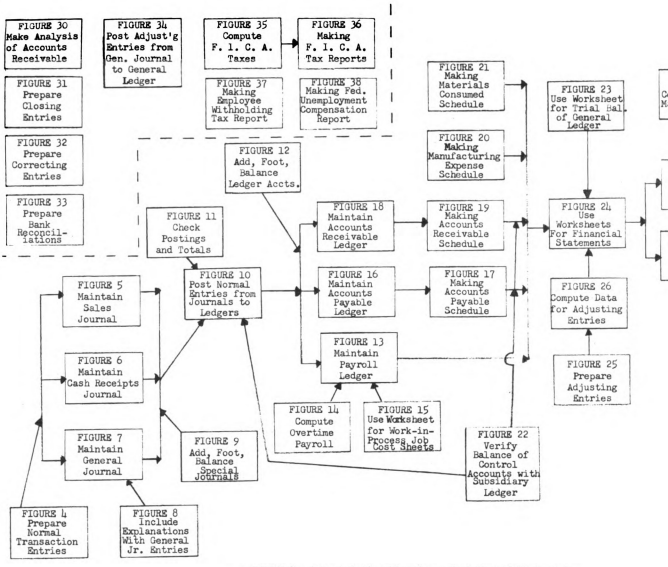

FIGURE 3. Interrelationships Among Task Demand Statements And Among The Instructional Objectives

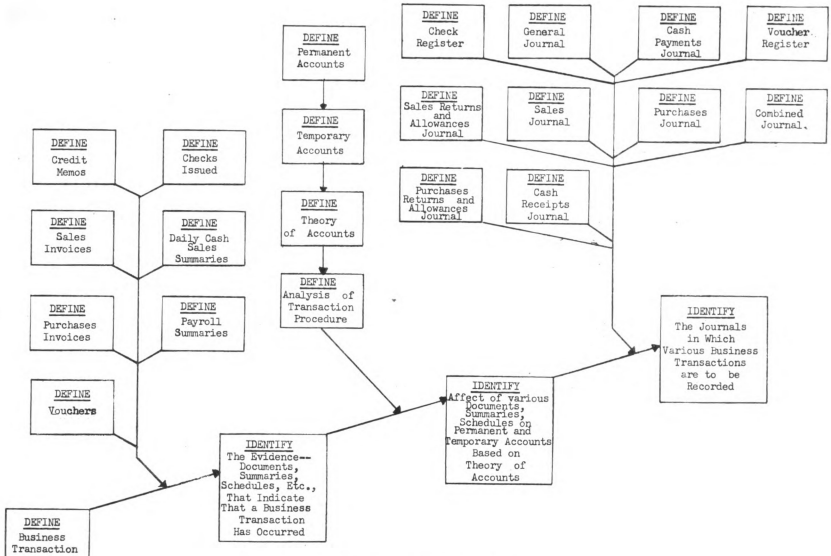

FIGURE 4. Prepare Normal Transaction Entries

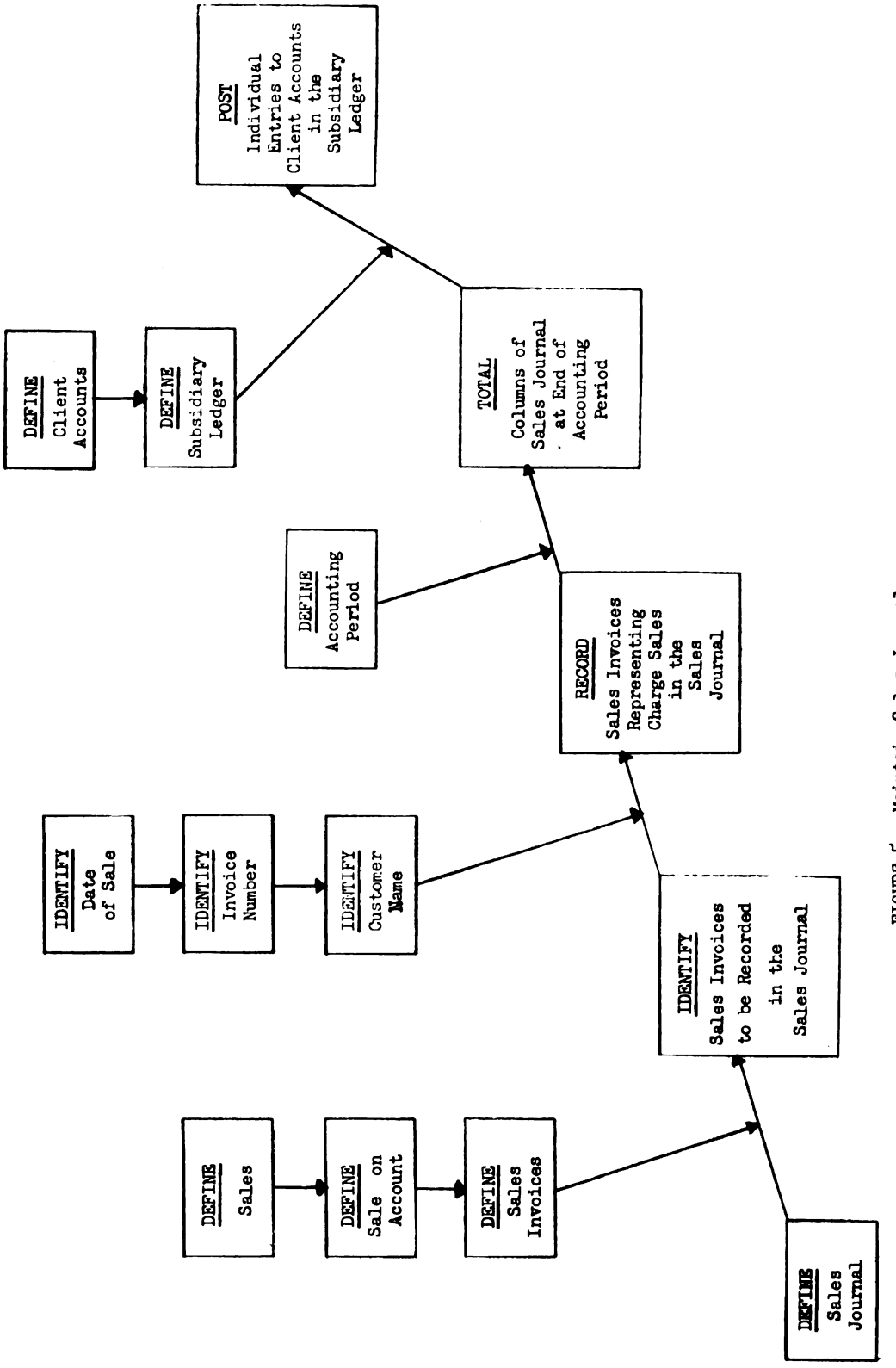

FIGURE 5. Maintain Sales Journal

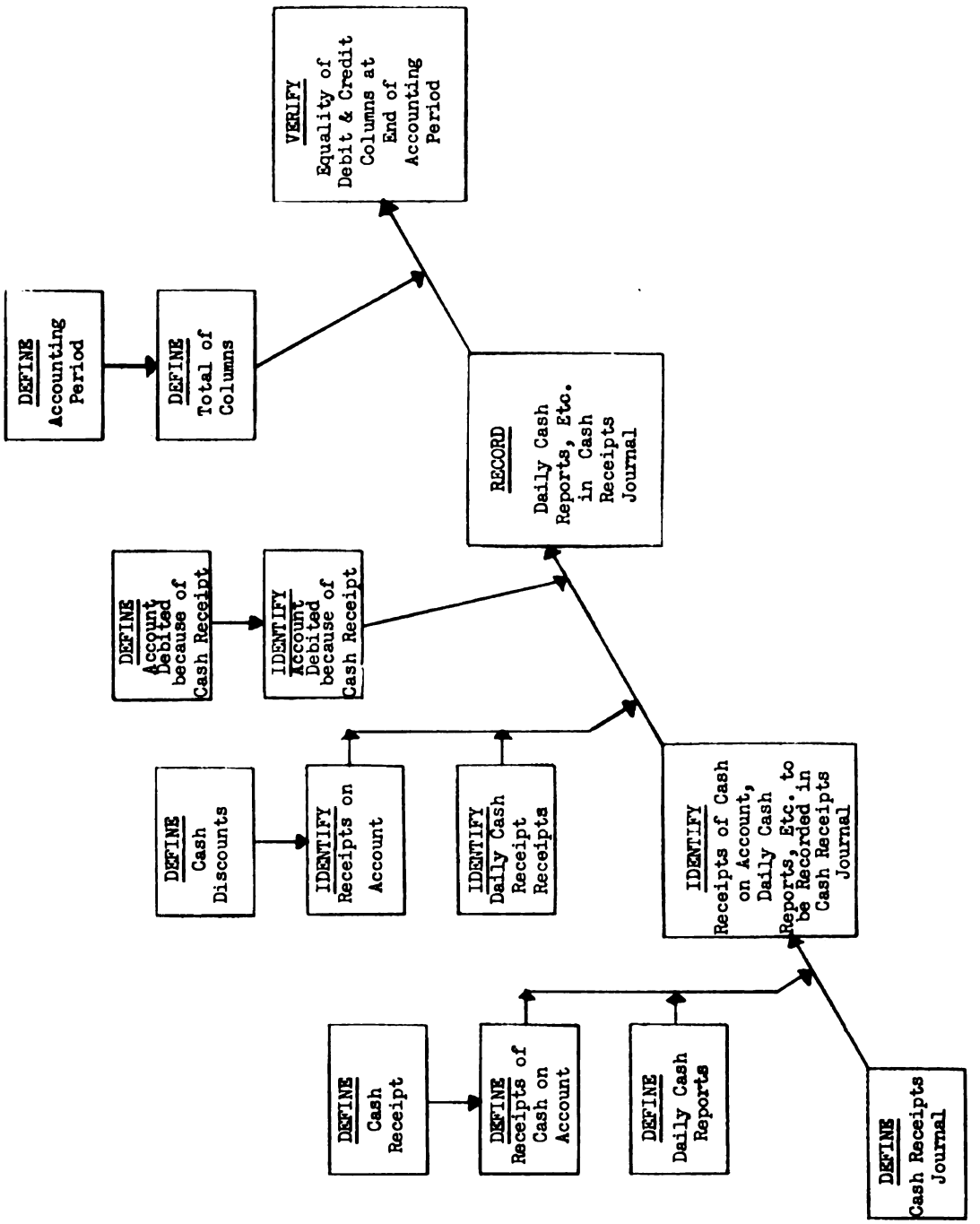

FIGURE 6. Maintain Cash Receipts Journal

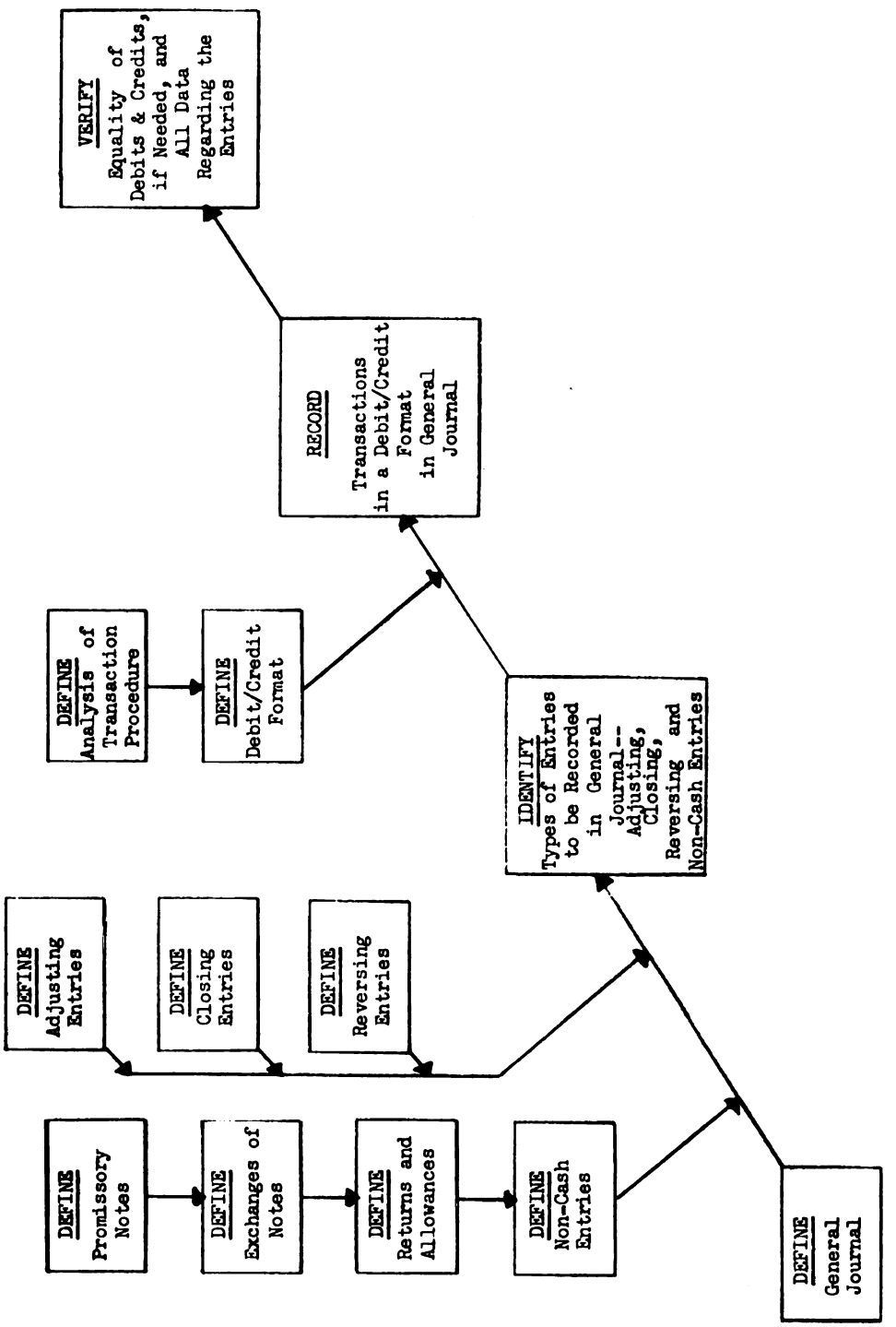

FIGURE 7. Maintain General Journal

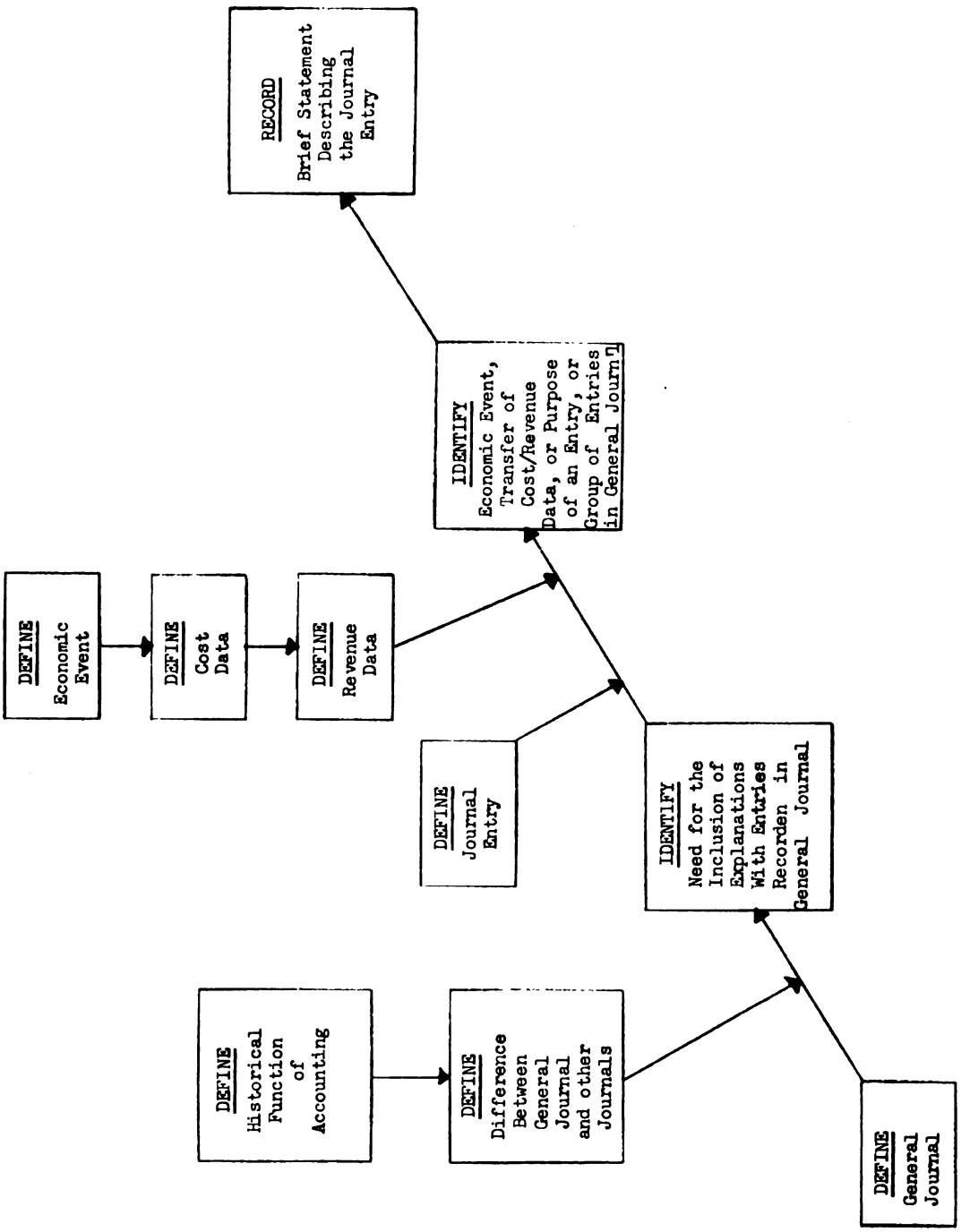

FIGURE 8. Include Explanations On Each General Journal Entry

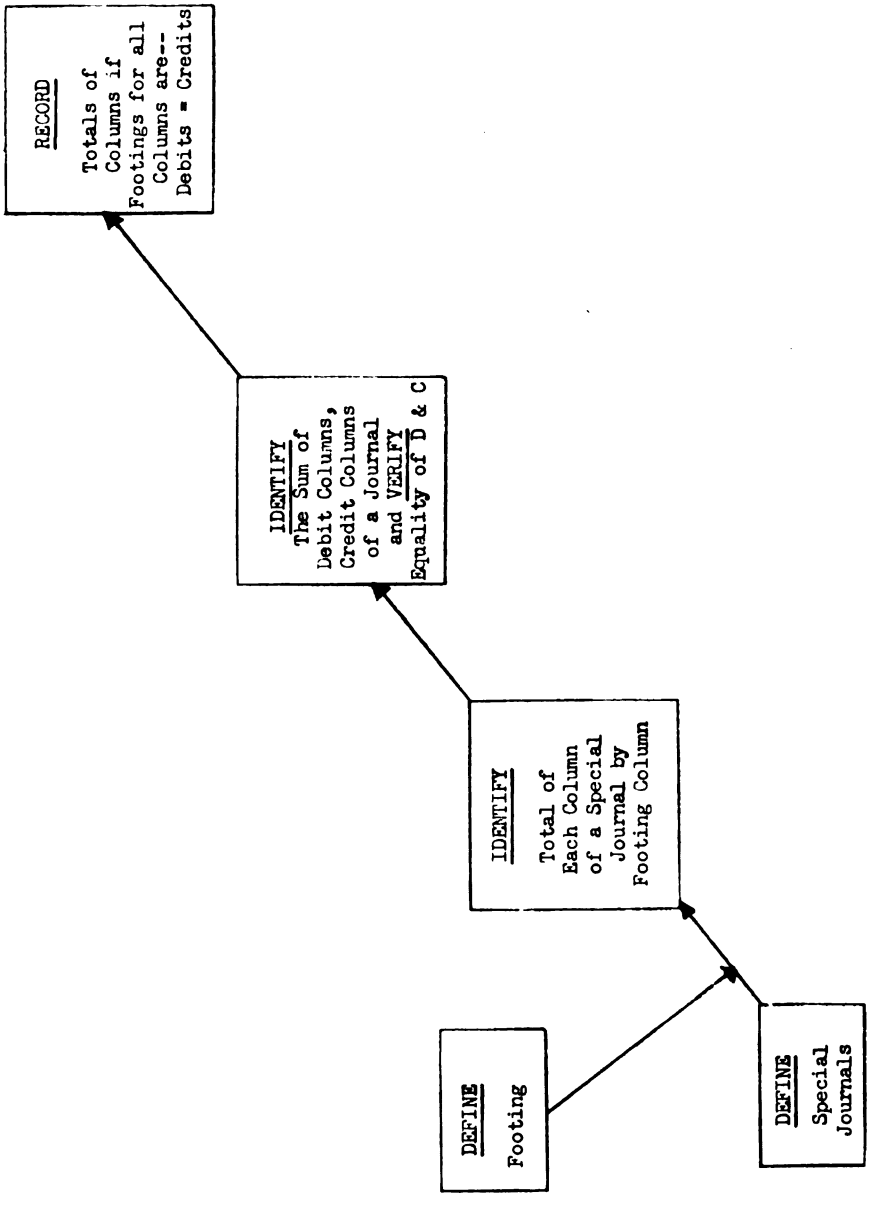

FIGURE 9. Add, Foot, And Balance Columns In Special Journals

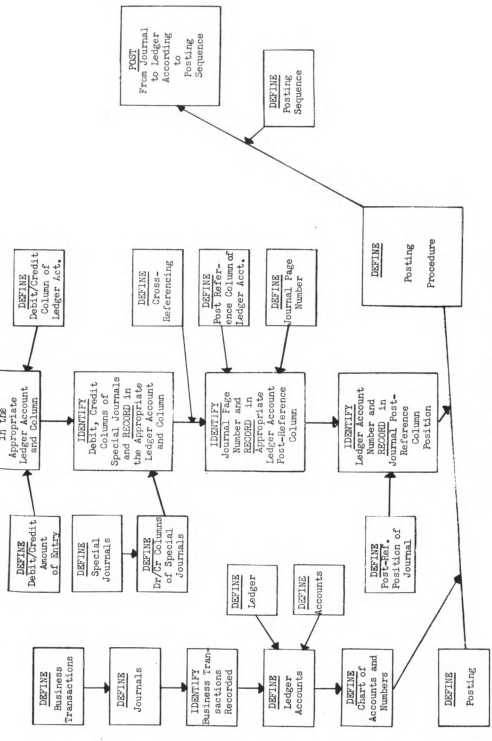

FIGURE 10. Post Normal Transaction Entries From Journals To General Ledger

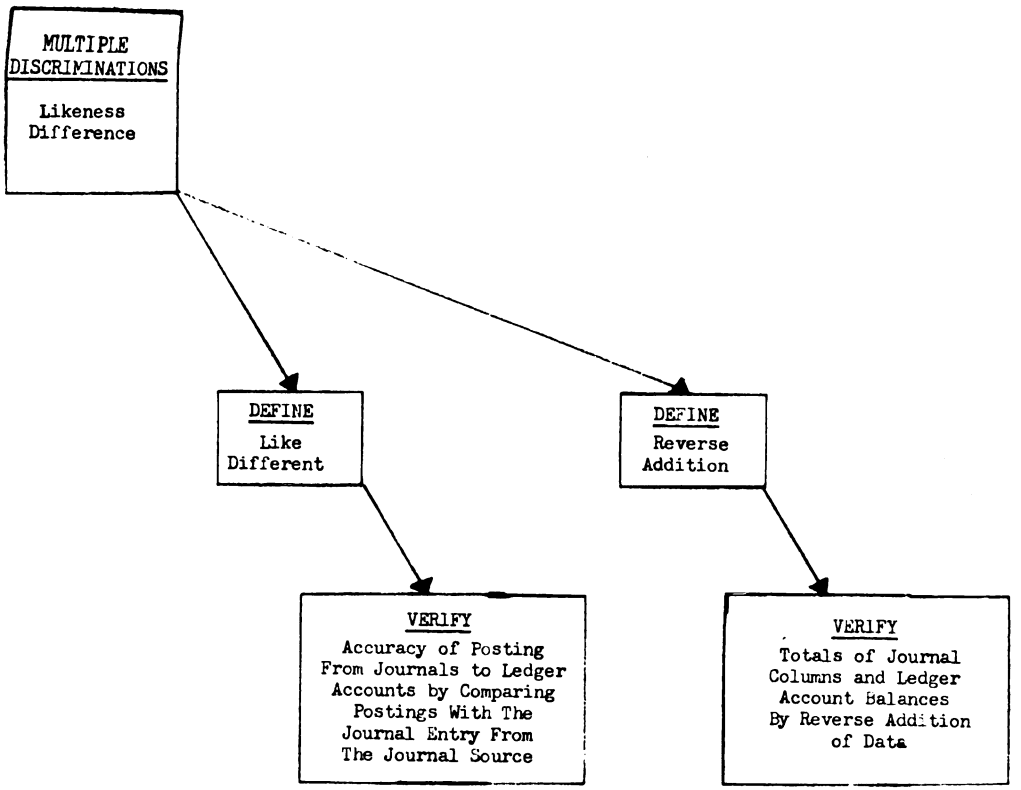

FIGURE 11. Check Postings And Totals

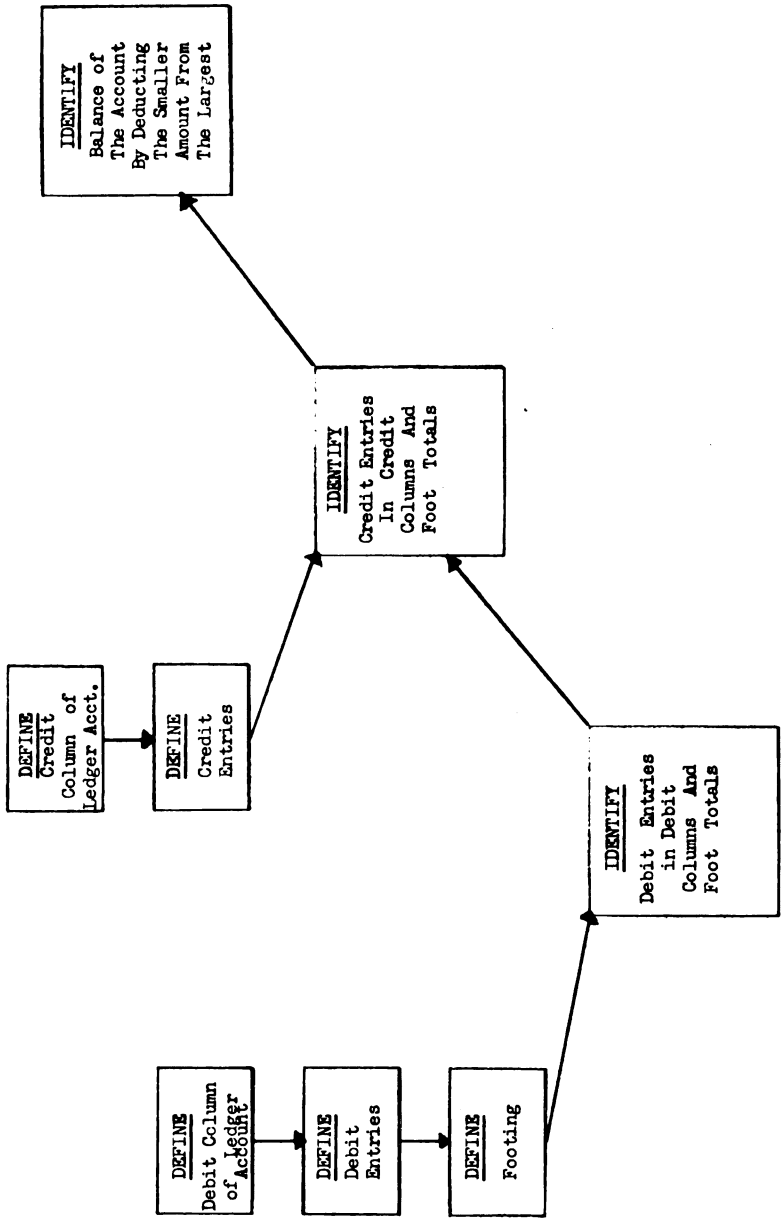

FIGURE 12. Add, Foot, And Balance Ledger Accounts

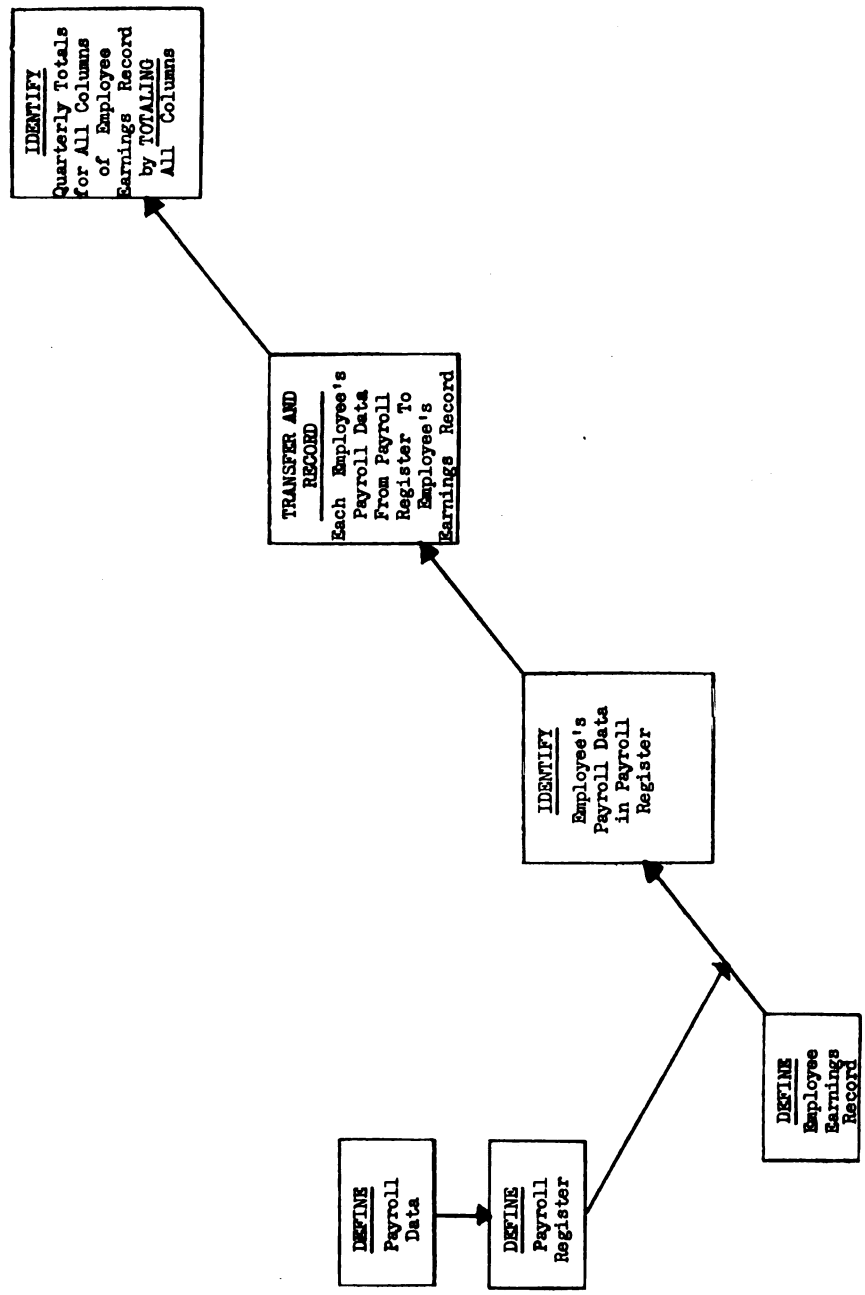

FIGURE 13. Maintain Payroll Ledger
(Individual Earnings Record)

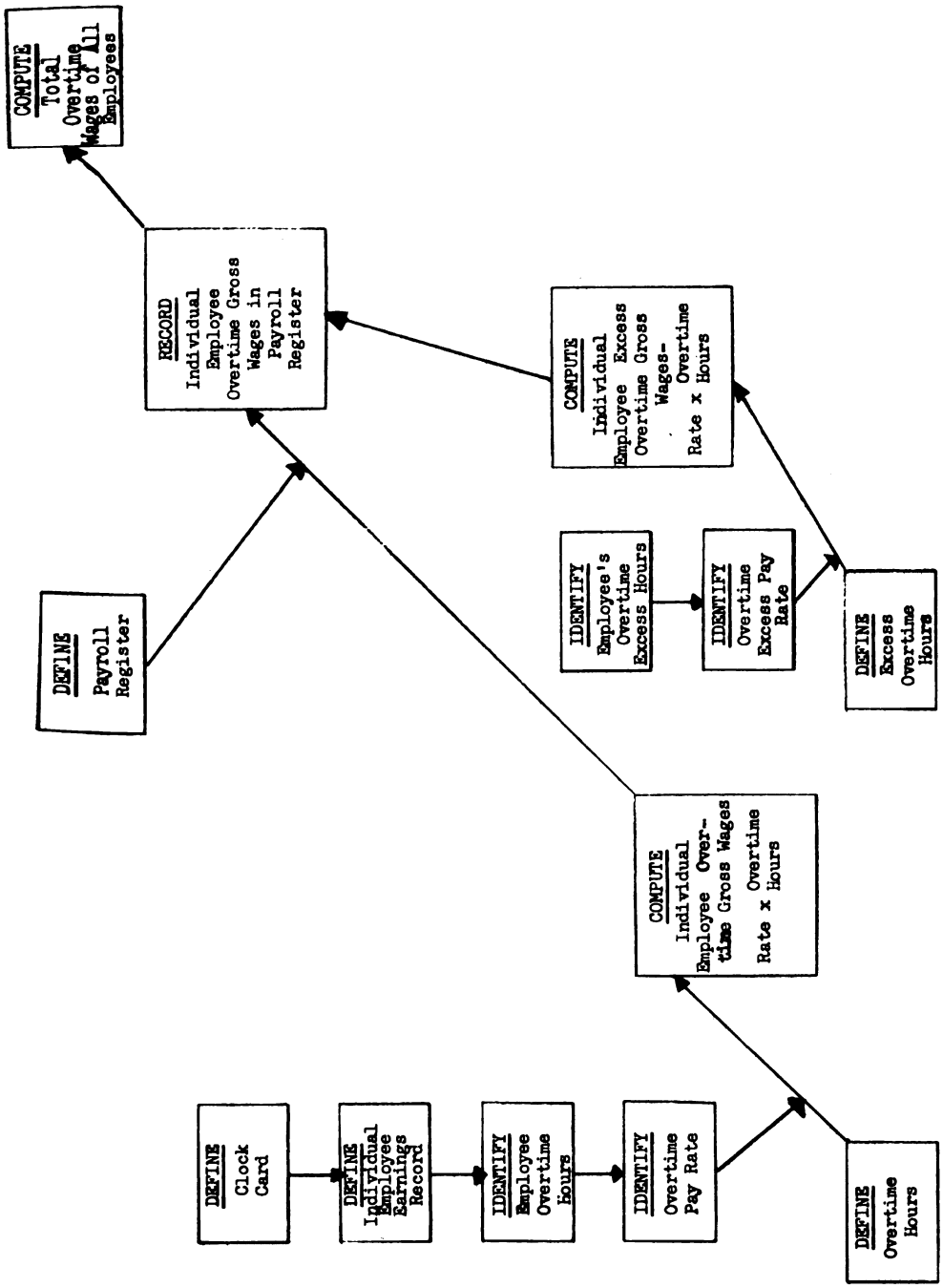

FIGURE 14. Compute Overtime Payroll

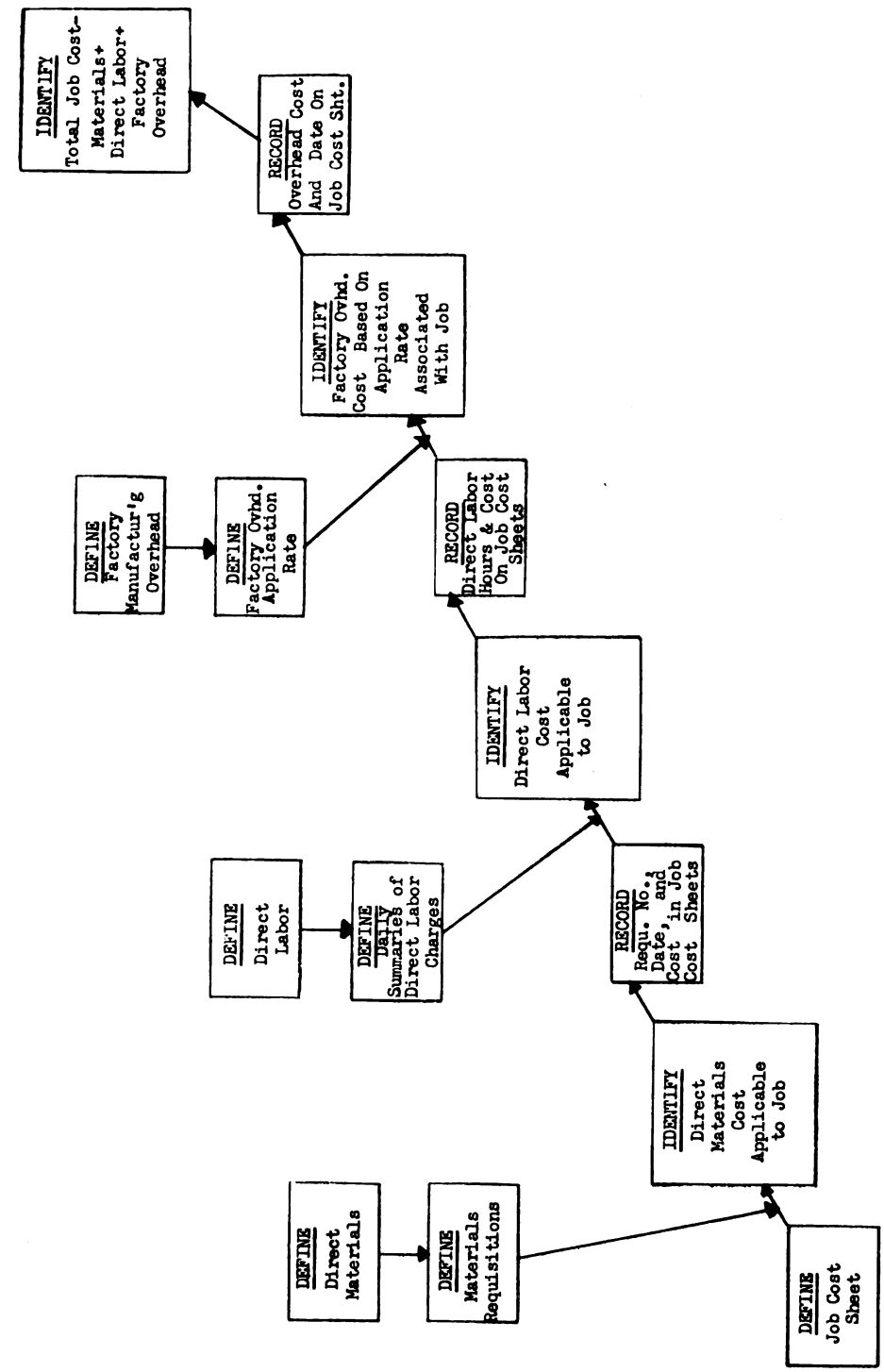

FIGURE 15. Use Worksheet For Work In Process (Job Cost Sheets)

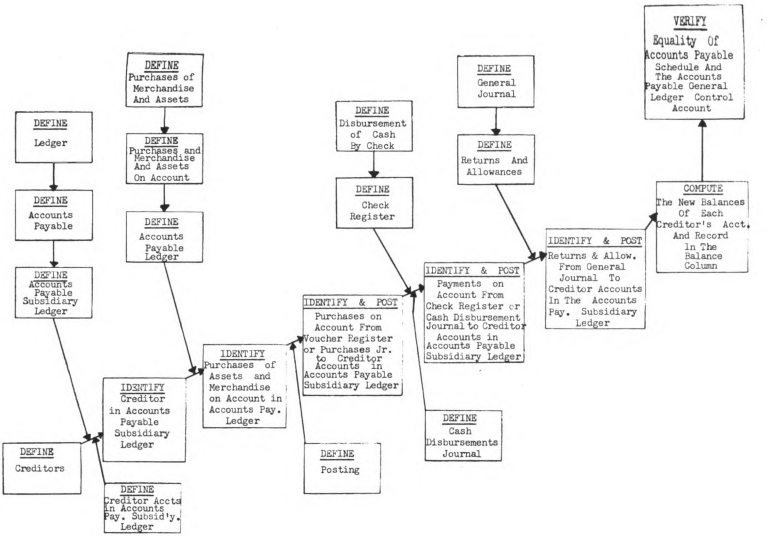

FIGURE 16. Maintain Accounts Payable (Vouchers Payable) Ledger

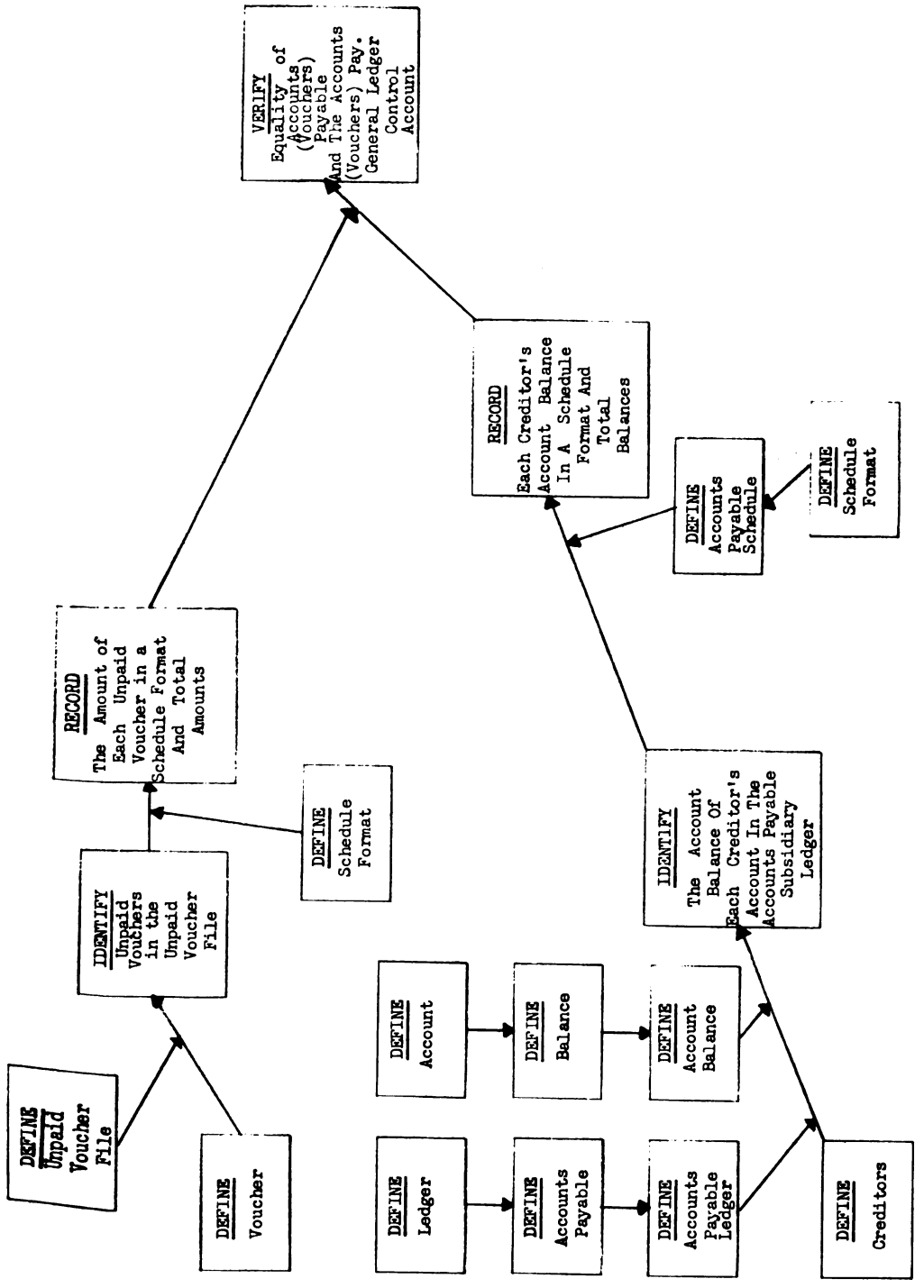

FIGURE 17. Making Accounts (Vouchers) Payable Schedule

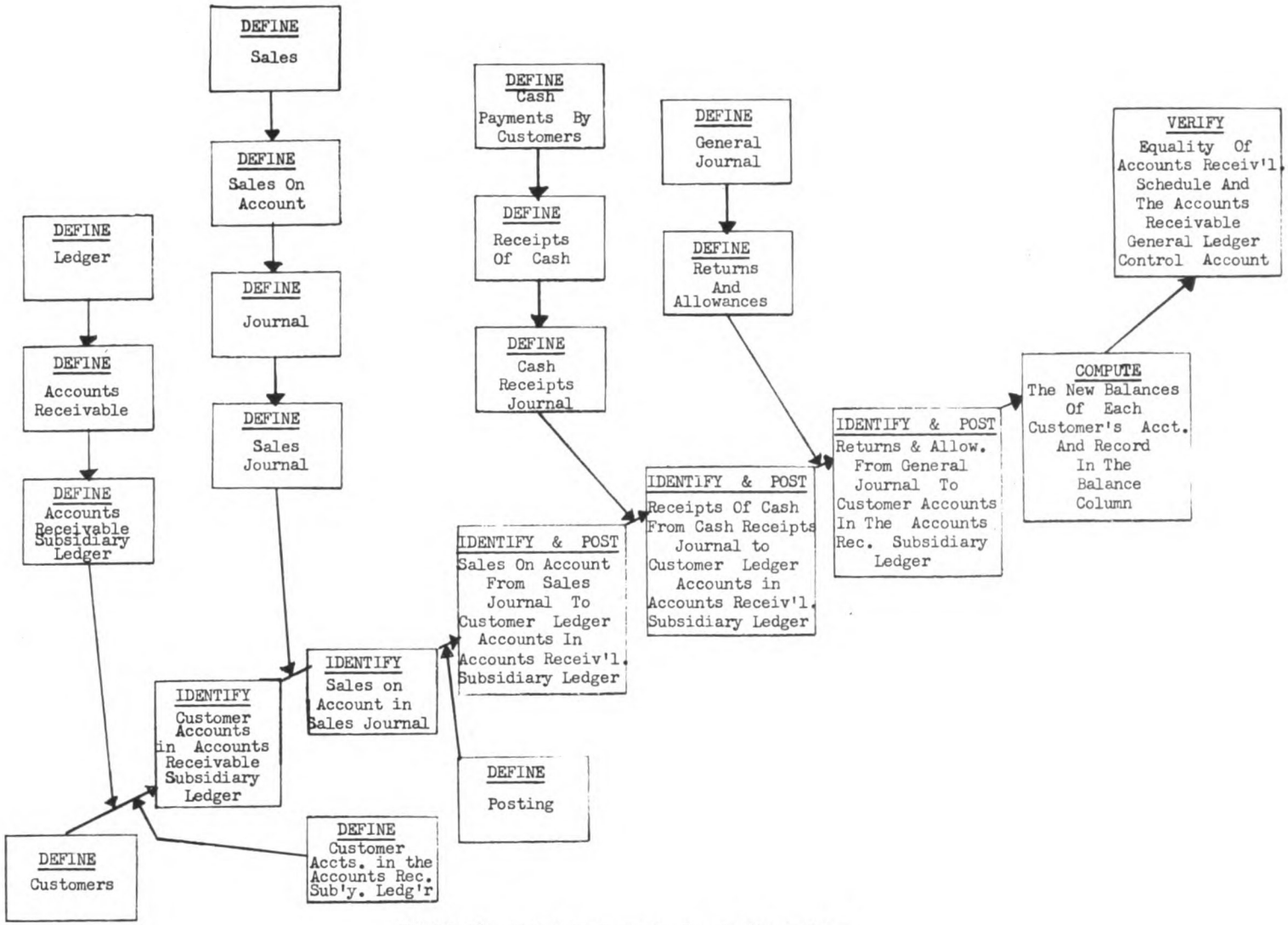

FIGURE 18. Maintain Accounts Receivable Ledger

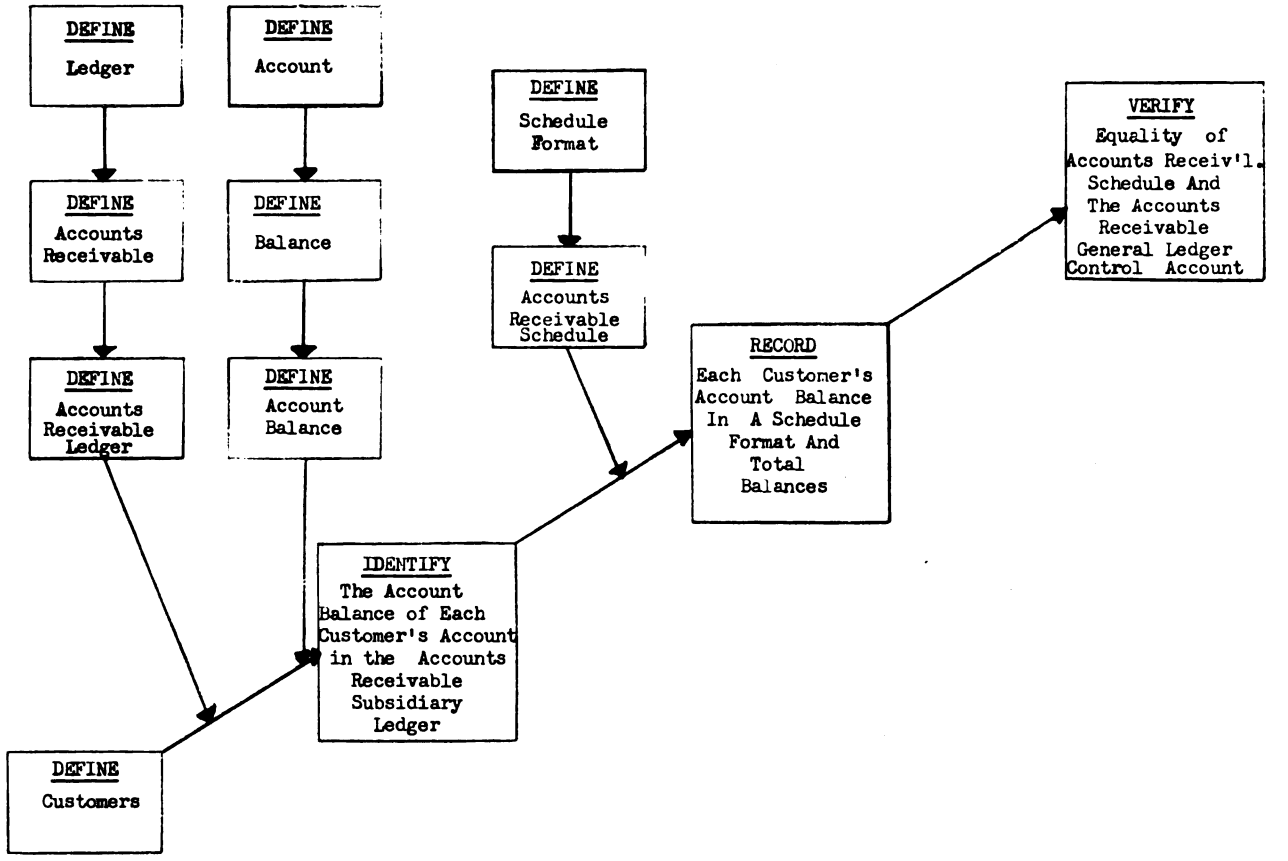

FIGURE 19. Making Accounts Receivable Schedule

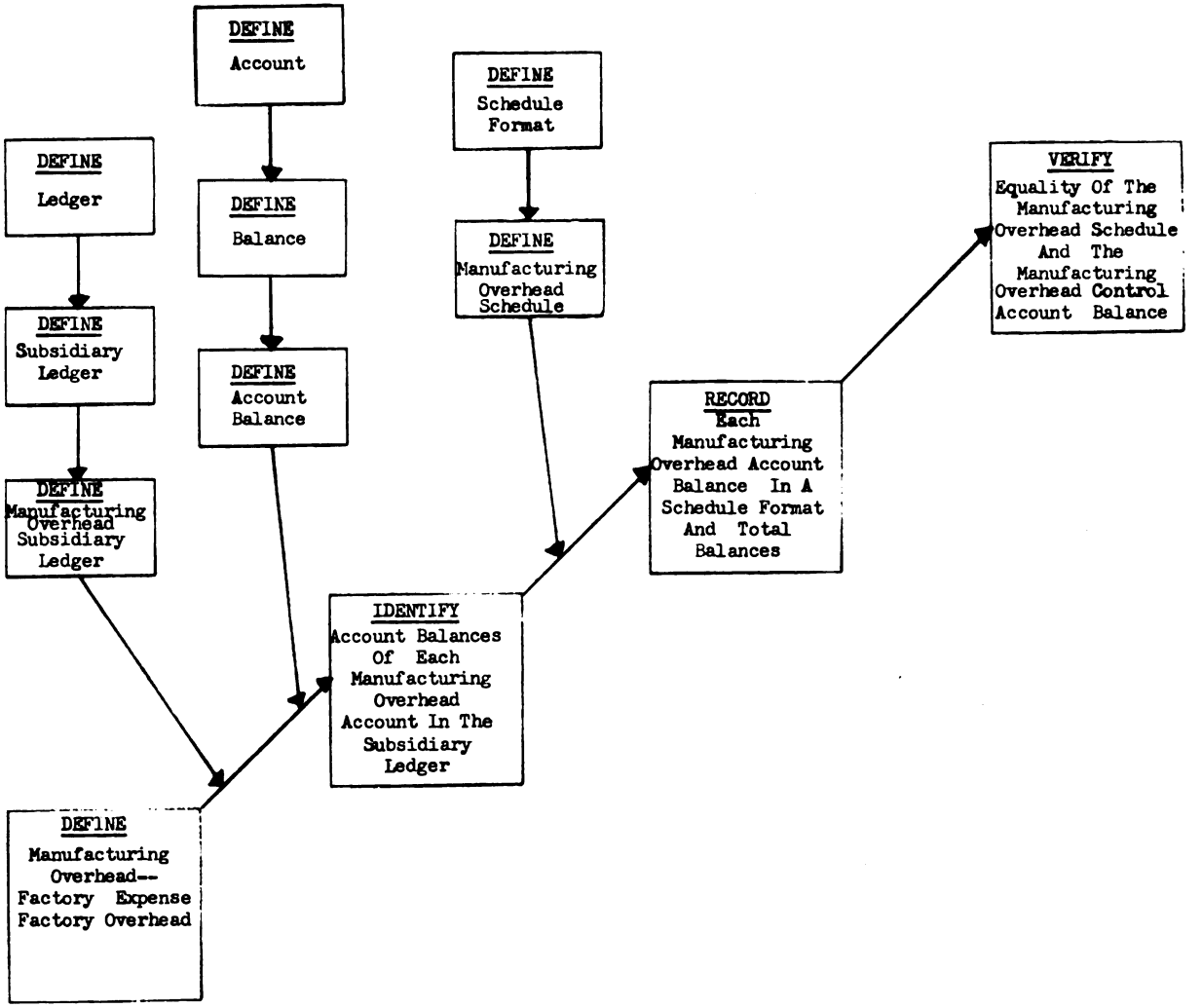

FIGURE 20. Making Factory Expense (Factory Overhead) Schedule

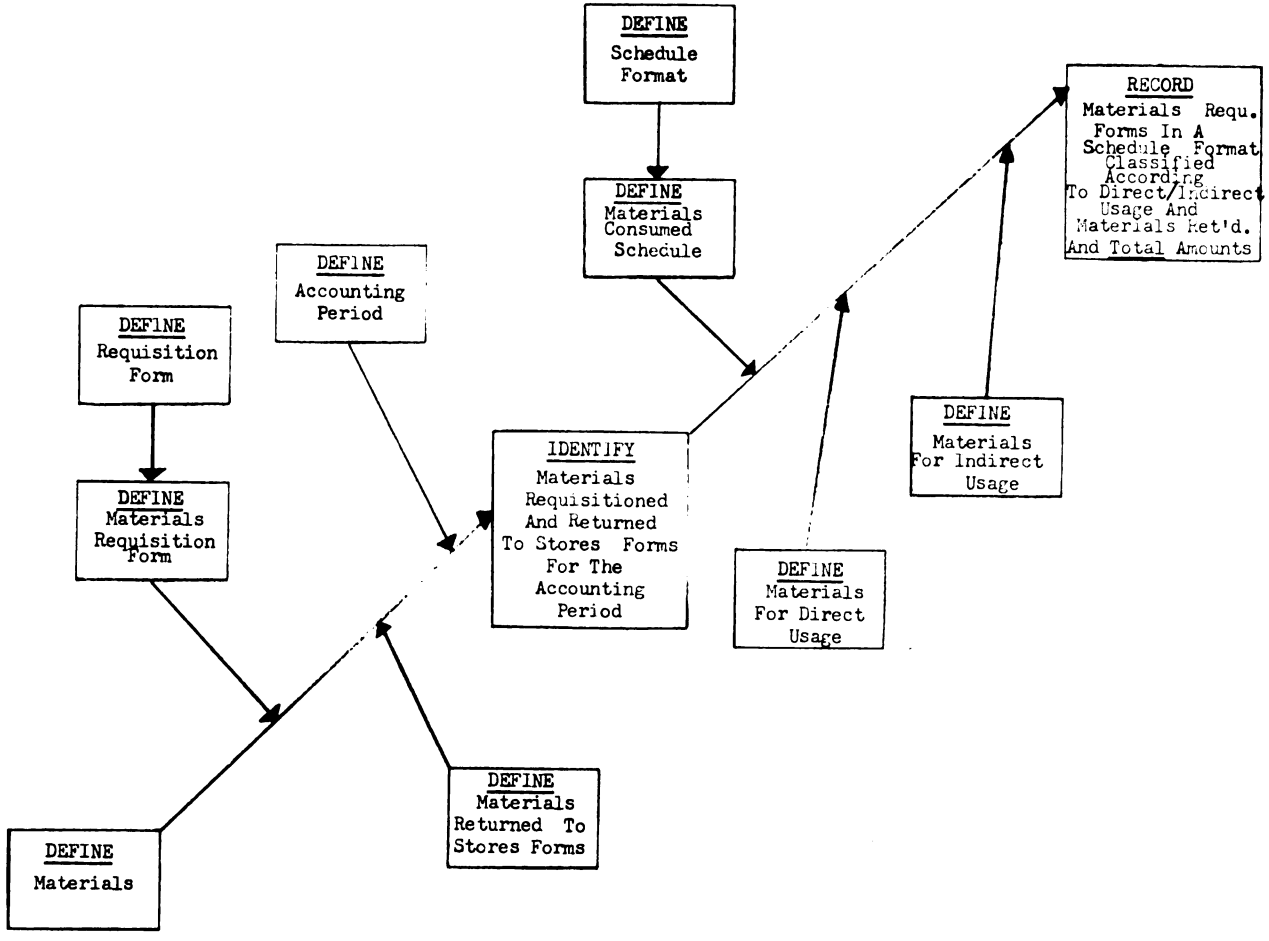

FIGURE 21. Making Materials Consumed Schedule

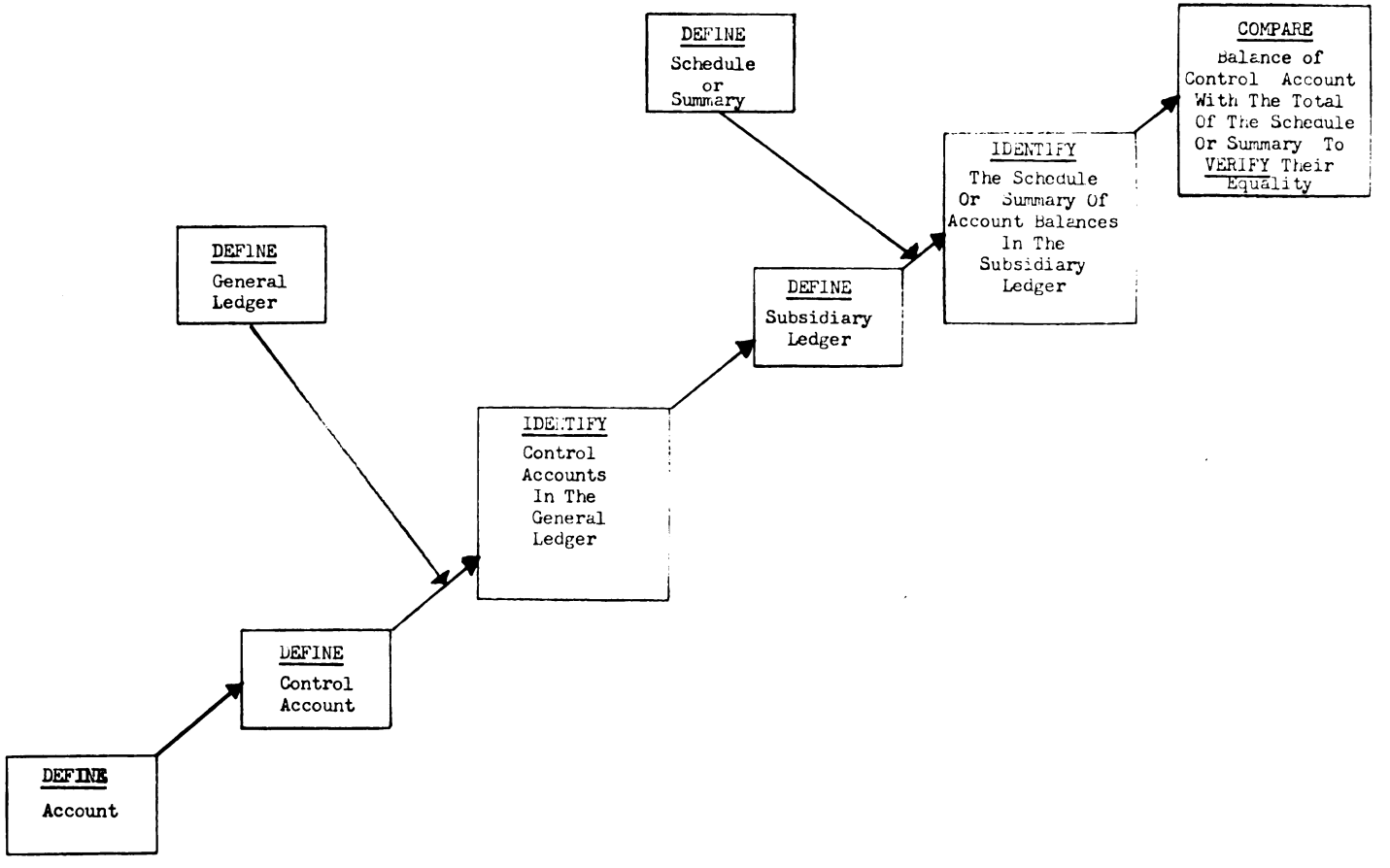

FIGURE 22. Verify Balances Of Control Accounts With Subsidiary Ledger

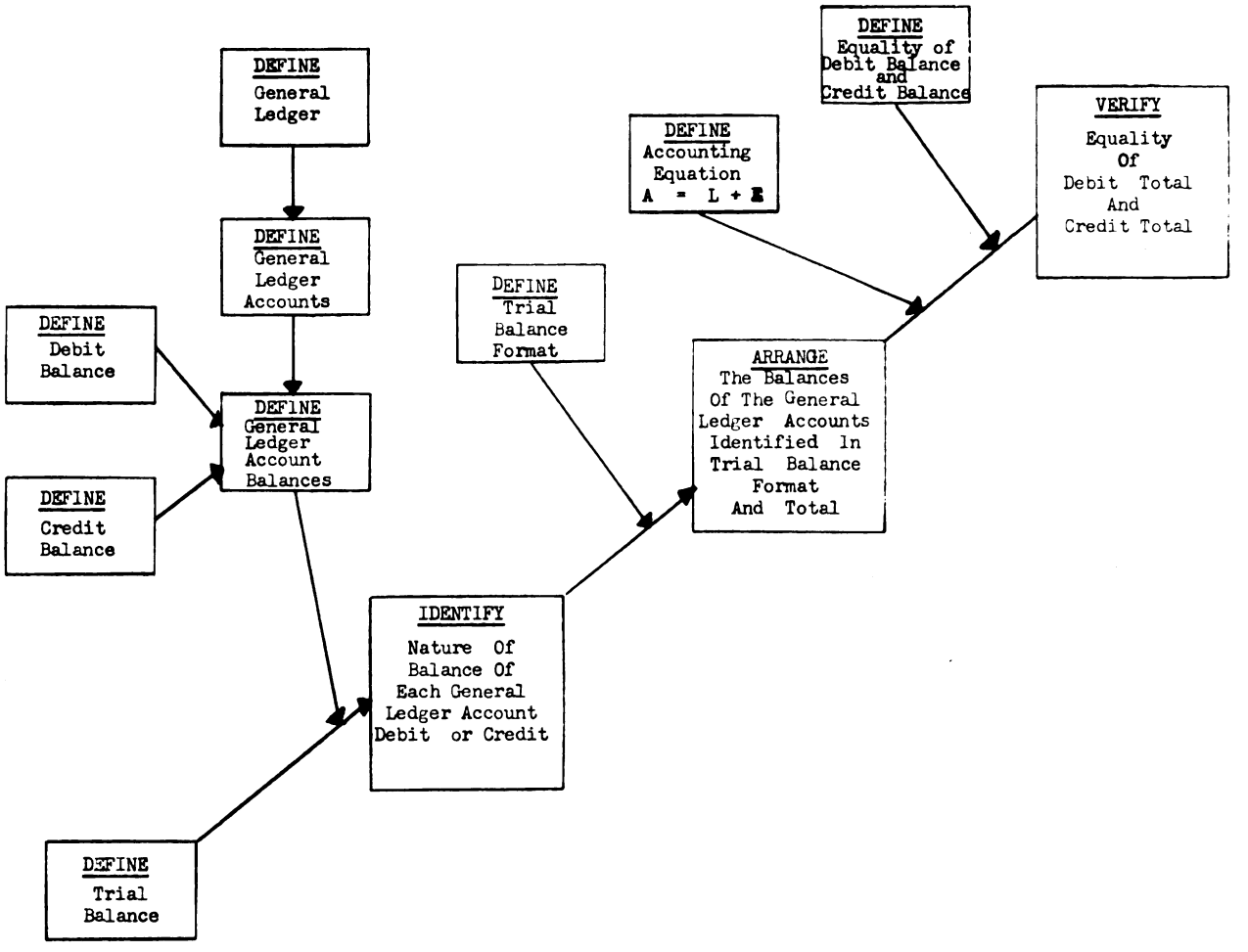

FIGURE 23. Use Worksheet For Trial Balance

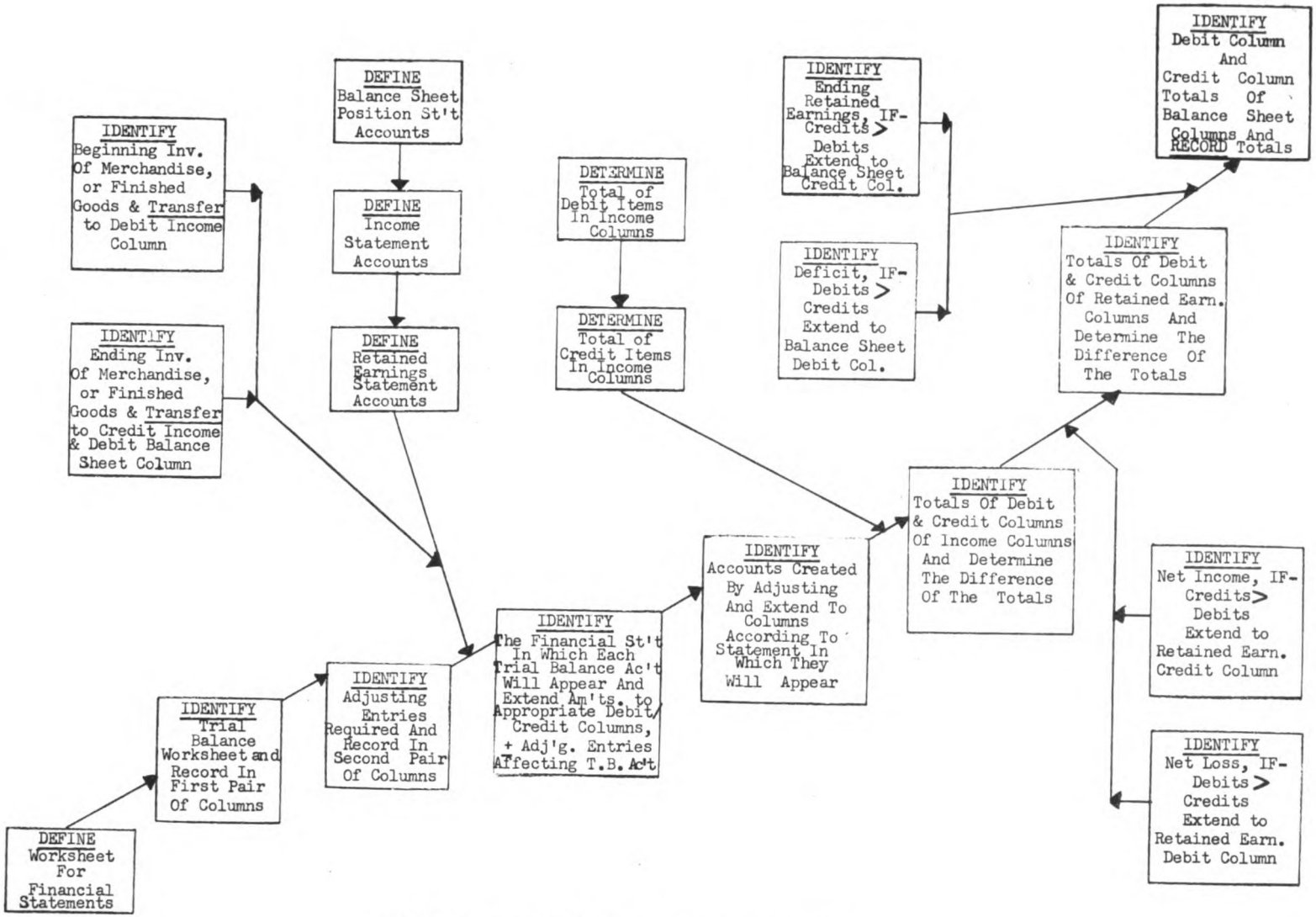

FIGURE 24. Use Worksheet For Financial Statements

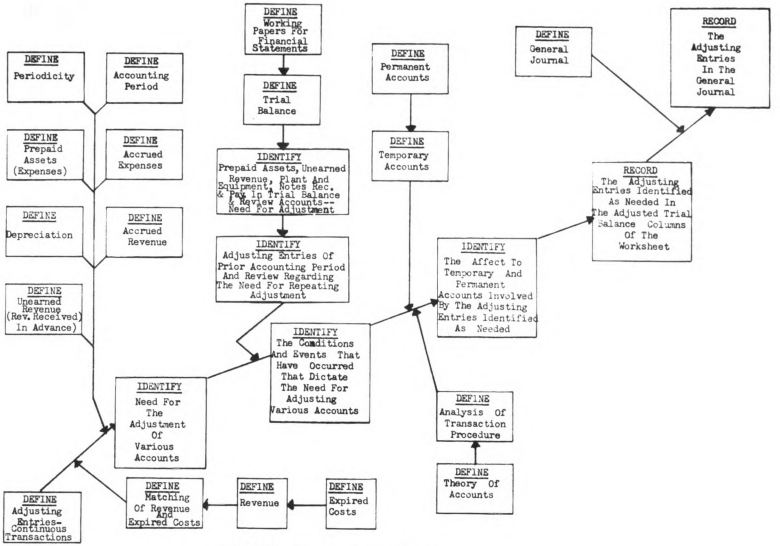

FIGURE 25. Prepare Adjusting Entries

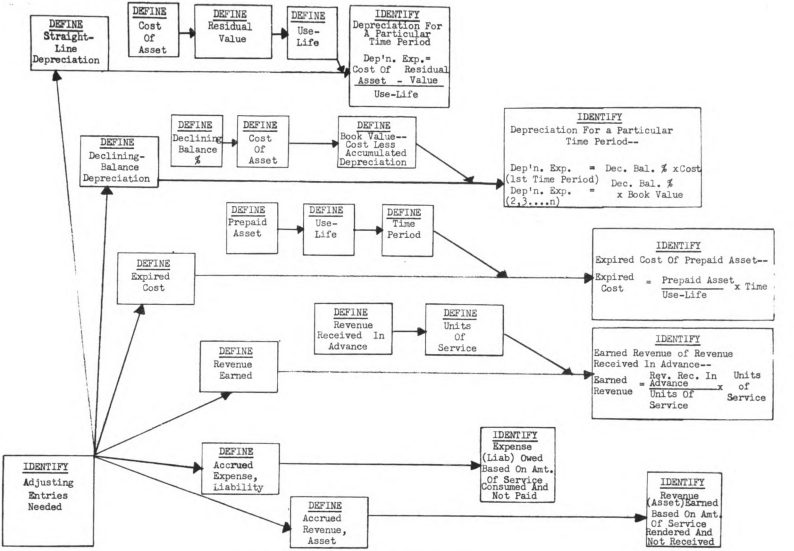

FIGURE 26. Compute Data For Adjusting Entries

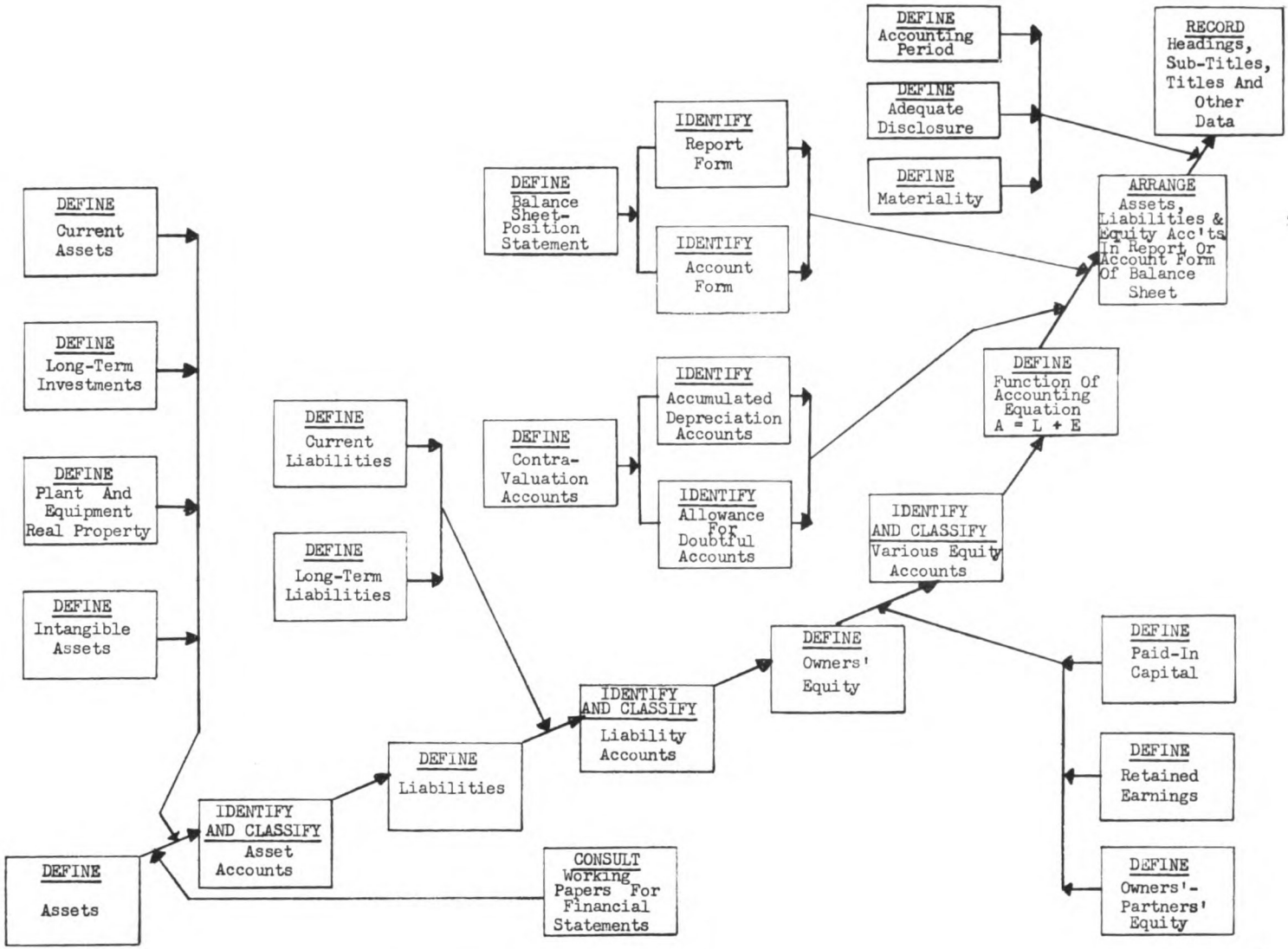

FIGURE 27. Making A Balance Sheet

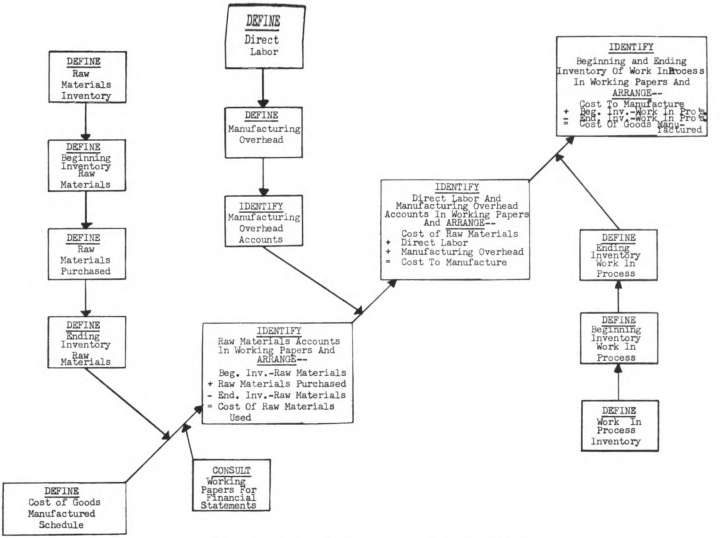

FIGURE 28. Making Cost Of Goods Manufactured Schedule

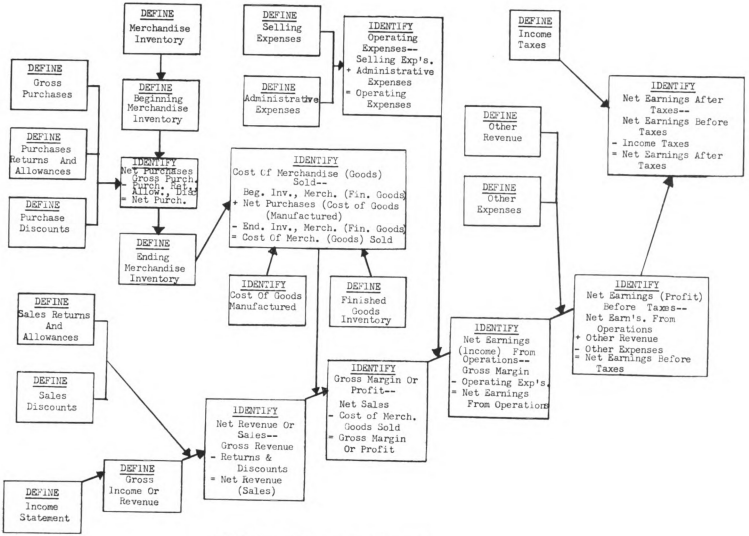

FIGURE 29. Making An Income Statement

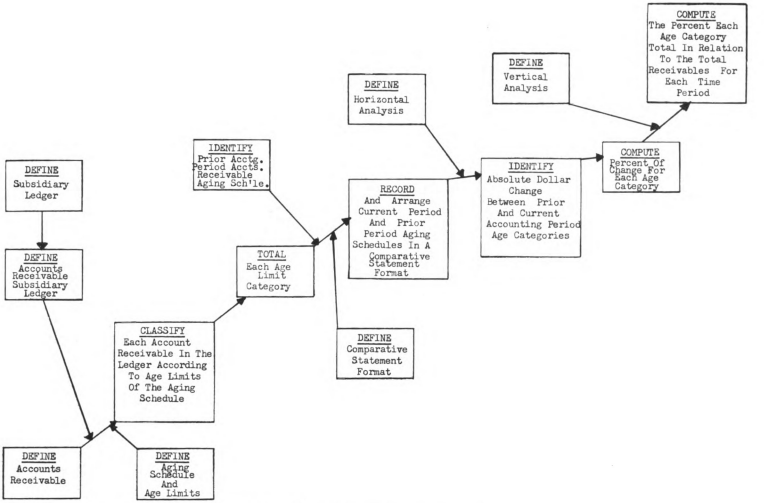

FIGURE 30. Make Analysis Of Accounts Receivable

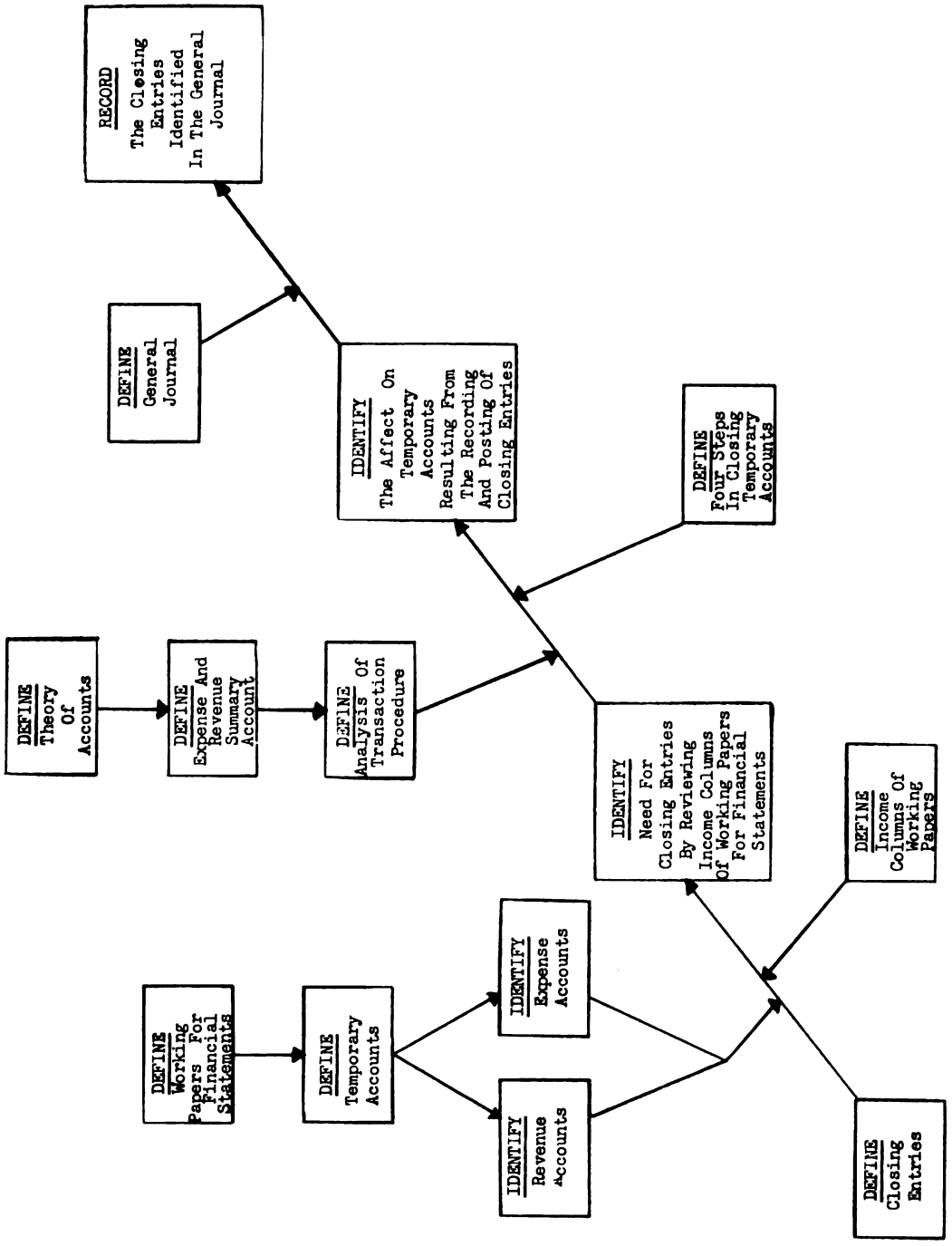

FIGURE 31. Prepare Closing Entries

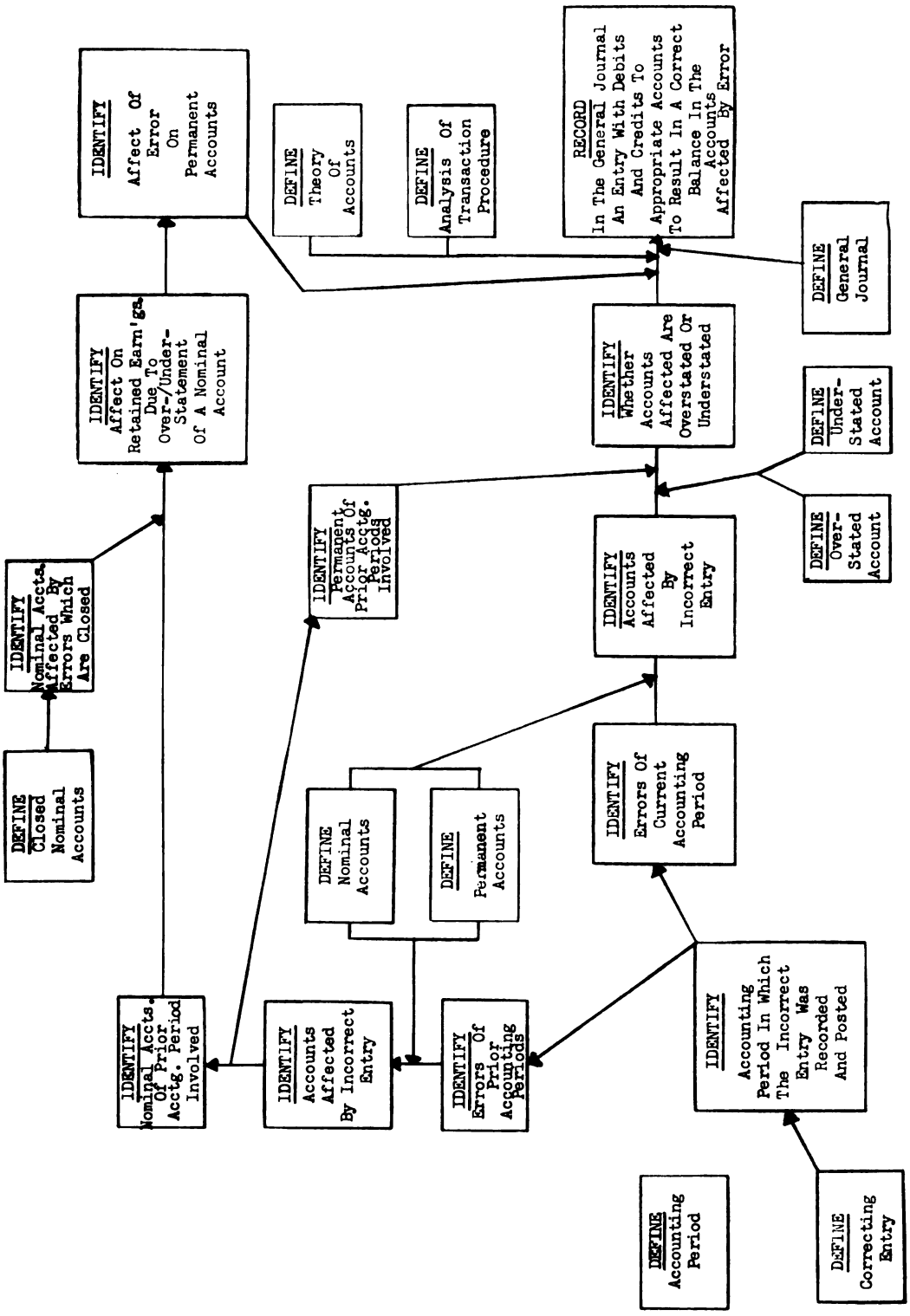

FIGURE 32. Prepare Correcting Entries

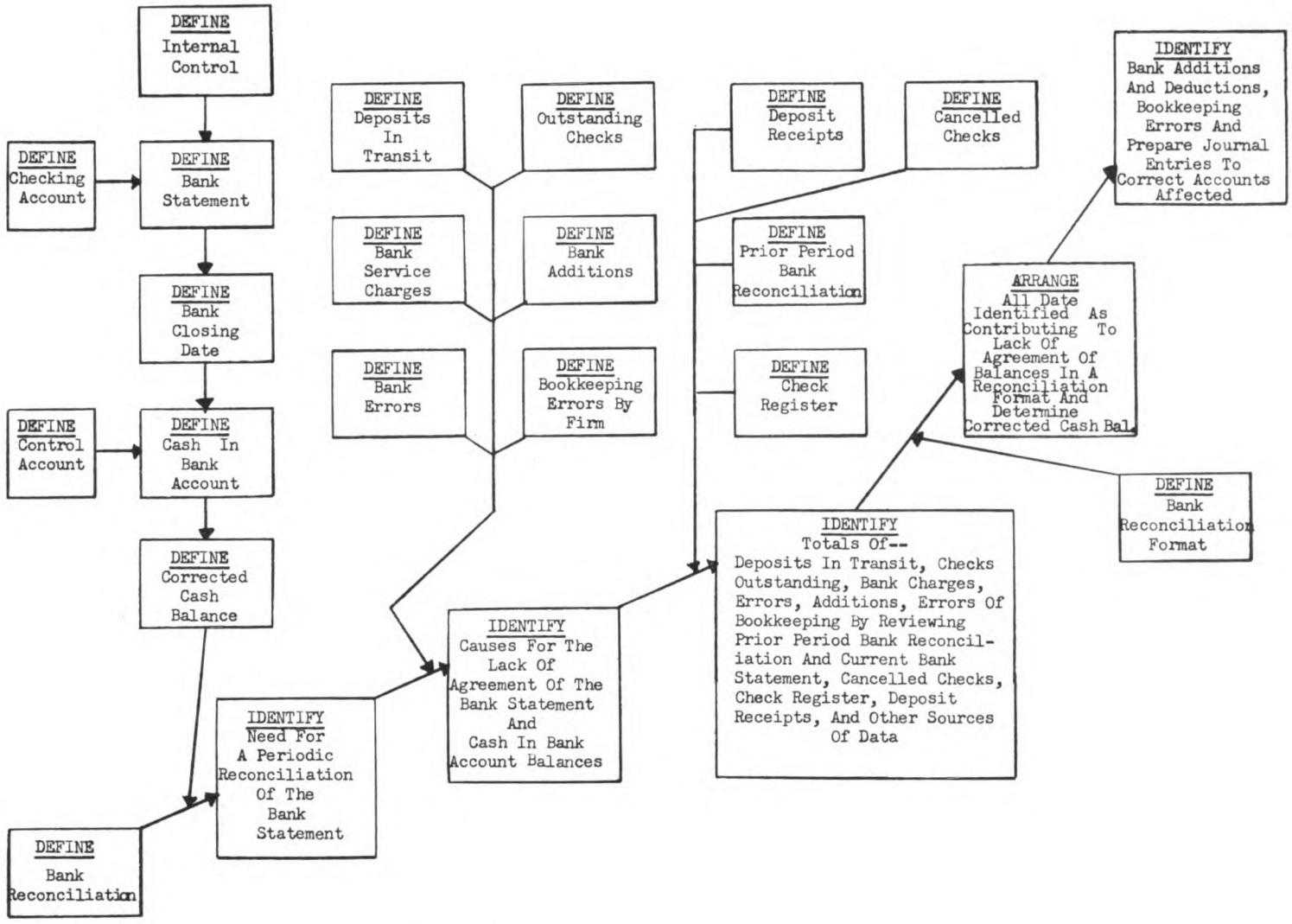

FIGURE 33. Prepare Bank Reconciliation

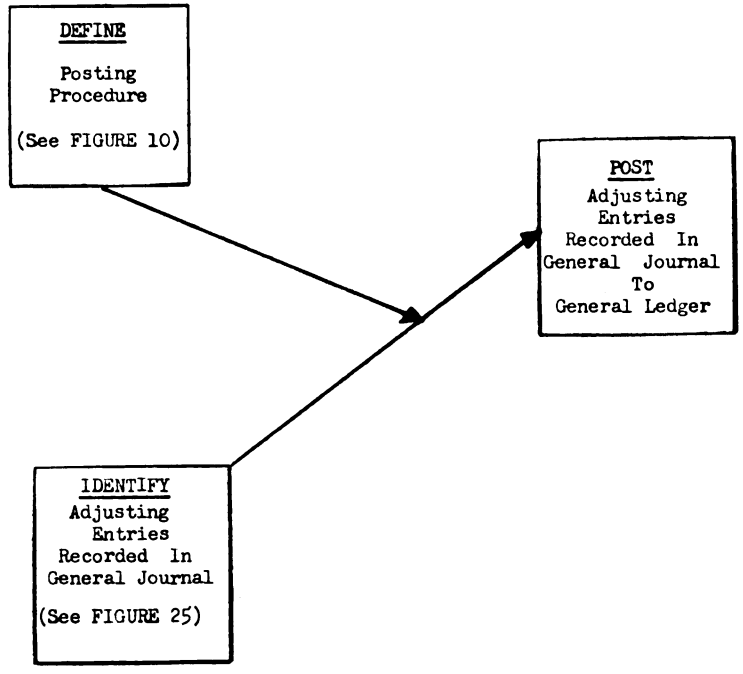

FIGURE 34. Post Adjusting Entries From General Journal To General Ledger

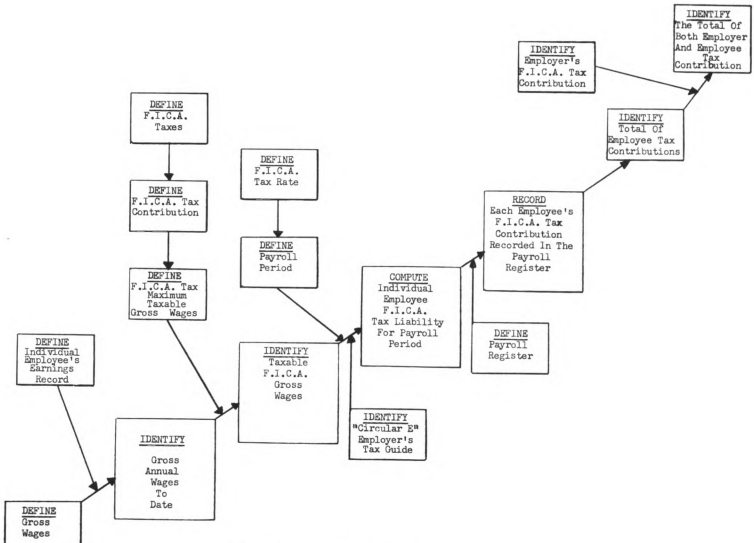

FIGURE 35. Compute F. I. C. A. Taxes

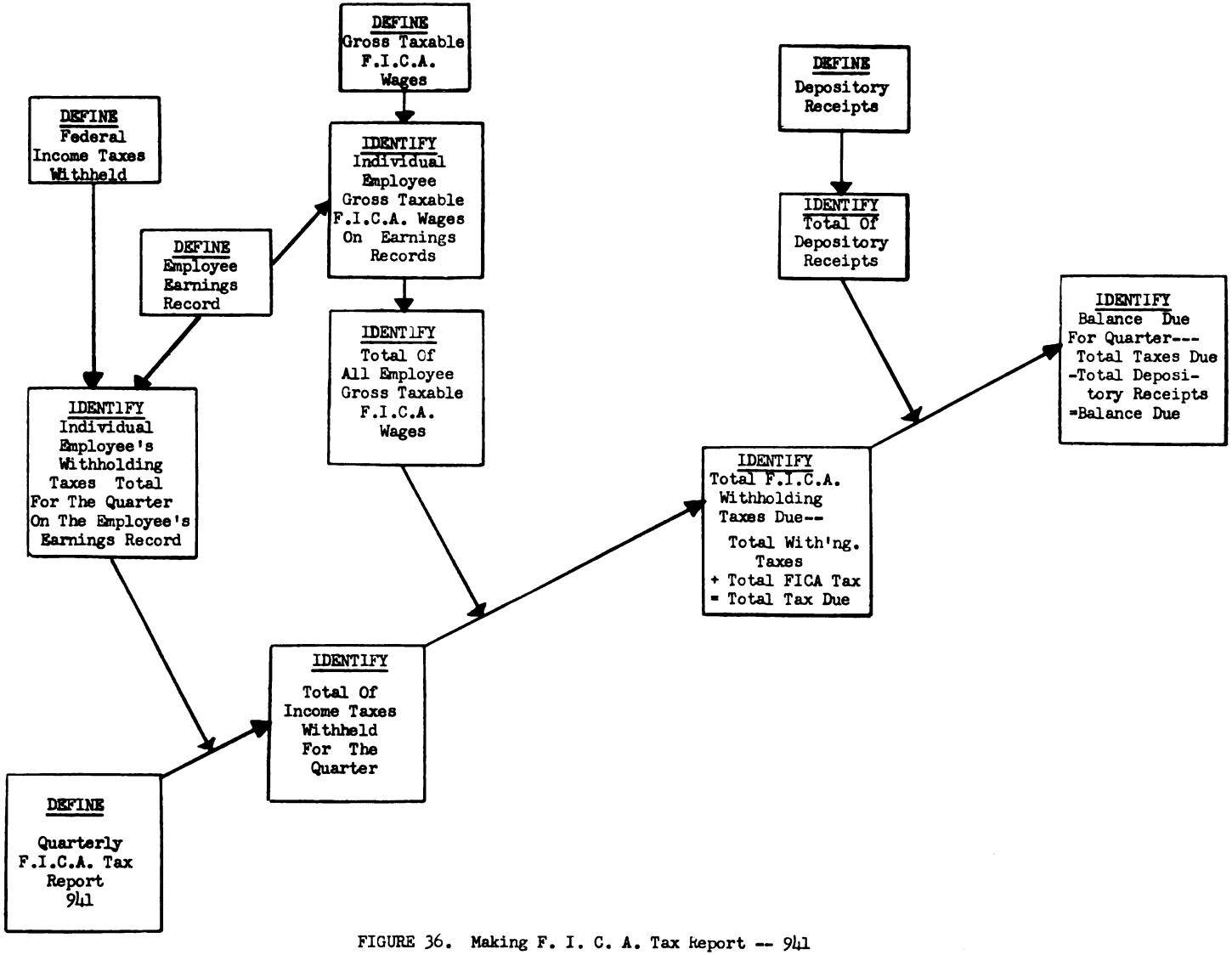

FIGURE 36. Making F. I. C. A. Tax Report -- 941

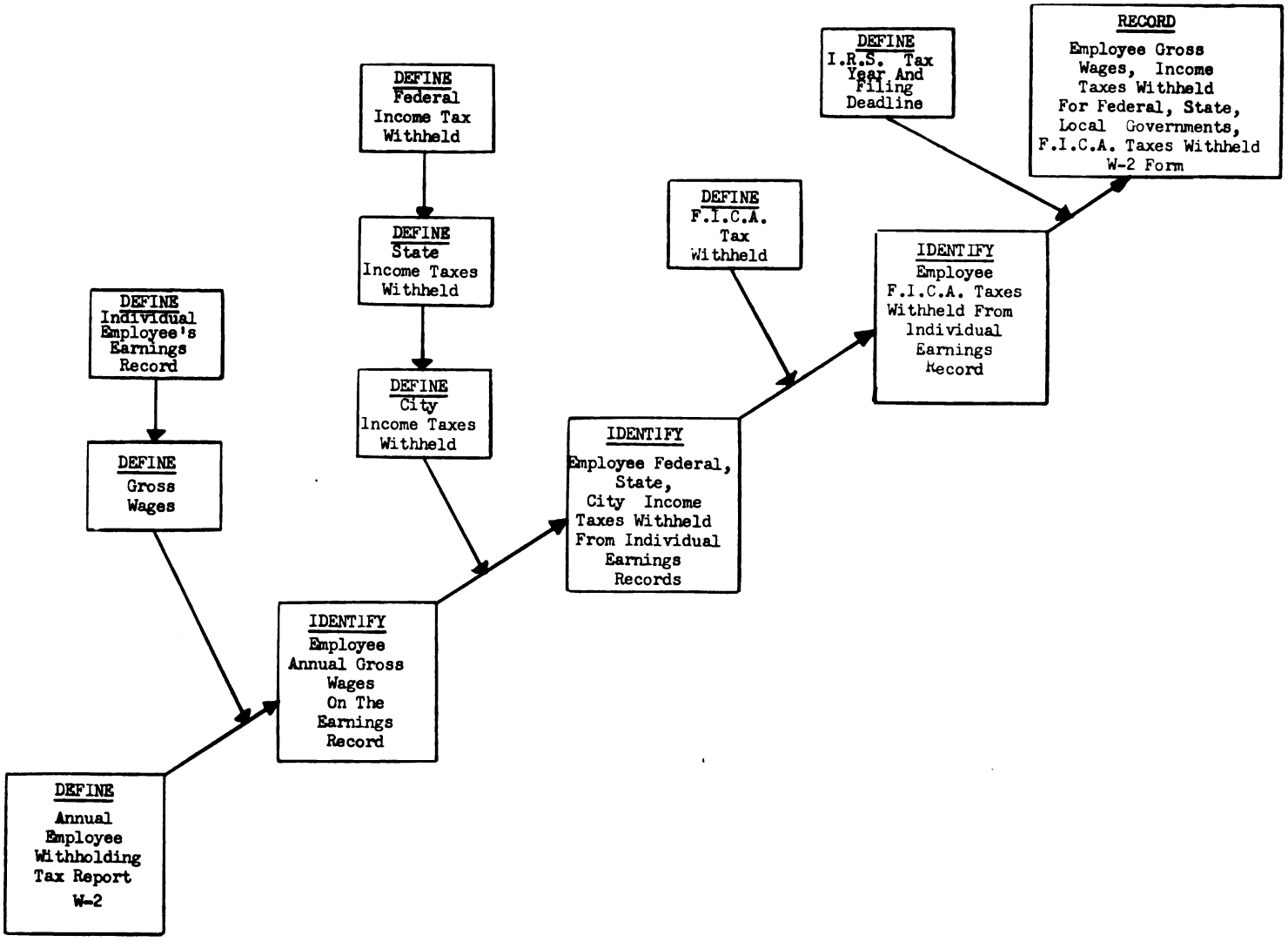

FIGURE 37. Making (Prepare) Employee Withholding Tax Report - W-2

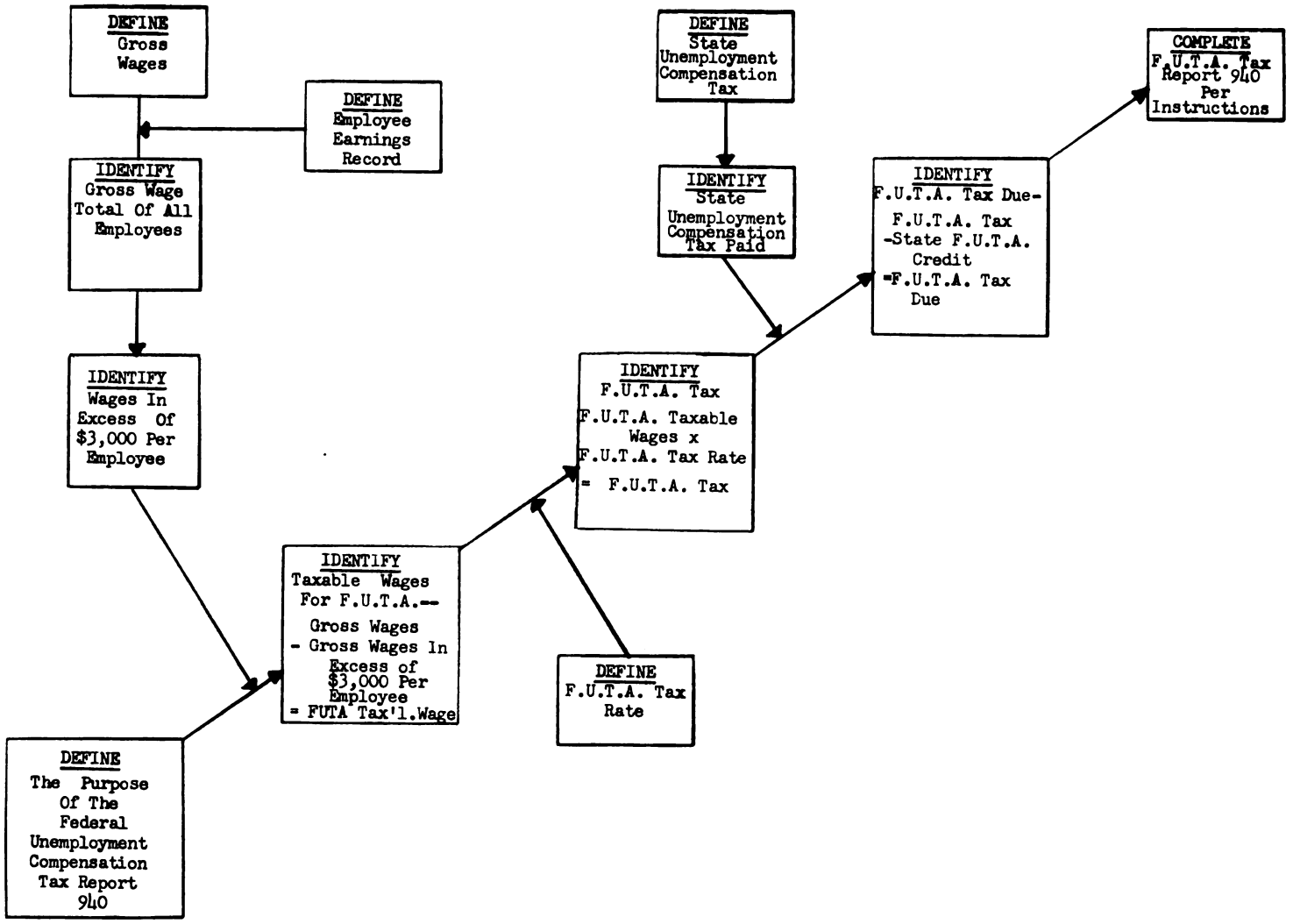

FIGURE 38. Making Federal Unemployment Compensation Tax Report - 940

CHAPTER V

THE FINDINGS, PART II

INSTRUCTIONAL OBJECTIVES FOR A SELECTED SET OF ACCOUNTING ACTIVITIES PERFORMED BY ACCOUNTING TECHNICIANS

The prime purpose for specifying what a student should be capable of doing upon the completion of instruction is that the instructor is provided with a goal-setting situation to assist him in determining the procedures required to secure the desired student behavior. Chapters I and II included a discussion with respect to the need for instructional objectives. Included in Chapter IV were flow diagrams illustrating the relationship among the learning tasks of the selected set of accounting activities. The present chapter concentrates on specifying the instructional objectives developed from the flow diagrams of each of the selected set of accounting activities. This final step completes the sequence of steps of the objectives-deriving model beginning with the identification of accounting activities and ending with the specification of instructional objectives.

Arrangement of the Instructional Objectives

The selected set of accounting activities which describe terminal student behavior are arranged in a sequence identical to that of Figure 3 in Chapter IV. Adjacent to each of the accounting activities are reported the instructional objectives derived from the component learning tasks illustrated by the corresponding flow diagram. Each set of instructional objectives is arranged in a sequence similar to that of the sequence of learning tasks illustrated by the corresponding flow diagram. This sequence is hierarchical in nature in the sense that each objective assumes that prior

learning must have occurred of the learning task defined by the preceding objective. Furthermore, this hierarchical sequence of learning tasks implies that it is essential for the student to be able to demonstrate that behavior which is described by each objective in the sequence prior to being exposed to the instructional effort designed for enabling the student to develop the behavior described by the succeeding instructional objective. Therefore, the sequence of instructional objectives coupled with the corresponding flow diagram for each of the accounting activities provide an outline for an identifiable instructional strategy for which instructional materials and evaluative procedures can be developed.

Finally, the sequencing of learning tasks as illustrated by each flow diagram and the corresponding set of instructional objectives are representative of the concepts proposed by Gagné--namely, that it is essential to identify and specify interrelated and interdependent hierarchies of learning behaviors. (See pages 33-35)

Characteristics of the Instructional Objectives

Consistent with the guidelines proposed by Mager, (See page 30) each of the instructional objectives appearing on the following pages describes an intended outcome of instruction rather than course content, teaching activity, or what a student is to know or understand. Key action verbs appear underlined which describe student behavior or performance. Thus, it is possible to assess whether a student is demonstrating the intended level of achievement specified by the instructional objective.

A majority of the objectives begin with the word, "given." This is due to the hierarchical nature of the objectives which was discussed above, and which implies the "given" learning behavior that the student must be

able to demonstrate and on which the learning behavior specified by the objectives is dependent. The "given" also specifies those conditions under which the student behavior is to occur which is the second of the three criteria Mager sets forth as being essential for useful instructional objectives. (See page 30)

Finally, the majority of the objectives define the criterion of acceptable performance, the third of the set of criteria Mager states are essential for useful instructional objectives. In many cases the action verb implies the student behavior which represents acceptable performance. In other cases the acceptable performance is indicated specifically.

The instructional objectives for the selected set of accounting activities performed by accounting technicians appear on the following pages.

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
Prepare normal transaction entries (See Figure 4, p. 49)	1. Student is able to write a definition of a business transaction.
	2. Student is able to define the purpose of various business documents such as sales invoices, vouchers, checks, payroll summaries, daily cash sales reports, etc.
	3. Given various business documents such as sales invoices, vouchers, checks, payroll summaries, daily cash sales reports, the student is able to identify the nature of the business transactions that have occurred.
	4. The student is able to demonstrate his understanding of the theory of debits and credits by identifying the affect of debits and credits to assets, liabilities, equity, revenue, and expense account categories.
	5. Given the accounts affected by a transaction, the student is able to identify whether the accounts represent assets, liability, owner equity, revenue, or expense account categories.
	6. Given a business transaction, a student is able to (a) identify the accounts affected, (b) state whether the accounts identified are increasing or decreasing, and (c) determine whether each account affected should be debited or credited based on the theory of accounts.
	7. Given a set of special journals such as Cash Receipts, Voucher Register, Sales, Purchases, the student is able to define the function of each special journal and give examples of business transactions that could be recorded in each of these journals.
Maintain Sales Journal (See Figure 5, p. 50)	1. Student is able to explain the function of a Sales Journal as one of a group of special journals of an accounting system.
	2. Given chronologically arranged business transactions, the student is able to identify all entries of sales on account to be recorded in the Sales Journal.

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
	3. Given a sales invoice, the student is able to identify the data to be recorded in the Sales Journal.
	4. Given sales invoices, or summary data of sales invoices, the student is able to record the data in the Sales Journal.
	5. Given a Sales Journal in which transactions for an accounting period have been recorded, the student is able to foot, total and rule the columns of the journal and describe how the column totals will be posted.
	6. Given a transaction recorded in the Sales Journal, the student is able to post the appropriate data to the customer's account in the Accounts Receivable Subsidiary Ledger.
Maintain Cash Receipts Journal (See Figure 6, p. 51)	1. The student is able to explain the function of a Cash Receipts Journal as one of a group of special journals of an accounting system.
	2. Given an array of chronologically arranged business transactions, a student is able to identify all of those transactions to be recorded in the Cash Receipts Journal.
	3. Given an array of business transaction source documents, a student is able to select receipts of cash on account from customers, daily cash receipt reports, and other documents which result in a receipt of cash all of which are to be recorded in the Cash Receipts Journal.
	4. Given a Cash Receipts Journal form with no entries recorded, the student is able to write a brief statement indicating (1) what type of entry would be recorded in Cash Column, (2) whether that particular column is a Debit or Credit column, and (3) the nature of the posting from the particular column.

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
	5. Given an array of business transactions to be recorded in the Cash Receipt Journal, a student is able to record the transactions in the appropriate column. Performance will be judged correct if upon footing each column, the sum of the debit footings is equal to the sum of the credit footings.
Maintain General Journal (See Figure 7, p. 52)	1. Student be able to define the function of a general journal as part of a grouping of special journals of an accounting system.
	2. Given an array of chronologically arranged business transactions, a student is able to identify all of those transactions which would be recorded in the General Journal.
	3. Given a completed worksheet for financial statements, a student is able to identify the adjusting, closing, and reversing entries which would be recorded in the General Journal.
	4. Given data concerning transactions to be recorded in the General Journal, the student is able to record the transaction in correct debit/credit format and include explanations where needed.
Include Explanations on Each (General) Journal Entry (See Figure 8, p. 53)	1. Student be able to state, or write, a brief statement contrasting the need for explanations with General Journal entries in relation to entries recorded in special journals not requiring a similar explanation.
	2. Given any general journal entry, student is able to write a brief explanation to accompany the entry describing the business transaction, end-of-accounting period summary entry, or adjusting, closing, and reversing entries.
Add, Foot, and Balance Columns in Special Journals (See Figure 9, p. 54)	1. Student is able to identify special journals and is able to total and record preliminary footings in each of the columns of these journals.

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
	2. Given special journals with all columns totaled and footed, student is able to identify the debit columns as a group, the credit columns as a second group, determine a total for the group with debit footings, and a total for the group with credit footings, and compare the two sums regarding their equity. Performance will be judged correct if, upon comparing the sum of the debit columns with the sum of the credit columns, the two totals are equal.
	3. Given a special journal where, upon verifying the sum of the debit columns with the sum of the credit columns, the two totals are not equal, the student is able to (a) systematically verify the accuracy of each step involved in adding, footing, and balancing the special columns in reverse order, and (b) verify the accuracy of recording each entry in the special journal based on the source information for the entry. Performance will be judged correct and completed when the error is located, corrected, and the sums of the debit columns and credit columns are verified to be equal.
	4. Given a special journal where equality of the sum of the debit columns and credit columns has been verified, the student is able to record the preliminary footings previously determined as column totals, and rule the journal.
Post Normal Transaction Entries from Journals to General Ledger (See Figure 10, p. 55)	1. Given a set of special journals and a General Journal with entries recorded for an accounting period, a student is able to post the date of the entry, number of credit memo, invoice, voucher or any miscellaneous information regarding the entry, the journal page number and the debit or credit amount of the entry from the sundry columns of all the various journals to the appropriate General Ledger debit or credit column. Upon completing the posting, the General Ledger account should have recorded in it the data indicated above.

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
	2. Given a set of special journals and a General Journal with entries recorded for an accounting period, a student is able to post column totals of all special columns, and the journal page number of all the journals to the appropriate General Ledger debit or credit column and record the date of posting.
	3. The student is able to record in the journals, either in the post reference column or below the column total, the appropriate General Ledger account number to which the various debits and credits have been posted. Performance of the post-reference procedure will be judged completed when, upon completing the posting of all journals, a review of the journals and the general ledger accounts reveals a ledger account number associated with each entry in the sundry columns and the special journal columns, as well as a journal page number associated with each and every posting in the general ledger accounts.
	4. Student is able to express verbally, or write a brief statement explaining the significance of complete and accurate cross-referencing of posting from all journals to general ledger accounts.
Check Postings and Totals (See Figure 11, p. 56)	1. Given a set of special journals and general journal which have been posted to the General Ledger accounts at the end of an accounting period, the student is able to verify the accuracy of the posting of all data by comparing the amount of the entries recorded in the various journals with the posted amount in the General Ledger accounts.
	2. Given a set of special journals which have been footed, totaled, and balanced, student is able to verify the accuracy of the footings by reverse addition or by the use of an adding machine.
	3. Given the General Ledger and subsidiary ledgers, the student is able to verify the accuracy of each ledger account balance by re-balancing each account.

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
Add, Foot, and Balance Ledger Accounts (See Figure 12, p. 57)	1. Given General Ledger and subsidiary Ledger accounts for which all end-of-month postings from various journals has been completed, the student is able to identify the sum of the debit postings and the sum of the credit postings and is able to determine whether the account has a debit, credit, or no balance and record the balance in the balance column.
Maintain Payroll Ledger (Individual Earnings Record) (See Figure 13, p. 58)	1. Given the Payroll Register for a particular payroll period, student is able to identify the payroll data for each employee and transfer the data regarding hours worked, regular, overtime and total earnings, deduction, gross and net pay, to the individual employee's earnings record in the Payroll Ledger. 2. Given a Payroll Ledger with the individual employee's earnings records up-dated to include all payroll data for a quarterly period or for the entire year, the student is able to total the various columns and identify quarterly and/or annual totals for each individual employee.
Compute Overtime Payroll (See Figure 14, p. 59)	1. Given an employee's clock card as well as the employee's overtime pay rate, the student is able to compute the employee's overtime hours and the overtime gross pay for a particular payroll period. 2. Given an employee's clock card as well as the employee's excess overtime pay rate, student is able to compute the employee's excess overtime hours and the excess overtime gross pay for a particular payroll period. 3. Given overtime gross pay and/or excess overtime gross pay for each employee for a particular payroll period, the student is able to record this data in the payroll register for the payroll period and determine the total gross overtime wages for all employees.

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
Use Worksheet (Job Cost Sheets) for Work in Process (See Figure 15, p. 60)	1. Given all materials requisitions, or a summary of the materials requisition, student is able to identify and record the dollar amount and the requisition number of the materials requisitioned to each of the job cost sheets representing the jobs to which materials were applied.
	2. Given all time tickets, or a summary of direct labor applied to various jobs, student is able to identify and record the dollar cost of direct labor and the time ticket number to each of the job cost sheets representing the jobs to which direct labor was applied.
	3. Given the job cost sheets on which materials cost and direct labor cost have been recorded and data regarding the method of applying manufacturing overhead to jobs, the student is able to compute and record the dollar cost of manufacturing overhead applicable to the job during the time period.
	4. Given the job cost sheet on which direct labor applied, materials requisitioned, and manufacturing overhead have been recorded, the student is able to record totals for each of the cost elements indicated above, transfer these totals to a summary section on the job cost sheet and to determine the total cost of materials, direct labor, and overhead applied to each job during prior accounting periods as well as the current accounting period.
Maintain Accounts Payable Ledger (See Figure 16, p. 61)	1. Given a Purchases Journal and the Accounts Payable Subsidiary Ledger, which includes individual creditor's accounts, the student is able to identify purchase of merchandise and assets on account from specific creditors recorded in the Accounts Payable special column, and to post dollar amounts, date of purchase as well as data regarding invoice number to the individual creditor's accounts in the subsidiary accounts payable ledger. Performance of the postings described will be judged to be completed accurately when an examination of the Purchases Journal indicates all purchases of merchandise and other assets on account have been posted, and when an examination of the creditor's

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
	accounts in the subsidiary ledger indicates that the postings from the Purchases Journal have been recorded in the credit columns.
	2. Given a Cash Payments (Disbursements) Journal and the Accounts Payable Subsidiary Ledger, the student is able to identify payments on account to creditors, and to post dollar amounts, date of payment, check number to the individual creditor's account in the subsidiary accounts payable ledger. Performance of the posting described will be judged to be completed accurately when an examination of the Cash Payments Journal indicates all payments on account have been posted to the subsidiary ledger accounts, and when an examination of the creditors' accounts in the subsidiary ledger indicates that the postings from the Cash Payments Journal have been recorded in the debit columns.
	3. Given a General Journal and the Accounts Payable Subsidiary Ledger, a student is able to identify entries affecting creditors' accounts such as Returns and Allowances, and to post dollar amount, date, and other pertinent data regarding the entry to the individual creditor's account in the subsidiary accounts payable ledger. Performance of the posting described will be judged to be completed accurately when an examination of the General Journal indicates all entries affecting creditor's accounts have been posted to the subsidiary ledger accounts and properly cross-referenced.
Making Accounts (Vouchers) Payable Schedule (See Figure 17, p. 62)	1. Given the Accounts Payable Subsididary Ledger with all individual creditor accounts footed and balanced, the student is able to identify the balance of each creditor account and to record the name of the account and the balance in a schedule format with appropriate identification of the schedule by means of a heading. The student is also able to total and rule the schedule. Performance will be judged to be completed accurately when the total of the schedule is in agreement with the balance of the Accounts Payable controlling general ledger account.

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	**---the following instructional objectives should be achieved**
	2. Given the Unpaid Voucher File, the student is able to identify the dollar amount of the voucher and to record the number of each voucher as well as to whom it is to be paid in a schedule format with an appropriate heading identifying the schedule, the student is also able to total and rule the schedule. Performance will be judged to be completed accurately when the total of the schedule is in agreement with the balance of the Voucher Payable controlling general ledger account.
Maintain Accounts Receivable Ledger (See Figure 18, p. 63)	1. Given a Sales Journal and an Accounts Receivable Subsidiary Ledger which indicates individual customer accounts, the student is able to identify sales of merchandise on account to specific customers recorded in the Sales Journal and to post dollar amounts, sale invoice numbers, date of sale and other pertinent data to the individual customer accounts in the subsidiary Accounts Receivable Journal. Performance of the posting described will be judged to be completed accurately when an examination of the Sales Journal indicates that all sales on account have been post referenced as having been posted to the subsidiary ledger account, and when an examination of the customers' accounts in the subsidiary ledger indicates that the postings from the Sales Journal have been posted to the debit columns and properly cross-referenced.
	2. Given a Cash Receipt Journal and the Accounts Receivable Subsidiary Ledger, the student is able to identify payments on account by customers, and to post dollar amounts, date of receipt, as well as cash receipt number to the customer accounts in the Accounts Receivable Subsidiary Ledger. Performance of the posting described will be judged to be completed accurately when an examination of the Cash Receipt Journal indicates that all recorded receipts of cash on account have been post referenced as having been posted to the subsidiary ledger accounts, and when an examination of the customer accounts in the subsidiary ledger indicates that the postings from the Cash Receipt Journal have been posted to the credit column and properly cross-referenced.

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
	3. Given a General Journal and an Accounts Receivable Subsidiary Ledger, the student is able to identify entries affecting customer accounts such as returns and allowances, and to post dollar amount, date of entry, and other pertinent data regarding the entry to the individual customer's accounts in the subsidiary ledger. Performance of the posting described will be judged to be completed accurately when a review of the General Journal indicates that all entries affecting customers' accounts have been posted to the subsidiary ledger accounts and properly cross-referenced.
Making Accounts Receivable Schedule (See Figure 19, p. 64)	1. Given an Accounts Receivable Subsidiary Ledger with all individual accounts footed and balanced, the student is able to identify the balance of each customer account and to record the balance and the name of the account in a schedule format with an appropriate heading identifying the schedules. The student is also able to total and rule the schedule. Performance will be judged to be completed accurately when the total of the schedule is in agreement with the balance of the Accounts Receivable controlling General Ledger Account.
Making Factory Expense (Manufacturing Overhead) Schedule (See Figure 20, p. 65)	1. Given a Factory Overhead Subsidiary Ledger with individual Factory Overhead accounts posted and balanced, the student is able to identify the individual account balances and to record the title of the account and the balance in a schedule format with an appropriate heading identifying the schedule. The student is also able to total and rule the schedule. Performance will be judged to be completed accurately when the total of the schedule is in agreement with the Manufacturing Overhead Control General Ledger Account.
Making Materials Consumed Schedule (See Figure 21, p. 66)	1. Given materials requisitioned forms and materials returned to store report forms for an accounting period, the student is able to identify (a) materials requisitioned for direct usage on specific jobs as well as for indirect usage, (b) materials returned to stores, and to record requisition numbers, factory overhead account numbers, report numbers, factory overhead account

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
	numbers as well as dollar value of materials concerned in a schedule format with an appropriate heading identifying the schedule. The student is also able to total and rule the schedule.
Verify Balances of Control Accounts with Subsidiary Ledger (See Figure 22, p. 67)	1. Given various subsidiary ledgers such as Accounts Receivable, Accounts Payable, Factory Overhead, and the respective General Ledger Control accounts such as Accounts Receivable, Accounts Payable, Factory Overhead, the student is able to identify the balances as indicated by the respective schedule and control accounts and verify their equality.
	2. Given a schedule and the respective General Ledger control account with balances which the student has verified not to be equal, the student is able to systematically check balances, footings, postings and trace entries to their business source documents to determine and correct the cause for the inequity. Performance will be judged to be completed accurately when the student identifies and corrects the cause for inequality and verifies the equality of respective schedules and control accounts.
Use Worksheet for Trial Balance (See Figure 23, p. 68)	1. Given a General Ledger with all accounts footed and balanced, the student is able to record account titles and balances of the accounts in either the debit or credit column depending on the account balance, foot and total the columns, verify the equity of the debit and credit totals, and record an appropriate heading identifying the worksheet.
	2. Given a Trial Balance wherein the debit and credit footings are verified to be unequal, the student is able to systematically verify the footings and account balances, verify the accuracy of posting from journals, and verify the accuracy of recording business transactions in the journal and to determine and correct the cause or causes, for the inequality. Performance will be judged to be completed accurately when the student identifies and corrects the

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
	cause, or causes, for the inequality and verifies the equality of the debit and credit of the trial balance worksheet totals.
Use Worksheet for Financial Statements (See Figure 24, p. 69)	1. Given the trial balance worksheet of the General Ledger with the sums of the debit and credit columns verified as being equal, the student is able to record the trial balance in the first two columns of a worksheet for financial statements entitled Trial Balance.
	2. Given all of the adjusting entries required to adjust the temporary and permanent general ledger accounts at the end of the accounting period, the student is able to record in the second pair of columns of the worksheet for financial statements entitled Adjustments all of the adjusting entries opposite the appropriate account appearing in the trial balance columns, or to record the account title in an appropriate position below the trial balance account title and the amount of the entry in either the debit or credit columns of the adjustment columns. The student is able, also, to foot and total the debit and credit columns of the Adjustments. Performance will be judged to be completed accurately upon verification of the equality of the sum of the debits and credits of the recorded adjusting entries.
	3. Given the Ending Merchandise Inventory data for a merchandising enterprise where perpetual inventory records are not maintained, the student is able to record the inventory data on the worksheet by either of the methods whereby the inventory accounts are up-dated by adjusting entries or by closing entries.
	4. Given the worksheet for financial statements with the trial balance, adjusting entries and inventory accounts recorded, the student is able to proceed systematically to extend all trial balance account balances to either the income statement columns, retained earnings statement columns, or balance sheet statement columns, adding or subtracting adjusting entry amounts to/from the trial balance amounts. The student

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
	is also able to extend all accounts created by adjusting entries to the appropriate statement columns of the worksheet.
	5. Given the income statement columns of the worksheet with all revenue, cost and expense account balances recorded, the student is able to foot the columns, compute the net income (loss) and balance the columns. The student is also able to extend the net income (loss), to the appropriate retained earnings statement column. Performance will be judged to be completed accurately when the income columns have been balanced and the net income (loss) has been extended to the appropriate retained earnings column.
	6. Given the Retained Earnings Columns of the worksheet with all the account balances affecting retained earnings and net income (loss) recorded, the student is able to foot the columns, compute the entries Retained Earnings, and balance the columns. The student is also able to extend the ending Retained Earnings or Deficit, to the appropriate Balance Sheet column. Performance will be judged completed accurately when the Retained Earnings Columns have been balanced and the ending Retained Earnings, or Deficit, extended to the appropriate Balance Sheet statement column.
	7. Given the Balance Sheet columns of the worksheet with all permanent account balances and ending Retained Earnings, or Deficit, recorded, the student is able to total and balance the columns. Performance will be judged to be completed accurately when the sum of the accounts of the debit columns is equal to the sum of the accounts of the credit column.
	8. Given the Balance Sheet columns of the worksheet where the sum of the debit accounts and the sum of the credit accounts are not equal, the student is able to proceed systematically through all of the steps involved in completing the worksheet in reverse order, and to identify and correct all errors. Performance will be judged to

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
	be completed accurately when the sum of the debit and credit columns of the Balance Sheet have been found to be equal.
Prepare Adjusting Entries (See Figure 25, p. 70)	1. The student is able to define verbally or in writing Prepaid Assets (expenses), Deferred Revenue (revenue received in advance), Accrued Expenses, Accrued Revenue, and to demonstrate the need for entries to adjust permanent and temporary accounts at the end of an accounting period by illustrating with examples each of these types of adjusting entry situations.
	2. Given the adjusting entries recorded at the end of the previous accounting period and the trial balance worksheet of the General Ledger at the end of the current accounting period, a student is able to (a) identify all the accounts that would require adjusting at the end of the accounting period, (b) identify and state which accounts are to be debited and credited by the adjusting entry and, (c) compute the dollar amount of the adjustment required.
	3. After the student has identified the accounts to be debited and credited and computed dollar amounts of all adjusting entries required at the end of an accounting period, he is able to record these entries in the adjustments column of the worksheet for financial statements and to journalize these entries in the General Journal under an appropriate heading.
Compute Data for Adjusting Entries (See Figure 26, p. 71)	1. Given a Plant Asset Subsidiary Ledger, the student is able to identify the cost, book value, residual value and use-life of each plant asset which will need to be adjusted at the end of the given accounting period.
	2. Given the cost, residual value, and use-life of a plant asset, the student is able to compute the depreciation for a given period of time by the straight-line method of depreciation.

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
	3. Given the cost, book value, residual value, and declining balance percentage, the student is able to compute the depreciation for a given period of time by the declining balance method of depreciation.
	4. Given the cost of a Prepaid Asset, such as Insurance, and the term of the policy, or use-life of the asset, the student is able to compute the expired cost to be identified with a given time period.
	5. Given the cost of ending inventory and the cost units purchased of a Prepaid Asset, such as supplies, the student is able to compute the expired cost to be identified with the given time period.
	6. Given data regarding the units of service rendered and additional revenue in advance during the given accounting period, the student is able to compute the revenue earned during the given time period.
	7. Given data regarding the nature of the obligation incurred but not paid, such as interest rate, principal, and time of a note payable, the student is able to compute the amount of the accrued liability (expense) for a given time period.
	8. Given data regarding the nature of the receivable earned but not received, such as interest rate, principal, and time of a note payable, the student is able to compute the amount of the accrued asset (revenue) for a given time period.
Making a Balance Sheet (See Figure 27, p. 72)	1. Given the worksheet for financial statements, the student is able to identify from the data recorded in the Balance Sheet columns all current assets, long-term investments, plant, equipment, and real property, and intangible asset accounts, group the individual accounts within these asset classifications along with their respective contra-evaluation accounts, total each asset category, and determine the total net value of assets.

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
	2. Given the worksheet for financial statements, the student is able to identify from the data recorded in the Balance Sheet columns all current liability and long-term liability accounts, group the individual accounts within their liability category, total each liability category, and determine the total liabilities.
	3. Given the worksheet for financial statements, the student is able to identify owner's equity or Partner's Equity as in the case of a corporation, the Retained Earnings and Paid-in-Capital accounts, group and arrange the appropriate individual accounts within these equity categories, total these equity categories, and determine total equity section balance. Performance will be judged to be completed accurately when the sum of the net assets is equal to the sum of the liability and equity categories.
	4. Given a situation where the sum of the net assets was found not to be equal to the sum of the liabilities and equity categories, the student is able to systematically perform the steps followed in developing the balance sheet in reverse order until the error or errors are identified and corrected so that the balance sheet balances.
	5. Given the data regarding net assets, liabilities and equity categories, the student is able to arrange these categories in either (a) balance sheet format, (b) the report form or the account form, and include appropriate headings, subheadings, account titles, to produce a balance sheet in a generally accepted format.
	6. The student is able to demonstrate his understanding of the concepts of materiality and adequate disclosure in preparing the balance sheet by including footnotes and explanatory information, such as future contingencies affecting the firm, valuation procedures, and rounding off amounts in an appropriate manner.

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
Making Cost of Goods Manufactured Schedule (See Figure 28, p. 73)	1. Given a worksheet for financial statements, the student is able to identify from the Cost of Goods Manufactured columns the beginning and ending materials inventory data, materials purchased, as well as returned, allowances and discounts on materials purchased, and is able to arrange the data to determine cost of materials used.
	2. Given a worksheet for financial statements and cost of materials used, the student is able to identify direct labor cost and all the manufacturing overhead accounts and is able to arrange the data to determine Cost to Manufacture Goods.
	3. Given a worksheet for financial statements and cost to manufacture goods, the student is able to identify beginning and ending inventory data of Goods in Process and is able to arrange the data to determine Cost of Goods Manufactured during the accounting period.
	4. Given materials, direct labor, manufacturing overhead, and goods in process inventory costs, the student is able to record appropriate headings, section titles, identify totals, total and rule the data to produce a cost of goods manufactured schedule in a correct and generally accepted format.
Making an Income Statement (See Figure 29, p. 74)	1. Given a worksheet for financial statements, the student is able to identify Gross Sale, Revenue, Sale Returns, Allowances and Discounts, and is able to arrange the data to determine Net Sales Revenue.
	2. Given a worksheet for financial statements, the student is able to identify Gross Cost of Purchases, Purchases Returns, Allowances and Discounts, and is able to arrange the data to determine Net Cost of Purchases.

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
	3. Given a worksheet for financial statements and Net Cost of Purchases, the student is able to identify beginning and ending merchandise inventory data, and arrange the data to determine Cost of Goods Sold.
	4. Given a worksheet for financial statements of a manufacturing enterprise and the Cost of Goods Manufactured Schedule, the student is able to identify the beginning and ending finished goods inventory, and arrange the data to determine Cost of Goods Sold.
	5. Given detailed data in determining Net Sales Revenue and Cost of Goods Sold, the student is able to arrange the data to determine Gross Margin or Profit.
	6. Given a worksheet for financial statements, the student is able to identify all selling and administrative expenses, arrange the individual accounts under the heading Selling Expenses and Administrative Expenses, total each category and determine total Selling and Administrative expenses.
	7. Given the detailed data in determining Gross Margin (Profit) and total Selling and Administrative Expenses, the student is able to arrange the data to determine Net Earnings.
	8. Given all the detail data for determining Net Earnings and the worksheet for financial statements, the student is able to identify Other Revenue and Other Expense accounts, to arrange other data to determine Net Other Revenue and Expenses, and compute Net Income from operations.
	9. Given all detailed data for determining Net Income from Operations and data for Income Taxes, the student is able to arrange the data to determine Net Income after taxes.

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	**---the following instructional objectives should be achieved**
	10. Given all the detail data for determining Net Income after taxes, the student is able to record an appropriate heading identifying the statement, all section headings, and to produce an Income Statement in a correct and generally accepted format.
Make Analysis of Accounts Receivable (See Figure 30, p. 75)	1. Given the Accounts Receivable Subsidiary Ledger and an aging schedule regarding account age limits and estimated percentages of uncollectibility, the student is able to review each individual customer account in the subsidiary ledger, classify each sale by age, and total each age category. Performance will be judged to have been completed accurately upon verifying that the sum of the age limits total is equal to the total of the Schedule of Accounts Receivable.
	2. Given the prior accounting period aging schedule and the current period accounts receivable aging schedule, the student is able to record the data in a horizontal analysis format, compute dollar change for each age category, and determine percent of change from the prior accounting period age category total.
	3. Given the prior accounting period aging schedule and the current period accounts receivable aging schedule, the student is able to record the data in a vertical analysis format and compute the percent of each age category in relation to the total accounts receivable for each of the accounting periods being analyzed.
Prepare Closing Entries (See Figure 31, p. 76)	1. Student is able to write a brief statement regarding (a) the need for closing entries, (b) the net affect of closing entries, and is able to list the four basic steps in closing the temporary accounts of a General Ledger.
	2. Given the worksheet for financial statements and the General Ledger account, Income Summary, the student is able to explain the function of the account in the closing of the books process and to demonstrate his understanding of the function by utilizing the account in recording the required closing entries.

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
	3. Given the worksheet for financial statements, the student is able to identify all the accounts with credit balances in the Income Statement columns, and is able to record an entry in the General Journal to close these accounts and transfer the total of these accounts to the Income Summary account.
	4. Given the worksheet for financial statements, the student is able to identify all accounts with debit balances in the Income Statement columns, and is able to record an entry in the General Journal to close these accounts and to transfer the total of these accounts to the Income Summary account.
	5. Given the worksheet for financial statements, the student is able to identify the Net Income (loss), and to record an entry in the General Journal to transfer this amount from the Income Summary account to the owner's equity account or partner's equity accounts according to partnership agreement, or to the Retained Earnings Account in the case of a corporation.
	6. Given the worksheet for financial statements, the student is able to identify the Drawing account, or in the case of a partnership, each partner's Drawing account, and record an entry in the General Journal to close Drawings to the owner('s) equity account(s). In the case of a corporation, the student is able to identify the Dividends and to record an entry in the General Journal to close dividends to the Retained Earnings account.
Prepare Correcting Entries (See Figure 32, p. 77)	1. Given a situation or condition whereby it has been determined that one or more accounts do not reflect a correct balance due to an error in journalizing and posting a transaction, the student is able to determine whether the error occurred during a prior accounting period or during the current accounting period.

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
	2. Given an error which occurred in a prior accounting period which has resulted in an incorrect balance in one or more accounts, the student is able to identify all accounts involved, determine which accounts are permanent and which are nominal, and determine whether they overstated or understated, and by what amount.
	3. Given an error which occurred during a prior accounting period which affected only permanent accounts, the student is able to record a correcting entry in the General Journal which, when posted will restore a correct balance to the account involved.
	4. Given an error which occurred during a prior accounting period which affected both temporary and permanent accounts, the student is able to identify the affect of the error to net income and retained earnings (or capital) as a result of the error in a temporary account, and is able to record an entry in the General Journal which, when posted will restore a correct balance to the accounts involved.
	5. Given an error which occurred in the current accounting period which has resulted in an incorrect balance in one or more general ledger accounts, the student is able to identify all accounts involved, determine which accounts are overstated or understated and to record an entry in the General Journal which, when posted will restore a correct balance to the accounts involved.
Prepare Bank Reconciliations (See Figure 33, p. 78)	1. Student is able to write a brief essay on how a checking account and a periodic bank reconciliation assists in the internal control of a firm's cash flow.
	2. Given a bank statement accompanied by cancelled checks and other data regarding bank additions and deductions, check register or cash disbursements journal, cash receipts journal, bank deposits, General Ledger cash accounts, and prior period bank reconciliation statement, the student is able to identify all causes which

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
	contribute to the lack of agreement between the bank statement balance and cash in bank account balance.
	3. Given an analysis of the causes for lack of agreement between the bank statement balance and the cash in bank general ledger account balance, the student is able to arrange the data in detail in a generally accepted format for determining corrected cash balance on a given date, and to determine the corrected cash balance. Performance will be judged to be completed accurately when the bank statement balance and cash in bank account balance have been verified to a common adjusted cash balance.
	4. Given the completed bank reconciliation for an accounting period, the student is able to identify the transactions that have been initiated by the bank and which need to be reflected in the general ledger accounts, and is able to prepare and record the journal entries necessary to adjust the account to corrected balances.
Post Adjusting Entries from the General Journal to General Ledger (See Figure 34, p. 79)	1. Given the adjusting entries for an accounting period recorded in the General Journal, the student is able to post all entries to the General Ledger accounts including dollar amounts, date, along with appropriate cross-referencing in the General Journal and each Ledger account affected. The student is also able to record in the Ledger accounts a brief statement indicating the nature of the entry.
Compute F.I.C.A. Taxes (See Figure 35, p. 80)	1. Given each individual employee's earnings record and data regarding maximum taxable gross wage F.I.C.A. regulations, the student is able to determine each employee's gross earnings to date and gross wage portion taxable for F.I.C.A. tax purposes for the current payroll period.
	2. Given each employees gross wages of the current payroll period taxable for F.I.C.A. taxes, the student is able to compute F.I.C.A. tax contributions for each employee using the current rate and multiplying the rate times gross taxable wages, or by using Circular E, Employers tax guide.

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
	3. Given each employee's F.I.C.A. tax contributions, the student is able to record the amount in Payroll Register as part of employee's deductions from gross wages.
	4. Given the completed payroll register for a taxable quarter, the student is able to determine total taxable gross wages for all employees for the quarter and compute total F.I.C.A. tax liability for the quarter, including the contributions by employees as well as by employer's matching contribution for use in completing the quarterly 941 Report.
Making F.I.C.A. Tax Reports (See Figure 36, p. 81)	1. Given total of employees' income taxes withheld for the quarter as reported in individual Employee Earning Records and Payroll Register of each payroll period for the quarter, the student is able to record the data on the 941 quarterly return on line 2.
	2. Given individual employee earnings records, the student is able to record on the 941, or on a supplementary schedule, the social security number, name and gross taxable F.I.C.A. wages for the quarter, total the gross taxable employee wages, and record total on line 5.
	3. Given the total of employer and employee F.I.C.A. tax contributions, income tax withheld, and depository receipts total, the student is able to compute the balance due to the Internal Revenue Service.
	4. Given the 941, the student is able to fill in all information required to complete the return according to directions. Performance will be judged to be completed accurately when a review of the completed report indicates that it is useful for filing purposes with the District Director of Internal Revenue.

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
Making (Prepare) Employee Withholding Tax Report (See Figure 37, p. 82)	1. Given each employee's individual earnings record, the student is able to identify employee's gross wages, income tax withheld for federal, state, and local taxes, if any, and F.I.C.A. tax contributions.
	2. Given each employee's gross wages and various deductions, student is able to record the data on a withholding tax form using a typewriter and verify the accuracy of the report by comparing the typed report with year end totals as reported on the employee's individual earnings record.
Making Federal Unemployment Compensation Report - 940 (See Figure 38, p. 83)	1. Given the individual earnings record of all employees, the student is able to identify the sum of all earnings in excess of $3000 and to deduct this sum from gross earnings of all employees.
	2. Given the sum of employee's taxable gross earnings for F.U.T.A. tax, the student is able to compute the F.U.T.A. tax liability by applying the applicable F.U.T.A. tax rate.
	3. Given the F.U.T.A. tax liability and the State Unemployment Taxes paid data, the student is able to compute F.U.T.A. taxes due and to record the total liability, State Unemployment taxes paid and F.U.T.A. taxes due on Form 940; the student is able to complete the 940 according to directions indicated on the report.

Verification of the Usefulness of the Instructional Objectives.

A jury panel of three community college accounting educators and a public accountant who teaches part-time in the evening division of a community college was asked to review the instructional objectives included in this chapter.[1] Specifically, they were asked to determine whether they understood the objective well enough to describe some sort of instructional activity or experience which would lead to the accomplishment of the student behavior described by the instructional objective.

The majority of the instructional objectives were clear and meaningful to the jury panel. Those on which they expressed some doubts were rewritten and submitted to the jury panel members again to determine whether a degree of clarity and meaning had been established.

A review of the instructional objectives for which doubts were expressed regarding clarity of meaning indicated the following areas of difficulty:

1. Two objections were concerned with objectives requiring the writing of a definition and the explanation of the function of a special journal. "Define a business transaction" was changed to state as follows: "Student is able to write a definition of a business transaction." (Figure 4, objective 1, p. 87) The statement, "Explain the function of a Sales Journal," was changed to state as follows: "Student is able to explain the function of a Sales Journal as one of a group of special journals of an accounting system." (Figure 5, objective 1, p. 87)

2. Several objections were concerned with the definition of the criterion of acceptable performance. For example, Figure 16, objective 3, p. 94,

[1]See Appendix B, p. 132.

was modified to include the words, "and properly cross-referenced." This addition helped to explain the basis for judging acceptable student performance.

3. An expression of the "given" conditions within which the student behavior is to occur was added in several cases. For example, by adding a progressive series of "givens" to correspond with the sequence of steps in completing an Income Statement in each of the objectives of Figure 29, pp. 103-105, a description of the required instructional experience was facilitated for the jury panel members.

Verification of the usefulness of the instructional objectives by a jury panel of practitioners provided the opportunity to test the usefulness of the objectives from the standpoint of accounting instructors who themselves may be concerned with designing instructional sequences and learning experiences in their own classrooms.

CHAPTER VI

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

NATURE OF THE STUDY

This study was an investigation to derive a set of instructional objectives for education in technical accounting, a set which could provide the basis for designing the learning structures of instructional programs for prospective accounting technicians. More specifically, this investigation attempted to:

1. Demonstrate the feasibility of a given model for the derivation of instructional objectives of technical accounting programs.
2. Establish a set of instructional objectives which describe desired terminal student behavior and which would be suggestive of appropriate learning sequences for the fulfillment of the specific objectives of technical accounting programs.

Need for the Study

The basic need for this study developed out of a series of instructional movements and developments which have as their underlying concept the assumption that the specification of the expected outcomes of the instructional process in terms of what the student should be capable of doing upon the completion of instruction, provides the teacher with a goal-setting situation and the focus for attaining the goal as well as gaining insights on evaluating student performance.

In addition to this fundamental concept, consideration given to the following assumptions regarding technical education and technical accounting education prompted this study.

1. That technical curricula should seldom exactly follow lower-level pre-professional curriculum patterns, but should be primarily occupation-centered.
2. The apparent need for the development of programs for training post-high school, non-baccalaureate degree, accounting technicians.
3. The need to evaluate continually the content and scope of the accounting courses in technical accounting programs.
4. The need for establishing achievement levels and content of technical accounting programs on identified job requirements.

Limitations of the Study

The study dealt with the derivation of a set of instructional objectives which could be used to assist in the development, implementation, and evaluation of instructional structures for technical accounting programs at the post-high school level. The study did not include the development of instructional structures and aids for technical accounting programs.

The accounting activities on which the instructional objectives were based was limited to include a sub-set of thirty-five (35) accounting activities selected from the Ozzello "evaluative criteria" list.

The procedures for deriving the instructional objectives were limited to those specified and described by the Haines, Ward and Hollingsworth model.

RESEARCH METHODOLOGY AND PROCEDURE

The research procedure consisted of three phases.

Phase I was concerned with securing a list of job activities performed by accounting technicians. A set of thirty-five (35) accounting activities was selected from the "evaluative criteria" list of the Ozzello study. The accounting activities included in this set were those performed by 40 per cent or more of the 99 accounting technicians interviewed by Ozzello, and were considered to be representative of the 170 accounting activities included in the Ozzello study.

Phase II involved the derivation and classification of instructional objectives based on the set of thirty-five accounting activities performed by accounting technicians.

The procedures of the Haines, Ward and Hollingsworth model were implemented and included the following sequence of steps: (1) re-writing of each of the accounting activities in terms of the activity performed by the accounting technicians and the analysis of each accounting activity into concepts, skills, and operations; (2) construction of flow diagrams which established the interrelationships of the component concepts, skills, and operations of each accounting activity, as well as the relationship of these component concepts, skills, and operations to Gagné's hierarchical categories of learning tasks; (3) writing of instructional objectives based on the flow diagrams of each of the accounting activities.

Phase III involved the verification of the usefulness of the derived instructional objectives. A jury panel of post-high school accounting instructors was asked to determine whether the instructional objectives were stated in a manner as to be suggestive of instructional activities or

experiences which might lead to the accomplishment of the student behavior described by the objectives. Those not found valid were re-written.

FINDINGS

The findings of this study were the flow charts for each of the thirty-five task demand statements reported in Chapter IV and the instructional objectives reported in Chapter V based on these flow charts. Because of the nature of these findings, it was considered unnecessary to report the entire group of flow charts and instructional objectives at this point.

CONCLUSIONS

The conclusions of this study are based on an analysis of the findings and are presented in two parts: (1) demonstration of the feasibility of the objectives-deriving model; (2) use of the derived instructional objectives for developing appropriate learning structures for the education of accounting technicians.

Conclusions Regarding the Usefulness of the Objectives-Deriving Model

1. The model for deriving instructional objectives as proposed by Haines, Ward and Hollingsworth is operational and the procedures specified by the model can be implemented by an individual researcher.

2. The operational step of the model described as "fractionating" is a crucial and significant stage in the objectives-deriving model as implemented in this study because it permits the inclusion of data regarding definitions, purposes and uses, operations and skills about each accounting activity from a variety of texts, documents, and related research.

3. Relating the component concepts, definitions, purposes and uses, operations and skills of each accounting activity performed by accounting technicians to the Gagné hierarchical categories of learning tasks does help to distinguish the interrelationships and interdependence among these components. These components can then be ordered into sequences consisting of underlying concepts, principles, and higher-order principles.

4. The construction of flow diagrams for each job activity performed by accounting technicians permits the illustration of the hierarchy of concepts and principles comprising the job activity and facilitates the hierarchical ordering of the instructional objectives derived for each job activity.

5. Reference to the Mager criteria for deriving valid and useful instructional objectives enables the researcher to focus on defining and describing the behavior that accounting technicians should be capable of demonstrating upon completion of instruction.

Conclusions Regarding the Derived Instructional Objectives

1. Statements which describe job requirements of accounting technicians can serve as the basis for deriving instructional objectives which, in turn, can accurately specify the behavior a student should be capable of demonstrating in the classroom to meet the requirements of the job.

2. The derived instructional objectives which describe desired student behavior are suggestive of appropriate sequences for the learning structures comprising the instructional program for accounting technicians.

RECOMMENDATIONS

The major recommendation is that the objectives-deriving procedure be extended to the total set of 170 accounting activities performed by accounting technicians and which are included in the "evaluative criteria" list identified by Ozzello.[1]

The present project was concerned with specific accounting activities from which were derived instructional objectives that can be classified essentially within the cognitive domain. Educational research should be conducted to include the specification of employer expectations of employee behavior as well as conceptualized employee attitudes and behavior with respect to the duties and responsibilities of the position of the accounting technician.

EDUCATIONAL IMPLICATIONS

Presented in this final section is a tentative plan for the use and application of the research procedure and findings included in this study. Although the suggestions which follow are explained within the context of technical accounting instructional programs, the research procedure and methodology employed in this study can be extended readily to other areas of occupational education which may be concerned with the development of student behaviors in the classroom which are closely allied with the world of work.

Research Model for the Individual Occupational Educator

The objectives-deriving model included in the Haines, Ward and Hollingsworth research proposal was intended to be implemented by a research

[1] Ozzello, op. cit., pp. 125-130.

team and to employ an extensive information gathering and storing structure developed for easy retrieval of data. The versatility of this model has been demonstrated by this study to the extent that it has been demonstrated that an individual researcher may utilize the fundamental operational steps of the model and derive instructional objectives for technical accounting programs. The question may be asked, therefore, "is it not possible for an individual educator, or a small group of educators, to derive valid and useful instructional objectives for their particular instructional environment?" It is the contention of this researcher that the research procedure demonstrated in this study has just such an applicability.

Outlined below is a total research sequence which begins with the identification of the job demands of the occupation or position--step one, basic tasks demonstrated in the study--steps 2, 3, and 4, and ends with the development of the learning experiences based on the derived instructional objectives--step 5.

FIGURE 39

MODEL FOR THE DEVELOPMENT OF

INSTRUCTIONAL STRUCTURES FOR

OCCUPATIONAL PROGRAMS

Procedural Steps	Research Activity
1. Developed by job and task analysis data, or from general descriptive literature and research	Identify Specific Descriptions of Job Demands
2. Analyze job demands into their component concepts, skills, and operations	Analyze and Fractionate
3. Establish hierarchical sequences of concepts, principles, higher-order principles within the context of Gagné's learning tasks	Design Flow Diagrams
4. Re-write each learning task in the form of an instructional objective utilizing Mager's 3 criteria	Re-write in the Form of Instructional Objectives
5. Develop what-- (a) the instructor will do, (b) the student will do, (c) the course will do, and the instructional materials, teaching aids.	Design of the Learning Experiences

Step One involves the identification of statements which describe the job activities performed by workers in a particular job classification. However, the job demand descriptions could be limited to include very specific tasks for which instructional structures are to be developed for the classroom. In this study data rgarding job demands was obtained from completed research on the position of the accounting technician. Also, descriptive data regarding a job title or classification which is of a general nature and related to the general needs and demands of the occupation could be identified as well as specific job demand statements. The greater the number of demand statements which relate to general rather than specific work demands of an occupation, the greater will be the number of instructional objectives which will describe affective competencies and behaviors.

Steps Two, Three, and Four were demonstrated in this study. A complete description of these steps can be found in Chapter III and of the findings in Chapters IV and V. It should be noted that a thorough understanding of Gagné's learning structures and of Mager's criteria for preparing instructional objectives is desirable before attempting to implement these steps.

Step Five involves the construction of lesson plans, course outlines, and other instructional materials and teaching aids.

In summary, by identifying data describing the performance demands of a job, or job classification, an individual occupational educator may implement the procedures of this research design and derive the basis for the development of instructional sequences and materials for a particular unit, group of units, a course, a group of courses, or an entire occupational instructional program.

Development of Teaching Aids

Communicating to students the intent and direction of a given segment of instructional effort helps to establish a goal-setting situation for the student. (See Chapter IV) The flow diagrams summarize the concepts and terminology, operations and various accounting tasks and integrate several groups of related concepts and principles. Therefore, a possible application of the research procedure demonstrated in this study would be to prepare slides, transparencies, or "hand-outs" of each of the learning structures included in the flow diagrams. Teaching aids prepared from the flow diagrams could serve as the "road maps" to help guide student progress toward achieving the terminal job behavior required of accounting technicians.

A similar application could be made of the instructional objectives. Each group of instructional objectives could be given to the students prior to the introduction of a unit of instruction in an accounting class. The student would thus be provided with a clear indication of the expected behavior underlying job competency.

Auto-Tutorial and Programmed Instructional Materials

Programmed instruction is one of the instructional movements whose origin can be traced to the school of thought which advocated the specification of the goals of education in terms that would be meaningful to the classroom teacher. The flow diagrams included in Chapter IV relate directly to the procedures outlined by Espich and Williams in their handbook, Developing Programmed Instructional Materials.[1] The flow charts would facilitate the preparation of programmed materials, and assist in preventing

[1]Espich and Williams, op. cit.

the inclusion of superfluous materials as well as reducing the possibility of omitting fundamental concepts and principles.

Application of the research procedures demonstrated in this study can be made to the construction of a variety of teaching devices and materials which are primarily concerned with the mastery of hierarchies of learning tasks such as those represented by the field of auto-tutorial techniques.

Individualized Instruction and Advanced Placement

The availability of a complete array of the instructional objectives for a particular course or sequence of courses can contribute to the identification of areas of subject matter competency and mastery on the part of individual students. Because instructional objectives are stated in terms of student behavior, it could be possible to develop a checklist instrument which includes a sequence of instructional objectives underlying a course in Principles of Accounting. Experienced bookkeepers with a high school education, or employees who learned and developed their skills on the job, could then identify and check the behaviors which they can demonstrate. Individualized instructional units could be prepared for those areas which these students have not yet mastered.

Provision for identifying areas of competency could be useful for those adults who enroll in post-high school institutions with the objective of refreshing or up-grading their skills. In the case of technical accounting programs, enrollment in basic courses which are concerned with developing fundamental concepts and principles of bookkeeping and accounting procedures could be avoided and the adult student would enroll in accounting courses more appropriate for their educational goals.

Construction of Evaluative Devices

Specification of instructional objectives assists in the identification of the type of behavior students will be expected to demonstrate upon completion of the instructional effort. Provided with a clear expression of terminal behavior, an educator can identify the type of evaluative device to be employed to assess student achievement. For example, if the expected student behavior is to be able to recognize a definition in accounting when he sees it, he is being asked to make a broad discrimination; therefore, a multiple-choice item might be used. If the instructional objective specifies the ability to define a term, state a law or principle, he is expected to be able to recall knowledge acquired; therefore, a fill-in question or short essay question might be used. However, if the instructional objective specifies behavior which involves the ability to solve a problem in depreciation, or to determine a current ratio, he is being asked to generalize and make fine discriminations. Therefore, the test item should involve a question such as, "from the attached balance sheet calculate the current ratio for this company."

Finally, the value of clearly specified instructional objectives which describe student behavior is that (1) they provide a focus for the construction of the instructional sequences for developing this behavior, and (2) they provide the educator an identifiable behavior which can be measured and evaluated. Students should be asked to demonstrate the same level of behavior on an evaluative device as they were expected to demonstrate at the end of the instructional effort.

BIBLIOGRAPHY

BOOKS

Blocker, Clyde E., Plummer, Robert H., and Richardson, Richard D., Jr. The Two-Year College: A Social Synthesis. Englewood Cliffs: Prentice-Hall, Inc., 1965.

Bloom, Benjamin S. (ed.) Taxonomy of Educational Objectives, The Classification of Educational Goals, Handbook I, Cognitive Domain. New York, New York: David McKay Company, Inc., 1956.

Cronbach, Lee J. Educational Psychology. New York, New York: Harper and Brothers, 1960.

Espich, James E., Williams, Bill. Developing Programmed Instructional Materials. Palo Alto, California: Fearon Publishers, 1967.

Gagné, Robert M. The Conditions of Learning. New York, New York: Holt, Rinehart and Winston, Inc., 1965.

Good, Carter V. (ed.) Dictionary of Education. (2nd edition). New York, New York: McGraw-Hill Book Company, Inc., 1959.

Knepper, Edwin Garfield. Evaluating Competence for Business. National Association of Business Teachers, 1950 Yearbook.

Mager, Robert F. Preparing Instructional Objectives. Palo Alto, California: Fearon Publishers, 1962.

Mager, Robert F. and Beach, Kenneth M., Jr. Developing Vocational Instruction. Palo Alto, California: Fearon Publishers, 1967.

Medsker, Leland L. The Junior College: Progress and Prospect. New York, New York: McGraw-Hill Book Company, 1960.

Thornton, James W., Jr. The Community Junior College. New York, New York: John Wiley and Sons, Inc., 1960.

Tyler, Ralph W. Basic Principles of Curriculum and Instruction. Chicago, Illinois: University of Chicago Press, 1950.

Weaver, Gilbert G. (Chairman). Definition of Terms in Vocational Education. American Vocational Association, 1954.

PUBLICATIONS OF THE GOVERNMENT AND OTHER ORGANIZATIONS

Ammerman, Harry L., and Melching, William H. The Derivation, Analysis, and Classification of Instructional Objectives. HumRRO Technical Report 66-4, 1966.

Harris, Norman C. Technical Education in the Junior College, New Programs for New Jobs. Washington, D. C.: American Association of Junior Colleges, 1964.

Lindvall, C. M. Defining Educational Objectives. A Report of the Regional Commission on Educational Coordination and the Learning Research and Development Center. Pittsburgh, Pennsylvania: University of Pittsburgh Press, 1964.

Smith, Robert G., Jr. The Development of Training Objectives. HumRRO Research Bulletin 11, 1964.

Smith, Robert G., Jr. The Design of Instructional Systems. HumRRO Technical Report 66-18, 1966.

U. S. Department of Health, Education, and Welfare. Education for a Changing World of Work, Appendix I, Technical Training in the United States. Report of the Panel of Consultants on Vocational Education. Office of Education, Bulletin OE-80022. Washington, D. C.: Government Printing Office, 1963.

U. S. Department of Health, Education, and Welfare. Vocational Education and Occupations. Office of Education, Bulletin OE-80061. Washington, D. C.: Government Printing Office, 1969.

U. S. Department of Labor. Dictionary of Occupational Titles: Definitions of Titles. Third edition, Volume I, Bureau of Labor Statistics. Washington, D. C.: Government Printing Office, 1965.

U. S. Department of Labor. National Survey of Professional, Administrative, Technical, and Clerical Pay, June, 1967. Bulletin No. 1585, Bureau of Labor Statistics. Washington, D. C.: Government Printing Office, 1968.

U. S. Department of Labor. Occupational Outlook Handbook. Bulletin No. 1450, Bureau of Labor Statistics. Washington, D. C.: Government Printing Office, 1966.

ARTICLES AND PERIODICALS

Blocker, Clyde E. "Purposes, Growth, and Transition of the Community College," National Business Education Quarterly, NABTE Bulletin 87, December, 1967.

Honorable John H. Dent. "New U. S. Civil Service Standards for Accounting Technicians," The Balance Sheet, May, 1965.

Krathwohl, David R. "Stating Objectives Appropriately for Program, for Curriculum, and for Instructional Materials Development," The Journal of Teacher Education, March, 1965.

Raines, Max R. "Characteristics of Junior College Students," National Business Education Quarterly, NABTE Bulletin 87, December, 1967.

UNPUBLISHED MATERIAL

Clow, John E. "A Study of the Duties and Qualifications of Bookkeepers and Accountants in Manufacturing Firms in the DeKalb-Sycamore, Illinois, Area," Unpublished M. S. study, Northern Illinois University, DeKalb, 1967.

Cloyd, Helen Smith. "An Analysis of Current Practices in Cost Accounting in School Districts." Unpublished Ph.D. dissertation, Michigan State University, East Lansing, 1963.

Griffitts, Horace Franklin, "A Study Defining Eight Objectives of Business Programs in Public Community Colleges and Determining the Importance of these Objectives," Unpublished Ph.D. dissertation, Michigan State University, East Lansing, 1967.

Haines, Peter G., Ward, Ted, and Hollingsworth, Jeanne. "The Development of a Model for Vocational Objectives Derivation Based Upon Occupational Demand," Research Project, College of Education, Michigan State University, East Lansing, 1967.

Lauderdale, Frances. "The Levels of Skills of Specialized Clerical Employees in the Petroleum Industry," Unpublished Doctoral dissertation, University of Oklahoma, Norman, 1949.

Lees, George. "An Analysis of Accounting Skills and Knowledges Used by Selected Experienced Electrical Engineers in Rhode Island," Unpublished Ph.D. dissertation, University of Connecticut, Storrs, 1957.

Nicks, Earl G. "Bookkeeping Activities of Non-Bookkeepers," Unpublished Doctoral dissertation, New York University, New York, 1954.

Ozzello, Lawrence M. "An Analysis of Accounting-Type Activities Performed by Technical Accountants in Firms Manufacturing Durable Goods With Implications For Evaluation of Post-High School Terminal Accounting Programs," Unpublished Ph.D. dissertation, Michigan State University, East Lansing, 1967.

Stoner, James K. "An Analysis of the Accounting Systems and Practices of Small, Independent Retail Businesses," Unpublished Ed.D. dissertation, The University of Pittsburgh, Pittsburgh, 1953.

VanDerveer, Elizabeth T. "A Study of Patterns of Performance for the Most Frequent Duties of Beginning Clerical Employees," Unpublished Doctoral dissertation, New York University, New York, 1950.

Zehnder, Leonard E. "Attitudes and Behavior Change in the Food Service Industry," Unpublished Ph.D. dissertation, Michigan State University, East Lansing, 1966.

APPENDICES

APPENDIX A

INPUT DOCUMENTS FOR THE ANALYSIS OF TASK DEMAND STATEMENTS

Bierman, Harold Jr. and Drebin, Allan R. Financial Accounting: An Introduction. New York, New York: The Macmillan Company, Inc., 1967.

Bierman, Harold Jr. and Drebin, Allan R. Managerial Accounting: An Introduction. New York, New York: The Macmillan Company, Inc., 1967.

Carson, A. B., Carlson, Arthur E., and Boling, Clem. College Accounting. Cincinnati, Ohio: South-Western Publishing, Inc., 1967.

Chace, Franklin T., Schmiedicke, Robert E., and Sherwood, J. F. Principles of Accounting. Cincinnati, Ohio: South-Western Publishing Company, 1964.

Crowningshield, Gerald R. Cost Accounting: Principles and Managerial Applications. Boston, Massachusetts: Houghton-Mifflin, Inc., 1962.

Dopuch, Nicholas and Birnberg, Jacob G. Cost Accounting: Accounting Data for Management's Decisions. New York, New York: Harcourt, Brace and World, Inc., 1969.

Edwards, James D., Hermanson, Roger H., and Salmonson, R. F. Accounting: A Programmed Text, Volumes I and II. Homewood, Illinois: Richard D. Irwin, Inc., 1967.

Fertig, Paul E., Istvan, Donald F., and Mottice, Homer J. Using Accounting Information: An Introduction. New York, New York: Harcourt, Brace and World, Inc., 1965.

Finney, H. A. and Miller, Herbert E. Principles of Accounting, Introductory. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1963.

Fremgen, James M. Managerial Cost Analysis. Homewood, Illinois: Richard D. Irwin, Inc., 1966.

Gillespie, Cecil. Accounting Systems, Procedures and Methods. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1962.

Hoffman, William H. and Anderson, Hershel M. Income Tax, Principles and Practice. New York, New York: McGraw-Hill Book Company, Inc., 1968.

Horngren, Charles T. Cost Accounting, A Managerial Emphasis. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1967.

Johnson, Eldred A. Accounting Systems in Modern Business. New York, New York: McGraw-Hill Book Company, Inc., 1959.

Kennedy, Ralph D. and McMullen, Stewart Y. Financial Statements, Form, Analysis, and Interpretation. Homewood, Illinois: Richard D. Irwin, Inc., 1968.

Kohler, Eric L. A Dictionary for Accountants. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1961.

Matz, Adolph, Curry, Othel J. and Frank, George W. Cost Accounting. Cincinnati, Ohio: South-Western Publishing Company, 1967.

Meigs, Walter B. and Johnson, Charles E. Accounting, The Basis for Business Decisions. New York, New York: McGraw-Hill Book Company, Inc., 1967.

McCarthy, Clarence F. and others. The Federal Income Tax: Its Sources and Applications. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1968.

Moore, Francis E. and Stettler, Howard F. Accounting Systems for Management Control. Homewood, Illinois: Richard D. Irwin, Inc., 1963.

Nelson, Oscar S. and Woods, Richard S. Accounting Systems and Data Processing. Cincinnati, Ohio: South-Western Publishing Company, 1961.

Neuner, John J. W. Cost Accounting, Principles and Practice. Homewood, Illinois: Richard D. Irwin, Inc., 1962.

Niswonger, C. Rollin and Fess, Philip E. Accounting Principles. Cincinnati, Ohio: South-Western Publishing Company, 1969.

Pyle, William W. and White, John A. Fundamental Accounting Principles. Homewood, Illinois: Richard D. Irwin, Inc., 1969.

Shillinglaw, Gordon. Cost Accounting, Analysis and Control. Homewood, Illinois: Richard D. Irwin, Inc., 1967.

Van Voorhis, Robert H., Dunn, Clarence L., and McCameron, Fritz A. Using Accounting in Business. Belmont, California: Wadsworth Publishing Company, Inc., 1962.

Wixom, Rufus (Editor) and Kell, Walter G. (Staff Editor). Accountants' Handbook. New York, New York: The Ronald Press Company, 1956.

Wixom, Rufus and Cox, Robert G. Principles of Accounting. New York, New York: The Ronald Press Company, 1969.

APPENDIX B

JURY SELECTED TO VERIFY THE USEFULNESS OF THE DERIVED INSTRUCTIONAL OBJECTIVES

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APPENDIX C

ANNOTATED APPLICATION OF THE OBJECTIVES-DERIVING PROCEDURE

The complete sequence of steps in the objectives-deriving procedure as it was applied to one of the task demand statements is presented in this section. Remarks regarding the implementation of each of the steps of the procedure are included for reference by those who may wish to apply the procedure.

Phase I - Securing a List of Job Activities.

Data describing desired student work performance capabilities can be identified by a variety of means including job and task description. Ammerman and Melching stated in their report, cited in the text of the thesis, that the identification of meaningful performance situations is a critical step in the derivation of instructional objectives.[1]

It can be noted in Figure 1 on page 32 that student performance capabilities may include descriptions of specific tasks, generalized skills, or generalized behaviors. The data included in the Ozzello "evaluative criteria" list included descriptions of specific tasks.

The specific task selected for this presentation was the task demand statement, "Post Normal Transaction Entries from Journals to the General Ledger." This statement describes the behavior the student should be capable of demonstrating upon the completion of instruction. This level of specificity of desired student behavior is essential for the next step of the derivation procedure, fractionating.

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[1]Ammerman and Melching, op. cit., p. 14.

Phase II - Derivation and Classification of Instructional Objectives

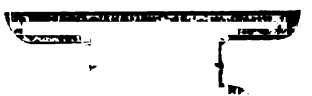
Fractionating. This step identifies the concepts, skills, and operations described or implied by the task demand statement. It permits the inclusion of data from a variety of sources including texts and other instructional materials, as well as the investigator's own prior experiences and judgments regarding the essential concepts, skills, and operations for the demonstration of the behavior described by the task demand statement.

The task demand statement in this illustration involves the development of the ability to perform a sequence of steps of locating sources of data and the specific data to be posted, and the identification of the document to which the data is to be posted. Essential to this sequence is the prior mastery of various concepts involving definitions of various business documents, the need for certain verification operations, as well as the ability to transfer data accurately. It was this writer's opinion that several concepts concerned with the purpose of this job task, as well as the sources of data for implementing the job task, are essential for job performance.

An analysis sheet was developed for arranging the identified concepts, skills, and operations. The completed analysis sheet is presented at this point.

Task Demand Statement POST NORMAL TRANSACTION ENTRIES FROM JOURNALS TO GENERAL LEDGER

CONCEPTS	CONCEPTS	OPERATIONS
Definitions		
Posting	ledger accounts so as to re-	Systematically---
Cross-indexing	flect all changes to an ac-	1. locating the general ledger
Special columns	count during a particular	account involved
Chronological order	accounting period	2. entering the amount of the debit
Controlling accounts	Sources of Data	or credit item or column total in
Subsidiary ledgers	Special and Sundry columns of	the debit or credit column of the
General ledger	General Journal and Special	general ledger account
General journal	Journals	3. recording the date of the trans-
Special journals		action in the date column
Purposes and Uses	SKILLS	4. recording the journal and page
To transfer data from the journals	Transferring data from one	source
to the appropriate ledger account	document to another	5. recording in the journal in the
To group all related data recorded		folio column or below the special
in the journals in the appropriate		column the ledger account number
		where the data was posted

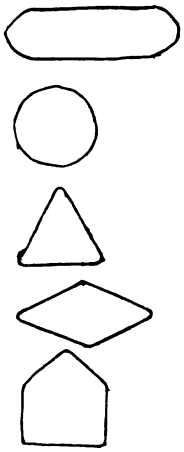


Design of Flow Diagrams. The use of flow diagrams was considered to be a useful technique for establishing an order and a hierarchy among the component concepts and operations identified by the fractionating step. This technique also provided for the identification of the implicit learning tasks as defined by Gagné. Figure 10 is repeated at this point to provide for continuity among the steps of the derivation procedure.

The flow diagram for this task demand statement indicates that the student should be able to demonstrate his understanding of two fundamental concepts, posting and posting procedure, and to be able to demonstrate the behavior implied and described by the task demand statement. The flow diagram also indicates that each of these two concepts is based upon a series of concepts which must be considered and included in developing the instructional strategy and sequences. By establishing this hierarchy of interrelated and interdependent concepts, principles and higher-order principles can be identified.

Principles as defined by Gagné consist of chains of concepts. Therefore, if the student is expected to be able to identify debits, credits, dollar amounts of an entry, and the date of the entry, and then be able to record this data in a ledger account, these concepts must be established before he can be expected to perform the "posting" task.

The underlined words denote certain categories of learning tasks defined by Gagné. (See page 47) Flow chart symbols may also be utilized to identify similar learning task categories and functions in the flow chart hierarchies. Several symbols indicated in the flow chart are illustrated and defined below.



represents point at which a flow chart originates or terminates

represents entry from, or exit to, another part of the flow chart

concepts

principles and higher-order principles

problem solving

Writing of the Instructional Objectives. The instructional objectives derived from Figure 10 which appears on the following page, describe specific behaviors which the students should be capable of demonstrating. It should be noted that the objectives do not include descriptions of the content which was described by the flow diagram. The expected performance capabilities are: ability to post data regarding individual entries from the journals to the appropriate ledger accounts; ability to post special column totals to the appropriate ledger accounts; the ability to record appropriate cross-referencing data in the journals and ledger accounts; and the ability to express verbally, or in writing, the significance of the cross-referencing procedure. This latter instructional objective can be traced to the writer's opinion, as indicated on the analysis sheet, that concepts regarding the purpose and use of posting procedures are essential to the demonstration of posting ability. The other three instructional objectives can be traced to the operations sequence indicated on the analysis sheet.

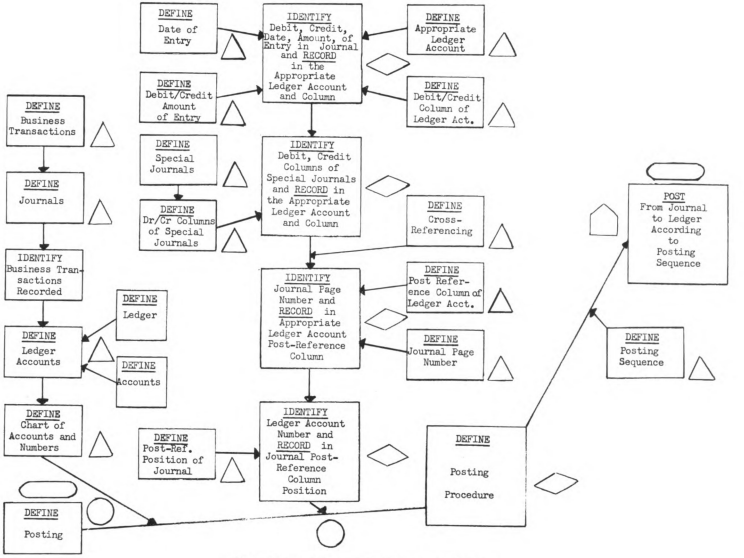


FIGURE 10. Post Normal Transaction Entries From Journals To General Ledger

TASK DEMAND STATEMENT	INSTRUCTIONAL OBJECTIVES
In order for students to demonstrate this terminal behavior---	---the following instructional objectives should be achieved
Post Normal Transaction Entries from Journals to General Ledger (See Figure 10, p. 55 and p. 138)	1. Given a set of special journals and a General Journal with entries recorded for an accounting period, a student is able to post the date of the entry, number of credit memo, invoice, voucher or any miscellaneous information regarding the entry, the journal page number and the debit or credit amount of the entry from the sundry columns of all the various journals to the appropriate General Ledger debit or credit column. Upon completing the posting, the General Ledger account should have recorded in it the data indicated above.
	2. Given a set of special journals and a General Journal with entries recorded for an accounting period, a student is able to post column totals of all special columns, and the journal page number of all the journals to the appropriate General Ledger debit or credit column and record the date of posting.
	3. The student is able to record in the journals, either in the post reference column or below the column total, the appropriate General Ledger account number to which the various debits and credits have been posted. Performance of the post-reference procedure will be judged completed when, upon completing the posting of all journals, a review of the journals and the general ledger accounts reveals a ledger account number associated with each entry in the sundry columns and the special journal columns, as well as a journal page number associated with each and every posting in the general ledger accounts.
	4. Student is able to express verbally, or write a brief statement explaining the significance of complete and accurate cross-referencing of posting from all journals to general ledger accounts.

Concluding Comments

A few comments are in order regarding prior conditions for the implementation of the procedures of the objectives-deriving procedure.

It is the writer's opinion that a thorough understanding of the Gagné's learning task hierarchies, and of the comments expressed by Mager regarding characteristics and qualities of useful instructional objectives, is essential before attempting the derivation procedure.

The consistent application of some aspects of the derivation procedures is necessary to ensure the generation of comparable data. For example, in the "fractionating" step it is mandatory for the researcher to apply the basic question regarding the inherent concepts, skills, and operations in a consistent manner. (See page 43) He must attempt to develop a complete array of data regardless of whether a particular concept is also included as part of another task demand statement. This will help to reveal interrelationships among task statements which are essential in establishing hierarchies of learning tasks.

The instructional objectives must be stated in a manner which is descriptive of student behavior. These statements are "action" statements. That is, they define an observable student activity, the conditions under which the activity is to occur, and how the instructor will be able to determine whether the activity has been completed.

Finally, implementing a derivation procedure as illustrated by this study is a time-consuming and extremely detailed experience. However, there are valuable rewards. It affords the opportunity to consult a variety of instructional materials and texts. An entirely new perspective is developed with regard to identifying the purposes underlying the reason for including certain instructional sequences and the evaluation of student progress. Furthermore, the analytical approach demanded by such a procedure is internalized and carries over to the solution of instructional problems encountered daily by a classroom instructor.

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