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ABSTRACT

In an attempt to identify the discrepancy between work and training programs for a beginning accountant or bookkeeping worker, and thereby provide either verification of the current curriculum or needed direction for change, this study posed three questions. The procedures were divided into three areas to coincide with the three questions. To determine the job tasks performed by the beginning accounting and bookkeeping worker (question 1), a comprehensive search of the literature was made covering the 1968-1975 period. Sixty-four studies were identified. To determine the job tasks included in the conventional high school accounting and bookkeeping curriculum (question 2), the textbooks most commonly used in the curriculum were identified and analyzed. To determine the extent to which the high school curriculum includes and prioritizes the job tasks of the beginning accounting and bookkeeping worker (question 3), rank correlation statistics and comparisons were applied to two lists, one representing job tasks performed by the worker, the other representing the curriculum. Two of the major findings were (1) no significant relationship was found when statistical applications were applied to the two lists grouped either by general accounting categories or by specific job tasks common to both lists and (2) 52% of textbook volume contained none of the job tasks taken from the list representing real work. The study is presented in chapter form: Chapter 1 presents general introductory material; chapters 2 through 4 each cover separately the three questions posed at the beginning of the study; chapter 5 presents detailed conclusions and recommendations. (HD)

JOB TASKS OF THE BEGINNING ACCOUNTING AND BOOKKEEPING WORKER COMPARED WITH THE CONTENT OF THE HIGH SCHOOL ACCOUNTING AND BOOKKEEPING CURRICULUM

An Abstract of a Dissertation

Presented to

the Faculty of the Graduate School

University of Houston

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Education

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by

Margaret Casey Reap

August 1976

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ABSTRACT

Reap, Margaret Casey. "Job Tasks of the Beginning Accounting and Bookkeeping Worker Compared with the Content of the High School Accounting and Bookkeeping Curriculum."

The problem. The present accounting and bookkeeping curriculum does not adequately prepare the student for employment as a beginning accounting and bookkeeping worker. The problem in this study was to identify the discrepancy between work and training programs in this area. To solve the problem, three questions were asked:

1. What identified job tasks are being performed by the beginning accounting and bookkeeping worker?

2. What job tasks are included in the conventional high school accounting and bookkeeping curriculum?

3. To what extent does the conventional high school accounting and bookkeeping curriculum include and prioritize these identified job tasks?

An assumption was made that the conventional high school accounting and bookkeeping curriculum is determined by the textbooks used in class. The definition used for the conventional high school accounting and bookkeeping curriculum included courses in accounting, bookkeeping, recordkeeping, data processing and/or computers. The purpose of the study was to provide either verification of

the current curriculum or needed direction for change. The study was also intended to provide a review of the research done in the content area of high school accounting and bookkeeping from 1963-1975.

Research procedures. The procedures were divided into three areas to coincide with the three questions asked in the problem.

To determine the job tasks performed by the beginning accounting and bookkeeping worker, a comprehensive search of the literature was made for eight years, 1968-1975. A total of 64 studies pertaining to the content area of high school accounting and bookkeeping were identified; of these, 16 studies contained specific information about the job tasks of the beginning accounting and bookkeeping worker. After a series of unsuccessful attempts to combine the 16 studies into a composite ranked list of the job tasks performed by the beginning accounting and bookkeeping worker, one study, the NOBELS study, was selected as containing representative information about the job tasks of the national population of the beginning accounting and bookkeeping worker. A list of 150 job tasks was drawn from NOBELS data and ranked by frequency of representation.

To determine the job tasks included in the conventional high school accounting and bookkeeping curriculum, the textbooks most commonly used in the curriculum were identified and analyzed. Berelson's and Holsti's methods

of content analysis were used to compile a list of job tasks included in each text. The job task lists from the two South-Western textbooks selected as representative of the curriculum were synthesized into one list and ranked by the total volume of space occupied by each job task in the textbooks.

To determine the extent to which the high school curriculum includes and prioritizes the job tasks of the beginning accounting and bookkeeping worker, rank correlation statistics and comparisons were applied to the two lists, one list representing the job tasks performed by the worker, the other list representing the curriculum. Curvilinear relationships were also examined through the use of a scatter diagram.

Findings. No significant relationship was found at any level of significance when statistical applications were applied to the two lists grouped by generalized accounting categories. Nor was significant relationship found at any level when statistical applications were applied to the two lists grouped by specific job tasks common to both lists.

Of the 150 job tasks on the list representing real work, only 36 of these could be found in the textbooks representing the high school curriculum.

Sixty-six percent of textbook volume was specific only to the extent that content could be identified as fitting into a generalized accounting category. Fifty-two

percent of textbook volume contained none of the job tasks taken from the list representing real work. The two generalized accounting categories ranked 1 and 2 (General Journal and General Ledger, and Financial Statements) on the curriculum list were the two categories ranked lowest, 9 and 8, on the real work list.

Conclusions.

1. The job tasks of the beginning accounting and bookkeeping worker require little or no understanding of the principles of debit and credit.

2. The job tasks of the beginning accounting and bookkeeping worker did not include recording in a sales journal, purchases journal, or a general ledger. Manual preparation of payroll tax returns was also missing from the list.

3. Job tasks in the electronic data processing category were the most frequently performed of all the job tasks of the beginning worker.

4. The job tasks of the beginning accounting and bookkeeping worker were more concerned with segments of the accounting cycle than with tasks requiring understanding of the whole cycle. Few of the job tasks required understanding of those steps in the cycle past the trial balance.

5. The job tasks of the beginning worker dealt with a great variety of financial operations, business

papers, and forms. These tasks dealt with the preparation and handling of original business documents rather than with the accounting entries for these documents.

6. The tasks covered in the conventional high school accounting and bookkeeping curriculum have no significant relationship to the job tasks necessary for employment in beginning accounting and bookkeeping occupations. The tasks most extensively covered in the curriculum are those most rarely performed by the beginning worker.

7. Both textbooks selected as representative of the high school accounting and bookkeeping curriculum are nonfunctional for the purpose of preparing students for occupational employment as beginning accounting and bookkeeping workers.

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Chapter 1

INTRODUCTION

A mainstream of revolution in the way financial records are kept in industry has been going on in the United States since the early 1950's. Manual techniques to record financial information have been increasingly replaced by electronic, electro-mechanical, and mechanical processing. The tremendous growth of information handled within offices has been paralleled by the growth of workers employed in clerical positions. The percentage of clerical and kindred workers grew from 12.3 percent of all the economically active civilian population in 1950 to 17.4 percent by 1970 and is projected to rise to 19.4 percent by 1985.[1] The new skills and concepts required central to these changes are numerous and complicated.

The changes made in offices to handle this growth have not been matched by changes in the conventional high school accounting and bookkeeping curriculum. Business educators have become increasingly concerned that the conventional accounting and bookkeeping courses taught in

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[1] U. S. Bureau of Labor Statistics, Handbook of Labor Statistics (Washington, D. C.: U. S. Government Printing Office, 1973) Table 6, pp. 19 and 39.

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high school do not adequately meet the requirements of business. West spoke on an "iron curtain between educators and the world of work."[2] Tonne commented on the lack of change made in the high school accounting and bookkeeping curriculum when he said, "We engage in tinkering with small additions here, a minimization of some subject matter there, but basically it is the same course we taught 75 years ago with a veneer of modernization."[3]

A major goal in business education is to prepare students for employment in business. The above comments indicate that high school accounting and bookkeeping courses are losing their occupational orientation, and the units of instruction taught in these courses may have little relationship to job tasks necessary for gainful employment in beginning accounting and bookkeeping occupations.

What, however, is the nature of this discrepancy between work and training programs? What work does the beginning accounting and bookkeeping worker currently perform? Are high school business programs training for current job performance? Is the beginning bookkeeper still

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[2]Leonard J. West, Survey of Entry-Level Bookkeeping Activities in Relation to the High School Bookkeeping Curriculum, Research Report 73-1 (New York: City University of New York, Institute for Research and Evaluation in Occupational Education, 1973) p. 199.

[3]Herbert Tonne, "A Critique of Bookkeeping Instructional Change," Journal of Business Education, December 1970, p. 108.

clearly distinguishable from the general clerical worker? The present study was intended to investigate the degree of congruency existing between the prevailing curriculum in high school accounting and bookkeeping and the actual job tasks performed by the beginning accounting and bookkeeping worker.

STATEMENT OF THE PROBLEM

The immediate research problem is to identify this descrepancy existing between the high school accounting and bookkeeping curriculum and the actual job tasks of employed accounting and bookkeeping workers.

To be able to solve the immediate research problem, the following questions must be answered:

1. What identified job tasks are being performed by the beginning accounting and bookkeeping worker?

2. What job tasks are included in the conventional high school accounting and bookkeeping curriculum?

3. To what extent does the conventional high school accounting and bookkeeping curriculum include and prioritize these identified job tasks?

ASSUMPTION

For the purposes of this study, the assumption was made that the conventional high school accounting and bookkeeping curriculum is determined by the textbooks used in class.[4]

PURPOSE OF THE STUDY

The purpose of this study was to compare the actual job tasks of beginning accounting and bookkeeping workers with the job tasks included in high school accounting and bookkeeping textbooks. The comparison should provide either verification of the current high school accounting and bookkeeping curriculum or needed direction for change. If change is indicated, the study should provide a ranked list of job task components that need to be included in high school training for beginning accounting and bookkeeping workers.

The study should also provide a review of the research done in the content area of high school accounting and bookkeeping for the past eight years.

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[4]West, p. 13; see also Ruth Woolschlager, "High School Bookkeeping As It Was, So Shall It Always Be? A Fable," Business Education Forum, March 1964, pp. 19-20; see also Padmakar Sapre and Roscoe Perritt, "A Historical Development of Accounting and Data Processing," Business Education Yesterday, Today, and Tomorrow, ed. Ruth Woolschlager and E. Harris (Reston, Virginia: National Business Education Association, 1976) p. 11.

In order to realize this purpose, the following steps were taken:

1. A comprehensive search of the literature was made to obtain a ranked list of the job tasks of beginning accounting and bookkeeping workers.

2. An analysis of high school accounting and bookkeeping textbooks was made to obtain a ranked list of job tasks taught in the conventional high school accounting and bookkeeping curriculum.

3. The actual job tasks performed by the beginning accounting and bookkeeping worker were compared with the job tasks taught in high school accounting and bookkeeping courses.

DELIMITATIONS

1. The study was not concerned with the specific study of the objectives of the high school curriculum in accounting and bookkeeping.

2. The study was not concerned with the specific study of the processes of the high school curriculum in accounting and bookkeeping.

3. The study was not concerned with the specific study of the training time of the high school curriculum in accounting and bookkeeping.

4. The study was not concerned with the specific study of evaluation components of the high school curriculum in accounting and bookkeeping.

BACKGROUND OF THE STUDY AND RELATED LITERATURE

The changing nature of bookkeeping occupations has brought with it much discussion about appropriate objectives for the accounting and bookkeeping curriculum in high school. The original objective of accounting and bookkeeping education was purely vocational. In the business establishments of the 1800's and early 1900's, the bookkeeper was frequently the only person with any business training. The owner of the business depended on the bookkeeper to manage his records and his office. The bookkeeper needed to know everything about bookkeeping, from the opening to the closing entry. The training of bookkeepers necessitated a thorough study of the double-entry accounting cycle system and of business procedures.

The occupational changes that took place in the field of financial recordkeeping in the 1930's and the 1940's brought changes in the expressed objectives of bookkeeping education. As professional accounting moved more definitively into the college level and fewer bookkeepers performed the complete duties included in the accounting cycle, bookkeeping instruction at the high school level started to reflect objectives of personal and social use as well as the vocational preparation of bookkeepers.

In his study of the objectives of high school elementary bookkeeping since the 1930's, Olson[5] found little change in the variety of objectives claimed for bookkeeping instruction since 1930. Vocational objectives and personal social use objectives were usually combined during training. Olson found that when bookkeeping jobs decreased, the emphasis on training shifted from the vocational to the personal social use objectives. When job opportunities increase, the consensus returned to emphasizing vocational objectives.

The meaning of the term "bookkeeper" has been changing rapidly since data automation arrived on the scene. A modern worker may still be categorized as a bookkeeper even though he performs none of the tasks performed by a bookkeeper in the traditional meaning of performing the duties of the double-entry accounting cycle. The term "bookkeeper" is currently being extended to include any type of record-keeping as well as the recording of data on coding sheets for computer analysis.

Many authorities in business education have indicated that current high school curricula in accounting and bookkeeping appear to be nonfunctiona[illegible] example, the

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[5]Lester Olson, "A Historical Study of Objectives in High School Elementary Bookkeeping Since 1930" (Doctoral dissertation, University of North Dakota, 1970).

NOBELS[6] study found that the job duties of beginning bookkeepers requiring "application of principles of accounting as taught in schools or double entry bookkeeping" were minimal, (NOBELS, p. 27). Similar conclusions were drawn by Luxner, "the study of two years of manual bookkeeping in high school, in and of itself, meets neither job requirements for accounting clerks nor for accountants."[7] A study made by the Battelle Memorial Institute[8] commented that bookkeeping in the high school "is not occupationally oriented. Rather it is taught to familiarize students with the language of the business world," (Battelle, p. 44). While the objective of teaching the language of business is legitimate, the Battelle report went on to say, this objective can be reached more effectively and efficiently by methods other than teaching one to two years of traditional bookkeeping.

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[6]Frank Lanham, et al., Development of Task Performance Statements for a New Office and Business Education Learnings System (NOBELS), Revised Final Project Report (Columbus: Center for Research and Leadership Development in Vocational and Technical Education, Ohio State University, 1973) ED 068 728.

[7]Lois Luxner, "Factors Affecting the Employability of Vocational Bookkeeping Students" (Doctoral dissertation, University of Pittsburgh, 1970) p. 146.

[8]Battelle Memorial Institute, An Exploratory Study to Analyze New Skill Content in Selected Occupations in Michigan and the Mechanism for its Translation into Vocational Education Curricula: Section Report on Clerk/Typist, Stenographer, Bookkeeper, and Salesperson (Columbus: Columbus Laboratories, 1972) p. 44 ED 085 511.

Statistics and projections made by the United States Department of Labor show a continuing need in industry for accounting and bookkeeping workers. A growth rate of 19.5 percent has been projected for bookkeeping jobs between 1972 and 1985.[9]

Recognition of the continuing need for bookkeepers coupled with the suspicion of an out-of-date curriculum in accounting and bookkeeping has generated much research to deal with the questions (1) what is a bookkeeper? (2) what work does a bookkeeper perform? (3) what (if any) training should the high school provide for prospective bookkeepers?

The business educator must continuously look to the community to see what the student needs to know when he goes to work. Tyler spoke of the value of utilizing data obtained from studies of contemporary life as one source for deciding what educational objectives the school should provide.[10] When writing about the need for accountability in education, Lessinger stated that schools should be certifying that students are able to perform specific tasks.

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[9]U. S. Bureau of Labor Statistics, Occupational Manpower and Training Needs: Information for Vocational Counseling and Planning for Occupational Training, Bulletin 1824 (Washington: Government Printing Office, revised 1974) p. 80.

[10]Ralph W. Tyler, Basic Principles of Curriculum and Instruction (Chicago: University of Chicago Press, 1950) p. 13.

Lessinger said also that planning for educational redevelopment "should be based on research and development to facilitate constant updating of specifications to meet these needs."[11]

The focus of current research in accounting and bookkeeping, as well as clerical occupations, has been in task analysis. The success of the United States Air Force occupational research projects, through CODAP,[12] has been the major influence in this trend. The Center for Vocational and Technical Education at Ohio State University has applied many United States Air Force task inventory concepts in developing a system for acquiring and using occupational information in revising and designing curriculum.[13] Occupational analysis of the job tasks of beginning accounting and bookkeeping workers can be found in studies that apply to the whole field of clerical work, as well as in studies limited to accounting and bookkeeping.

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[11]Leon Lessinger, "Accounting for Results: A Basic Challenge for American Schools," Accountability in Education, Leon Lessinger and Ralph Tyler (Worthington, Ohio: Charles Jones, 1971) p. 9.

[12]United States Air Force Comprehensive Occupational Data Analysis Programs (CODAP).

[13]William H. Melching, and Sidney D. Borcher, Procedures for Constructing and Using Task Inventories, Research and Development Series No. 91 (Columbus: The Center for Vocational and Technical Education, Ohio State University, 1973) p. 3.

An attempt to generate evidence of the actual tasks performed by office workers was made in 1968 by Perkins, Byrd, and Roley.[14] The study produced a list of 599 tasks performed in offices, of which 90 tasks applied to bookkeeping. Of particular interest was the extent to which office employees, regardless of job titles, engaged in activities outside their job titles.

Information about the actual tasks performed by office workers was provided by the New Office and Business Education Learnings System project (NOBELS). NOBELS was the first cooperative national research done in business education that involved teachers, businessmen, publishers, professional societies, and federal funds. Started in 1968 and reported in final form in 1973, the major product of NOBELS was the development of an inventory of 373 educational specifications in behavioral terms, drawn from a list of 4,564 basic tasks performed by beginning office workers. To eliminate the overlap inherent in a classification and analysis of workers by job title, information was grouped into functional areas of work. Of the 373 task performance statements, 150 applied to bookkeeping.

The evidence produced by NOBELS from the analysis of tasks performed does not support double-entry bookkeeping

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[14]E. A. Perkins, F. R. Byrd, and D. E. Roley, Clusters of Tasks Associated with Performance of Major Types of Office Work (Pullman: Washington State University, 1968) ED 018 665.

as taught in the high school. Most of the numerical recordkeeping tasks dealt with the handling of original documents rather than with the accounting entries generated by those documents. The mechanization of accounting chronicled in the study makes the form of the accounting entry in actual practice far removed from the way the accounting entry is taught in classrooms.

A survey of 597 bookkeepers in the state of New York was done by West in 1973. Bookkeepers in firms of all sizes were asked to indicate whether or not they performed the 131 bookkeeping job activities that West determined made up the high school accounting and bookkeeping curriculum. They were also asked to indicate whether training was received for that activity in school or on the job. In agreement with NOBELS, West found very little justification for much of the instruction ordinarily given in high school accounting and bookkeeping courses. West concluded that school instruction had little transfer value for job performance as a bookkeeper. West raised an interesting issue in bookkeeping research when he suggested that attempts to define entry-level positions as those held by young people might not be valid. West had originally anticipated that respondents to his survey of entry-level bookkeeping positions would be concentrated in the 18-24 age range, but he found that job duties mandated a definition of "entry-level" rather than chronological age (West, p. 27).

Some studies of a local nature have looked for relationships between the bookkeeping taught in school and the bookkeeping performed on the job. Spanswick[15] in Chicago, and Stelter[16] in Minnesota both found that on-the-job training was more valuable than school training for the majority of bookkeeping job tasks. Honaker's study in Russell County, Virginia; Henderson's study in Edwardsville, Michigan; Yirsa's study in Marquette, Michigan, all revealed that school training lacks relevance to actual bookkeeping activities.[17]

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[15]Ralph S. Spanswick, "An Investigation to Determine the Qualifications and Skills Desired, Accepted, and Actually Used in Manual Bookkeeping Jobs which Were Listed in Chicago and New York City Newspapers During the Months of May and August, 1966" (Doctoral dissertation, Northern Illinois University, 1967).

[16]Gayle A. Stelter, "A Study of the Bookkeeping and Accounting Duties Performed and Automatic Equipment Used By Bookkeeping and Accounting Employees in Rural Minnesota Businesses" (Doctoral dissertation, Northern Illinois University, 1968).

[17]Evelyn Honaker, "A Comparison of Bookkeepers in Russell County, Virginia and Job Activities Provided by Instructional Materials Used in Russell County, Virginia Bookkeeping Classes" (Master's thesis, Virginia Polytechnic Institute, 1968); see also Patricia Henderson, "A Study to Determine the Relationship Between Content Emphasis in High School Bookkeeping and the Activities of Those Who Completed the Bookkeeping Course" (Master's thesis, Southern Illinois University, 1968); see also John Yirsa, "A Study to Determine the Extent to Which Bookkeepers of Marquette, Michigan are Engaged in all of the Steps Encompassed in the Bookkeeping Cycle" (Master's thesis, University of Wisconsin, 1972).

The argument over the role and appropriate inclusion of data processing and computer training for the entry-level bookkeeper is still raging as fiercely in the 1970's as it was in the 1950's. Bangs and Hillestad, in a 1968 national survey of data processing,[18] found that data processing is appropriate on the high school level. Their study revealed that many beginning jobs in computer installations are available to high school graduates, particularly in the majority of operator and clerical classifications. The tie between activities of bookkeepers and data processors was vividly illustrated in West's study when analysis was made of the top ten job activities performed by the lower-level bookkeeping respondents. The first eight of the top ten job activities most frequently performed dealt with the examination, coding, correction, or preparation of data processing materials (West pp. 204-206).

The list of the duties and tasks most commonly performed by data processing workers according to Bangs and Hillestad (pp. 26-28) was considerably expanded by the research of Borcher and Joyner in 1973.[19] Borcher and

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[18]F. Kendrick Bangs and Mildred Hillestad, Curricular Implications of Automated Data Processing For Educational Institutions, United States Office of Education Research Study, Project No. BR5-0144 (Boulder: University of Colorado, 1968).

[19]Sidney D. Borcher, and John W. Joyner, Business Data Processing Occupational Performance Survey. Interim Report (Columbus: Center for Vocational and Technical Education, Ohio State University, 1973) ED 078 125.

Joyner using a format similar to that developed by the United States Air Force in their CODAP project, collected tasks performed in fourteen different catagories from 406 workers in 38 data processing installations across the country. A comparative study made in 1969 and 1973 by Curless in Chicago[20] found that high school training in data processing was viable since many jobs in data processing were open to beginning workers with only a high school diploma.

The changing nature of office activities prompted the 1970 investigation of the emergent office by Huffman[21] as part of the overall NOBELS project. The identification of 41 emerging office activities, gathered by questionnaire from 668 authorities, led Huffman to conclude that the training of the level of office workers who process information has been neglected (Huffman, p. 1). This neglected level of workers perform tasks that involve applying new concepts of information and the adaptation of technological changes of hardware and software used in the processing of information. Huffman concluded that these emerging

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[20]Jack Curless, "A Comparative Analysis between 1969 and 1973 of the Minimum Educational Requirements Necessary for Entry into Thirteen Types of Electronic Data Processing Positions" (Doctoral dissertation, Northern Illinois University, 1973).

[21]Harry Huffman and Dale Gust, Business Education for the Emergent Office, Interim Report (Columbus: Center for Vocational and Technical Education, Ohio State University, 1970) ED 043 754.

activities must be incorporated by educators into curriculum. A small study by Schweisthal[22] in Chicago showed that the training for workers below the level of programmer should concentrate more on the handling of equipment than on the understanding of double-entry concepts as currently taught on the high school level.

The textbook in high school accounting and bookkeeping courses largely determines the content of the curriculum. Tonné said, "bookkeeping is a textbook course, and the nature of the specific material taught depends largely on the text used."[23] West used this assumption of the textbook as determinant of the content of the curriculum by designing his questionnaire in conformance with an examination of high school textbooks in accounting and bookkeeping. The examination made by West revealed the tendency of textbooks to be encyclopedic, to cover all possible accounting concepts, to be general rather than specific (West, p. 13).

Honaker also used the textbook as indicator of the high school accounting and bookkeeping curriculum. This basic assumption made in her study was "that the job

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[22]Sister Mary Schweisthal, "An Analysis of the Information Flow in Automated Accounting Systems of Selected Chicago Firms with Implications for Revision of Bookkeeping Instruction" (Master's thesis, Catholic University of America, 1968).

[23]Herbert Tonné, Estelle Popham, and M. Herbert Freeman, Methods of Teaching Business Subjects (New York: McGraw-Hill, 1959) p. 217.

activities provided for the students in the bookkeeping classes were those which appeared in the textbook and practice set." (Honaker, p. 4).

A federally funded curriculum research project in Iowa commented in the foreword to their report:

> Office education curriculum frequently is based on units of instruction determined in many cases by textbook authors or subjective judgments of instructors. The units of instruction may have little relationship to job tasks necessary for gainful employment in office occupations.[24]

The influence of textbooks was also recognized by Spanswick when he said:

> The textbook used in a high school bookkeeping course usually serves as the basic guide for the course . . . . Teachers who follow the organization of these textbooks page by page with little change are in effect emphasizing the preparation of full-charge bookkeepers (Spanswick, p. 2).

Several researchers have analyzed high school accounting and bookkeeping textbooks in attempts to identify the curriculum being taught in these high school classes. Firth and Celluci analyzed content,[25] while Fischer and

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[24]Jack C. Reed, Identification of Tasks in Office Occupations, Final Report of Workshop June 1973 (Cedar Falls, Iowa: Iowa State Department of Public Institutions, Division of Career Education, State University of Iowa, 1973) ED 107 873.

[25]W. Firth, "An Analysis of Bookkeeping Text Material," Journal of Communication in Education, LVI (December, 1927), 256; see also Rosemarie Celluci, "A Comparative Analysis of the Content of Six Selected Textbooks in Elementary Bookkeeping " (Master's thesis, Boston University, 1961).

Gazaway did frequency studies of words in high school accounting and bookkeeping textbooks.[26] Hill, Wagoner, and Smiley analyzed textbooks to identify appropriate concepts for high school accounting and bookkeeping.[27] Fancher[28] looked for new trends in accounting and bookkeeping that were reflected in high school textbooks. An experimental study to assess the influence of textbooks on student achievement was conducted by Humbarger, while

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[26]Roy Fischer, "Word Frequency Study" (Master's thesis, University of North Dakota, 1959); see also Ronald T. Gazaway, "A Frequency Study of Selected Words and Phrases in Secondary School Bookkeeping and Accounting Textbooks" (Master's thesis, Kansas State College, 1972).

[27]Martha Hill, "A Comparative Study of Bookkeeping Principles and Activities Used on the Job as Presented in Textbooks and by Teachers" (Doctoral dissertation, University of Kentucky, 1954); see also Winifred Wagoner, "A Study of Course Content and Teaching Methods of Bookkeeping in Secondary Schools" (Doctoral dissertation, State University of Iowa, 1954); see also James Smiley, "The Identification and Comparison of Accounting Concepts that Should Be and Are Included in the Course Content of the First-Year High School and Post-Secondary Accounting Courses" (Doctoral dissertation, Ohio State University, 1972).

[28]Katherine Fancher, "Recent Trends in Accounting and the Extent to which They are Reflected in Current High School Textbooks" (Master's thesis, University of Tennessee, 1966).

Bydalek compared high school accounting and bookkeeping texts with elementary college accounting texts to determine curriculum commonality and emphasis.[29]

Summary

The findings from the studies reviewed in this section are in general agreement that the high school accounting and bookkeeping curriculum is not fulfilling the vocational objective of preparing a student for job entry as a bookkeeper. The next section will concentrate on the need for a study that reviews, synthesizes, and compares the job tasks of beginning accounting and bookkeeping workers with the job tasks taught in the high school curriculum.

NEED FOR THE STUDY AND RELATED LITERATURE

A definite need exists to synthesize and analyze research findings about the job tasks of bookkeepers in a format beneficial to the business education profession.

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[29]George L. Humbarger, "The Influence of Teaching Methods and Textbooks on Student Rate and Quality of Achievement in Bookkeeping" (Doctoral dissertation, Indiana University, 1968); see also David A. Bydalek, "A Comparative Analysis of Two High School Elementary Bookkeeping Textbooks and Two College Elementary Accounting Textbooks to Determine Commonality and Emphasis of Selected Topics" (Master's thesis, Northern Illinois University, 1966).

While much research has been done that deals with defining the bookkeeper's work, this research needs to be synthesized and analyzed so that realistic and useful curricula in accounting and bookkeeping on the high school level can be constructed, using research as the basis. A strong possibility exists that solutions to the problem of matching curriculum content with the actual job tasks of beginning accounting and bookkeeping workers have already been found but not recognized.

The format that would appear to be most beneficial to the business education profession would be a format that synthesizes and compares actual job tasks performed by the beginning accounting and bookkeeping worker with the job tasks taught in the high school accounting and bookkeeping curriculum. The attempts that have already been made in this direction have either been incomplete or too general.

The chronicle of attempts includes the work of Lanham and Trytten[30] who reviewed and synthesized business education research, including bookkeeping, for the years 1964-1966. The emphasis of their study was on trends.

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[30]Frank W. Lanham, and John M. Trytten, Review and Synthesis of Research in Business and Office Education (Columbus: Center for Research and Leadership Development in Vocational and Technical Education, Ohio State University, 1966) ED 011 566.

Price and Hopkins[31] continued in the same vein by reviewing and synthesizing business education research for the years 1966-1968. Devine confined his study to analyzing and classifying research in the bookkeeping area for the years 1950-1960, and Gallien followed in a similar fashion for 1961-1969.[32]

Olson and Hulett researched the objectives of high school accounting and bookkeeping instruction, while Stirewalt, Bentley, and Worthington dealt with current issues in the same area.[33]

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[31]Ray G. Price, and Charles R. Hopkins, Review and Synthesis of Research in Business and Office Education (Columbus: Center for Vocational and Technical Education, Ohio State University, 1970) ED 038 520.

[32]John W. Devine, "A Comprehensive Analysis, Classification, and Synthesis of Research Findings and Thought on the Teaching of Bookkeeping and Accounting, 1950-1960 " (Doctoral dissertation, Indiana University, 1962); see also Anna L. Gallien, "A Survey, Analysis, Classification, and Synthesis of Research Findings Pertaining to High School Bookkeeping, 1961-1969 " (Master's thesis, Northwest State University of Louisiana, 1971).

[33]L. Olson, "A Historical Study of Objectives in High School Elementary Bookkeeping Since 1930 " (Doctoral dissertation, University of North Dakota, 1970); see also Dan Hulett, "A Review of the Objectives of Bookkeeping " (Master's thesis, University of Wisconsin, 1970); see also Bruce E. Stirewalt, "Opinions on Issues in Teaching Bookkeeping at the Secondary Level " (Doctoral dissertation, Georgia State University, 1970); see also Kenneth Bentley, "The Pros and Cons of Including Bookkeeping in the Business Education Curriculum of the Secondary School " (Master's thesis, Northern Illinois University, 1971); see also J. Karl Worthington, "Identification and Analysis of Issues and Evolution of Trends in Selected Areas of Business Education in the Public Secondary Schools " (Doctoral dissertation, State University of Iowa, 1975).

A study to identify a comprehensive course in high school accounting and bookkeeping was conducted by Linnaus.[34] Lightner's national survey compared perceptions of teachers, businessmen, education leaders, and students about high school recordkeeping.[35] The first volume of a directory of task inventories was published by the Center for Vocational and Technical Education at Ohio State University in 1974, with the second volume due to be released in the near future.[36]

No synthesis of research that compares the actual job tasks of beginning accounting and bookkeeping workers with the activities being taught in high school accounting and bookkeeping courses exists. West in his 1973 study surveyed New York state only, and his determinant of curriculum was limited to the inclusion of bookkeeping activities in the textbooks rather than to a precise content analysis of textbooks. The present study was intended to fill that gap by identifying, synthesizing, and

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[34]Vernon Linnaus, "Guidelines for a Comprehensive High School Bookkeeping and Accounting Course" (Doctoral dissertation, University of Nebraska, 1968).

[35]Ardyce S. Lightner, "An Analysis and Evaluation of the Courses in Recordkeeping in the Business Curriculum of Public Secondary Schools of the United States" (Doctoral dissertation, Colorado State College, 1966).

[36]Directory of Task Inventories, Vol. 1 (Columbus: Center for Vocational and Technical Education, Bureau of Occupations and Adult Education, Ohio State University, 1974) ED 106 332.

comparing the actual job tasks performed by the beginning accounting and bookkeeping worker with the prevailing textbooks in high school accounting and bookkeeping.

DEFINITIONS

Job Task

A discrete unit of work performed by an individual; that is, the unit usually has a definite beginning and ending. (The reader should be aware that while job analysis experts employ terms such as task, function, responsibility, duty, etc., as though the distinctions among them were both obvious and fixed, this simply is not true. Attempts to place these terms into a commonly accepted hierarchy have not been successful. Melching and Borcher, p. 3).

Conventional High School Accounting and Bookkeeping Curriculum

A program that combines the vocational objectives of training bookkeepers with the personal objectives of interpreting, preparing, and/or using business information and records, and includes one or more of the following courses:

> Accounting and Bookkeeping - emphasizes the principles of double-entry bookkeeping and mastery of the steps of the accounting cycle, prepares students to analyze transactions, record in journals, post to ledgers and prepare and interpret statements.
>
> Recordkeeping - emphasizes keeping records for personal use and business use, sometimes includes the complete accounting cycle.

Data Processing and/or Computers - concerns the mechanical and/or conceptual processing of paper work as applied to business, either a separate course or incorporated into existing courses.

Beginning Accounting and Bookkeeping Worker

A person employed in a position dealing with the maintenance of financial records that does not require training above the high school level. These positions fit into those clerical groups in accounting suggested by a United States Office of Education classification system that includes:[37]

Accounting Clerk - performs one or more accounting clerical tasks such as posting to registers and ledgers; reconciling bank accounts; verifying the internal consistency, completeness, and mathematical accuracy of accounting documents; assigning prescribed accounting codes; examining and verifying for accuracy various reports, lists, calculations, etc; preparing simple journal vouchers; or other work relating to the clerical processing and recording of transactions and accounting information.

Bookkeeper (clerical), full charge bookkeeper, general bookkeeper - keeps records of financial transactions of establishment; verifies and enters details of transactions in accounts and journals; summarizes details on ledgers; transfers to general ledger; balances books

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[37] U. S. Office of Education, Vocational Education and Occupations, OE-80061 (Washington: Government Printing Office, 1969).

The definition for accounting clerk came from U. S. Department of Labor, Bureau of Labor Statistics, National Survey of Professional Administrativ Technical, and Clerical Pay, Bulletin 1742 (Washington: Government Printing Office, 1972), pp. 40-41. The definitions for bookkeeper and related accounting occupations came from U. S. Department of Labor, Dictionary of Occupational Titles, Vol., 1, Definitions of Titles, 3d ed. (Washington: Government Printing Office, 1966) p. 66.

and compiles reports; calculates payrolls, may prepare tax reports on payroll; may compute and type customers statements; may complete books to or through trial balance; may operate calculating and bookkeeping machines.

Related Accounting Occupations - Computing and account-recording occupations; includes cashiers, tellers, data processing operators, operators of billing machines, bookkeeping machines, computing machines, and account-recording machines.

RESEARCH DESIGN AND PROCEDURES

Rationale for selecting design

The study itself was based on a scientific strategy of multiple operations that sought convergence of findings derived from different research methods. The study sought to determine whether a composite of the tasks performed by beginning accounting and bookkeeping workers could be made from the findings of sundry related studies. Recognizing that variance in reliability and validity would vary from study to study, a research design was needed which searched for criteria to weight each identified study in making a composite of all the studies identified.

Authorities like Dunnette, Hoggatt, and Mosier had indicated that composite weighting of a variety of research measures was possible.[38] Wang and Stanley also thought composite weighting was possible:

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[38]Marvin Dunnette, and Austin Hoggatt, "Deriving a Composite Score from Several Measures of the Same Attribute," Educational and Psychological Measurement, XVII (1957), 423-434; see also Charles Mosier, "On the Reliability of a Weighted Composite," Psychometrika, VIII (September, 1943), 423-434.

> When measures are to be combined to form a composite measure, the question of differential weighting of the component measure arises. It is unlikely that the components will be equally reliable, have equal variance, be equally intercorrelated with one another. However, since each of these characteristics of the component measures will be reflected in the composite measure, it is to be expected, on purely logical grounds, that differential weighting would be effective.[39]

This study attempted to investigate whether the grouping of those studies that focused on the same problems would yield a core of valid findings that were related. Although grouping turned out to be impossible, the attempt to group related studies was considered worthy of investigation in fulfilling the purpose of this study.

The review of literature to identify the research studies pertaining to the job tasks of beginning accounting and bookkeeping workers covered the period January 1, 1968 to December 31, 1975. The year of 1968 was chosen to continue the research synthesis of Lanham and Trytten for 1964-1966 and that of Price and Hopkins for 1966-1968. The extra year was allowed to consider the possibilities of any research completed in 1968 not considered by Price and Hopkins. The cutoff year of 1975 was an attempt to make this study as inclusive as possible. The addition of research sources frequently outside the scope of business education research, such as government documents, business, and

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[39]Marilyn Wang, and Julian Stanley, "Differential Weighting: A Review of Methods and Empirical Studies," Review of Educational Research, XL (December 1970), 663-706.

accounting research, was included to strengthen the collection base of the data assembled for this study.

The job tasks of beginning accounting and bookkeeping workers were collected and ranked by frequency of job task representation to coincide with the logic expressed by the NOBELS team (NOBELS, p. 54). The NOBELS team constantly modified, as warranted by pilot studies and trial runs, each step of the process design. Other possible rankings of job tasks were considered by NOBELS such as "consequences of an employee's failure to perform specified tasks," "time spent on tasks," and "ranking tasks by difficulty." The "frequency of job task representation" was selected in the final analysis of the NOBELS study, as this method of ranking was believed to be the one that had the most fidelity to the tasks performed as reported by the interviewers.

Examination of the most commonly used textbooks in the high school accounting and bookkeeping curriculum by the techniques of content analysis presented a systematic method for determining the content of the conventional high school accounting and bookkeeping curriculum. Content analysis allows for the convergence of materials from different classes of data, in this event, a variety of textbooks. Content analysis may be related to job task analysis in two different ways according to Gagne:

> (1) It may be used to identify the probably intended outcomes of existing content (such as a text chapter);

and (2) It may be employed to design effective instruction and thus to determine instructional content.[40]

Identified job tasks collected and ranked by frequency of representation may be reliably compared with job tasks collected and ranked by content analysis. Pool states:

> The assumption that the frequency of statements provides a good index of intensity of attitude is probably reasonable for a large class of cases. By attitude here, of course, we mean the attitude expressed in the body of the text, not the covert feelings of the author. Even with this limitation, the assumption baldly spelled out sounds absurd, because it is perfectly clear that frequency is only one of a variety of devices by which feeling is expressed. But the experience of more than one analyst who has tried refinements in measuring intensity has been that nothing much is added by other measures than the frequency one.[41]

The quantification to be gained from content analysis proceeded in terms of the broad dimensions of bookkeeping practices. The broad dimensions of bookkeeping practices were further reduced by quantification within the categories of the job tasks of beginning accounting and bookkeeping workers identified in the review of the literature. The frequency of representation of job tasks was quantified by

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[40]Robert M. Gagne, "Task Analysis--Its Relation to Content Analysis" (paper presented at the annual meeting of the American Educational Research Association, Chicago, 1974) p. 15, ED 092 588.

[41]Ithiel de Sola Pool, "Trends in Content Analysis, A Summary," Trends in Content Analysis, ed. I. de S. Pool (Urbana, Illinois: University of Illinois Press, 1959) p. 33.

the volume of space each job task used in each textbook analyzed. Volume of space, the measuring unit, was determined by using a printer's ruler.

The analysis of the relationships between the job tasks identified by research and job tasks identified by the major high school accounting and bookkeeping textbooks was made through the use of rank-correlation coefficient methods.[42] Ranking was chosen to coincide with the frequency measure used in the task and content analysis techniques. The ranking of ordinal data gathered by frequency representation and volume of space in this study does not carry with it any implications of equality of differences between ranks. While there is some disagreement among researchers whether frequency measures provide a complete index of intensity or emphasis, Pool tells us that those who compare frequencies with other measures have often concluded that the former are quite satisfactory (p. 93).

The amount of time needed to learn job tasks varies according to task difficulty and learner ability. No research has been done, however, that establishes how much time is necessary to learn various bookkeeping tasks. Nor have publishers, such as Gregg and South-Western, leaders in

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[42] Gene Glass, and Julian Stanley, Statistical Methods in Education and Psychology (Englewood Cliffs, New Jersey: Prentice-Hall, 1970) pp. 172-174.

the high school accounting and bookkeeping textbook field, considered the learning time issue in any terms more specific than suggesting that time schedules for learning bookkeeping tasks be flexible and suited to the needs of the learner. Suggested time schedules in their textbook teaching manuals show no recognition of differences in learning times for different job tasks. The study, therefore, drew no inferences that the amount of space devoted to a particular bookkeeping job task in a textbook was an indication of learning ease or difficulty.

Procedures used in the study

The procedures used in this study have been separated into three areas to coincide with the three questions asked in the statement of the problem.

1. What identified job tasks are being performed by the beginning accounting and bookkeeping worker?

A. Identification of the research studies pertaining to the job tasks of beginning accounting and bookkeeping workers was made through a review of the literature for a period of eight years, from January 1, 1968 to December 31, 1975. The following sources were used in the review of the literature; complete documentation for these sources is found in the bibliography.

Educational Resources Information Center (ERIC)
Review of Educational Research (AERA)
Research Bulletins of the National Education Association
Abstracts of Instructional Materials in Vocational and Technical Education (AIM)
Abstracts of Research and Related Material in Vocational and Technical Education (ARM)

Dissertation Abstracts International
Index to Doctoral Dissertations in Business Education
Masters' Theses in Education

Business Education Index
Business Education Forum
Journal of Business Education
Current Index to Journals in Education (CIJE)

Monthly Catalog of U. S. Government Publications
American Statistical Index
National Center for Educational Statistics
Bibliographies of the Occupational Research Division, U. S. Air Force Human Resources Laboratories

Work-Related Abstracts
Accountants' Index
The Conference Board Cumulative Index
Source Directory of Predicasts Inc.
Encyclopedia of Business Information Sources
Index of Selected Publications of the Rand Corporation

A broad group of approximately fifty descriptors was used in searching the sources listed above.

B. The job tasks of beginning accounting and bookkeeping workers as identified in each research study were listed and ranked by frequency of representation in the study.

C. A search for criteria and/or a rating index to assign weight to each identified job task list was made through literature review of research authorities.

D. A synthesis of the identified job task lists into one list of the job tasks of beginning accounting and bookkeeping workers ranked by frequency of representation was attempted.

E. A list of the job tasks of beginning accounting and bookkeeping workers ranked by frequency of representation was established.

2. What job tasks are included in the conventional high school accounting and bookkeeping curriculum?

A. Identification was made of the textbooks in the high school accounting and bookkeeping curriculum that were most commonly used.

B. Identified textbooks were analyzed by a method of content analysis, using volume of space as the measuring unit. The job tasks elicited from research provided the categories to be used in the content analysis.

C. Criteria to assign weight to each textbook job task listing were established through correspondence with publishers and the application of enrollment figures to that correspondence information.

D. A synthesis of the identified textbook job task lists into one list of all the job tasks being included in the conventional high school accounting and bookkeeping curriculum was made.

3. To what extent does the conventional high school accounting and bookkeeping curriculum include and prioritize these identified job tasks?

A. Rank-correlation coefficient methods were used to compare and analyze relationships between the research-identified job task list and the textbook-identified job task list.

B. The analysis of data was presented, interpreted, and discussed.

C. The findings of the study were used to answer Question 3.

D. Conclusions were drawn and recommendations made for high school accounting and bookkeeping.

Chapter 2

WHAT JOB TASKS ARE BEING PERFORMED BY THE BEGINNING ACCOUNTING AND BOOKKEEPING WORKER?

Chapter 2 discusses the methods and procedures used to answer the question posed in its title. The chapter identifies research studies pertaining to the job tasks of beginning accounting and bookkeeping workers and synthesizes the identified job task lists into one list.

STUDIES PERTAINING TO THE JOB TASKS OF THE BEGINNING ACCOUNTING AND BOOKKEEPING WORKER

Methods of identification

The identification of research studies pertaining to the job tasks of beginning accounting and bookkeeping workers was made through a review of the literature for a period of eight years, from January 1, 1968 to December 31, 1975. Sources selected for review from the area of education were:

Educational Resources Information Center (ERIC)
Current Index to Journals in Education (CIJE)
Dissertation Abstracts International
Masters' Theses in Education
Review of Educational Research (AERA)
Research Bulletins of the National Education Association

Sources selected for review from the specific area of business and vocational education were:

Business Education Index
Index to Doctoral Dissertations in Business Education
Abstracts of Instructional Materials in Vocational and Technical Education (AIM)
Abstracts of Research in Vocational and Technical Education (ARM)
Business Education Forum
Journal of Business Education

Sources selected for review from the specific areas of business and accounting research were:

Work-Related Abstracts
Accountants' Index
The Conference Board Cumulative Index
Source Directory of Predicasts, Inc.
Encyclopedia of Business Information Sources

Government documents selected for review were:

American Statistics Index
Monthly Catalog of U. S. Government Publications
National Center for Educational Statistics
Bibliographies of the Occupational Research Division, United States Air Force Human Resources Laboratories
Index of Selected Publications of the Rand Corporation

The descriptors used in searching the literature were determined in conjunction with the thesaurus or key word index used in each of the sources listed. The descriptors, approximately 50 in number, ranged from terms as broad as accounting, bookkeeping, textbooks, and occupational analysis to terms as specific as electronic data processing occupations, Office of Education, statistical weighting measures, and business skills.

The identification of job task studies proceeded as follows:

1. All studies located in the search through both broad and specific descriptors were read in abstract.

2. All studies relating to the content area of accounting and bookkeeping were identified by reading abstracts or the original texts.

3. All studies whose abstracts related to job task analysis were read in the original texts.

4. The accounting and bookkeeping were divided into two groups:

a. studies specifically pertaining to the job tasks of beginning accounting and bookkeeping workers. These 16 studies are identified and reviewed in detail in this chapter.

b. studies relating to the content area of beginning accounting and bookkeeping, but containing no specific information about the job tasks of beginning accounting and bookkeeping workers. These 48 studies are identified and listed in Appendix A.

The 16 studies specifically pertaining to the job tasks of beginning accounting and bookkeeping workers

The 16 research studies containing specific information about the job tasks of beginning accounting and bookkeeping workers were identified through the review of literature. The studies are listed here by year of publication, then reviewed. The two United States Air Force

studies, those of English and Morsh, and Garza have been combined for review, as have the two allied health studies, that of Gosman and of Henrich.

1967

John R. Burton; and others, A Study of the Opportunities for, Requirements of, and Knowledges, Abilities, and Related Characteristics Needed by Beginning Office Workers in the State of Connecticut, with Implications for Business and Office Workers (Hartford: Connecticut State Department of Education, Hartford, Division of Vocational Education; University of Connecticut, Storrs, School of Education, 1967) ED 022 864.

Ralph R. Spanswick, "An Investigation to Determine the Qualifications and Skills Desired, Accepted, and Actually Used in Manual Bookkeeping Jobs which were Listed in Chicago and New York City Newspapers During the Months of May and August, 1966" (Doctoral dissertation, Northern Illinois University, 1967).

1968

Gayle A. Stelter, "A Study of the Bookkeeping and Accounting Duties Performed and Automatic Equipment Used by Bookkeeping and Accounting Employees in Rural Minnesota Businesses" (Doctoral dissertation, Northern Illinois University, 1968).

E. A. Perkins, F. R. Byrd, and D. E. Roley, Clusters of Tasks Associated with Performance of Major Types of Office Work (Pullman: Washington State University, 1968) ED 018 665.

F. Kendrick Bangs and Mildred Hillestad, Curricular Implications of Automated Data Processing for Educational Institutions, United States Office of Education Research Study, Project No. BR5-0144 (Boulder: University of Colorado, 1968).

Kenneth Arthur Ertel, Clusters of Tasks Performed by Merchandising Employees Working in Three Standard Industrial Classifications of Retail Establishments, Final Report, No. 20, United States Office of Education Study, Grant OEG-4-7-070031 (Olympia: Washington State University, 1968) ED 023 911.

Jacqueline English and Joseph E. Morsh, Occupational Survey of the Accounting and Finance Career Field 671X1, 671X3, 67170, 67290 (Lackland Air Force Base, Texas: Personnel Research Laboratory, Aerospace Medical Division, Air Force Systems Command, PRL-TR-68-2-(1, 11, 111) 1968).

Evelyn Honaker, "A Comparison of Bookkeepers in Russell County, Virginia and Job Activities Provided by Instructional Materials Used in Russell County, Virginia Bookkeeping Classes" (Master's thesis, Virginia Polytechnic Institute, 1968).

1970

Minna L. Gosman; and others, Occupational Analysis of Tasks Performed in a Medical Record Department. Interim Report (Los Angeles: California University, Division of Vocational Education, 1970) ED 041 148.

Robert R. Henrich; and others, A Study of Purchasing Occupations in Health Care Facilities. Interim Report (Los Angeles: California University, Division of Vocational Education, 1970) ED 041 146.

1972

Frank Lanham, et al., Development of Task Performance Statements for a New Office and Business Education Learnings System (NOBELS), Revised Final Project Report (Columbus: Center for Research and Leadership Development in Vocational and Technical Education, Ohio State University, 1973) ED 068 728.

Terry Frame, "The Relationship Between Tasks Performed by Office Employees and by Office Education Students" (Doctoral dissertation, Northern Illinois University, 1971).

Andrew T. Garza, Occupational Survey of Seven Accounting and Finance Civil Service Series (Lackland Air Force Base, Texas: Personnel Research Division, Air Force Systems Command, Brooks Air Force Base, Texas, AD-654967, AFHRL-TR-72, 1972).

Battelle Memorial Institute, An Exploratory Study to Analyze New Skill Content in Selected Occupations in Michigan and the Mechanism for its Translation into Vocational Education Curricula: Section Report on Clerk/Typist, Stenographer, Bookkeeper, and Salesperson (Columbus: Columbus Laboratories, 1972) ED 085 511.

1973

Sidney D. Borcher and John W. Joyner, Business Data Processing Occupational Performance Survey, Interim Report (Columbus: Center for Vocational and Technical Education, Ohio State University, 1973) ED 078 125.

Leonard J. West, Survey of Entry-Level Bookkeeping Activities in Relation to the High School Bookkeeping Curriculum, Research Report 73-1 (New York: City University of New York, Institute for Research and Evaluation in Occupational Education, 1973) p. 199, ED 086 873.

The Burton study. The purpose of this study was to collect data about the qualifications and needs of young people seeking office employment in Connecticut. Questionnaires were mailed to every fifth Connecticut company listed in the Dun and Bradstreet reference book, as well as to other nonlisted Connecticut businesses whose names were supplied by the Connecticut State Employment Service.

Of the 1,224 firms contacted, 824 responded and provided data which formed the base of 522 interviews conducted with beginning office workers and their 353 supervisors. Workers and supervisors were employed in 130 firms having at least 5 beginning workers. Burton collected information about 140 duties performed by office workers, along with the skills and knowledge necessary for office work. Of the 140 duties, 33 could be specifically applied to accounting and bookkeeping; of the 522 office workers, 45 were identified by the title of bookkeeper. The accounting and bookkeeping job tasks identified were very generalized, e. g., "Calculates rates or payments," (p. 193).

Burton's findings noted that most of the major employers of office workers were located in metropolitan areas of the state. Burton also noted that, for many firms, the high schools provided the major source of office employees, that nearly all beginning office workers were high school graduates, and that of these employees, only one in [illegible] any training beyond high school.

The Spanswick study. This small but carefully executed study was designed to identify and examine the activities performed in manual bookkeeping jobs available to employees whose formal training was limited to a one-year high school course in bookkeeping. The manual bookkeeping jobs available were identified by examining the Help Wanted ads in Chicago and New York city newspapers. A group of 80 respondents who satisfied the qualifications were found in Chicago and New York.

The nature of the activities performed in manual bookkeeping jobs and the reactions of employers and employees to the value of a one-year high school course in bookkeeping as preparation for those jobs were determined by using two questionnaires sent to the 80 employees and their employers. The questionnaires were prepared from the activities covered in three high school accounting and bookkeeping textbooks. The questionnaire, refined through a pilot study, gathered information on the activities, nature, and frequency of 73 bookkeeping activities performed

by employees classified as bookkeepers. Chi-square analysis was used to confirm the similarity of the job activities reported in Chicago and New York.

Spanswick found that most firms advertising bookkeeping jobs were not willing to hire inexperienced workers. Both employers and employees studied in this survey reported that bookkeeping job experience, rather than high school bookkeeping courses, prepared them for their jobs.

The Stelter study. Stelter's study sought to determine the qualifications of and duties performed by bookkeepers and accountants in rural businesses. The study also gathered data about the types of equipment used by bookkeepers and accountants, as well as projections of future equipment needs of offices.

Two field-tested questionnaires were mailed to a carefully drawn sample of 229 firms in Minnesota, one to employers and one to their employees. Usable responses came from 111 employers and 154 bookkeeping employees. The firms represented six Standard Industrial Classifications (SIC's), and were all located in cities over 50 miles from a population center in Minnesota having 50,000 persons or more. Stelter attempted, through this formula, to get a truly representative sample of rural bookkeepers. Besides the data collected by questionnaire, 34 interviews were conducted. Chi-square analysis revealed that questionnaire and interview data were substantially the same. Of the 80

traditional bookkeeping and accounting duties listed on his questionnaire, Stelter found that 46 of these duties were not performed at all by three-fourths of his respondents. He also found that formal education, while helpful, was not necessary to perform most of the duties of a bookkeeper in rural Minnesota, but that employment as an accountant required educational training beyond high school.

The Perkins, Byrd, and Roley study. This study was designed to identify capabilities required for modern office work. Specifically, the study identified clusters of tasks performed by a sample of 663 office employees working in various sizes of offices in twelve Standard Industrial Classifications in the state of Washington. The sample was based on a model developed at Washington State University in 1966.[1] Of the 295 firms in the private enterprise sector and the 28 government agencies surveyed, 80.3 percent of private firms, and 96.8 percent of the government agencies responded.

Perkins used a field-tested questionnaire of 599 office tasks, which had been validated by interview with a sample of office workers and supervisors, as well as a jury of experts. The 599 office tasks were clustered within 13

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[1]Edward Perkins, and F. Ross Boyd, A Research Model for Identification of Task and Knowledge Clusters Associated with Performance of Major Types of Office Employees' Work, Project ERD-257-65 (Pullman: Washington State University, 1966).

major categories of tasks--typewriting, office machines and equipment, dictating and transcribing, mailing, filing, telephoning and communicating, clerical, securing data, mathematics, financial and recordkeeping, editorial, meeting and working with people. Clusters of tasks were also prepared for each of six broad job classifications--supervision, secretarial-stenographic, clerical, bookkeeping-accounting, business machine operators, and data processing.

Chi-square analysis of data supported two hypotheses tested: (1) significant differences existed in tasks performed by office workers in various industrial classifications, and (2) significant differences existed in tasks performed by office workers in small and large offices. Of the 663 respondents, 131 were classified in bookkeeping-accounting, and 20 were classified in data processing. Of the 599 office tasks, approximately 140 were financial and recordkeeping tasks. Of the 140 financial and recordkeeping tasks, only 32 were performed by at least 40 percent of the employees responding.

The Bangs and Hillestad study. The purpose of this large-scale national study was to provide guidance for the evaluation of existing programs and the establishment of new programs in data processing on the high school and junior college level. Information for the study was compiled from businesses using data processing equipment and from institutions teaching data processing.

A preliminary census of data processing offerings was obtained by sending 10,278 questionnaires to all secondary and junior colleges in the United States. Over 94 percent of the institutions surveyed responded, resulting in a compilation of the characteristics of existing data processing programs throughout the United States. A random sample of 353 businesses in 39 states was interviewed to determine the knowledge needed for data processing job entry, the patterns of advancement for data processing jobs, and projections of new hardware and software with attendant implications for future job opportunities and training programs. A total of 176 school systems, high schools and junior colleges, located in the same cities as the sampled businesses, were studied through interview and by questionnaire to give information about existing data processing programs, equipment, teachers, and students.

The Bangs and Hillestad study was designed to comprehensively cover almost all aspects of data processing training and employment requirements. Along with this large collection of data, the job duties most commonly performed by 1,517 data processing employees were also collected. (Bangs and Hillestad, pp. 26-28). The data processing job categories most frequently open to high school graduates were: keypunch operator, tape librarian, unit record equipment operator, and computer operator. The verifier operator's job was also studied, but those duties so

closely paralleled the keypunch operator's duties that detailed analysis of the verifier operator's job was not presented. The job categories of programmer, data processing supervisor, and systems analyst were most frequently available to workers with post high school training in data processing.

The researchers concluded that future data processing jobs will become more complex rather than more abundant and that many of these same jobs will exist years into the future. Expanded opportunities were also forecast for persons trained in new developments in software. The conclusion was also drawn that educational institutions were not training enough data processing personnel for the needs of business.

The Ertel study. This study collected current data about major tasks performed by merchandising employees in three Standard Industrial Classifications of retail stores. A stratified random sample of 609 employees was drawn from department stores (SIC 531), general merchandise stores (SIC 539), and variety stores (SIC 533) in King and Pierce counties in Washington. Percentages of stores and employees in each stratum of the population closely matched the national population in terms of percentages of stores and employees in each of the three SIC's selected.

Separate questionnaires were prepared for non-supervisors and supervisors so that performances of the 225

job tasks could be compared on two levels. Among the 225 job tasks on the questionnaire, 60 applied to the area of the conventional high school accounting and bookkeeping curriculum.

Analysis of the findings showed limited opportunity for non college bound youth to advance into supervisory positions. Data also showed limited opportunity for early advancement of women into supervisory positions.

The Honaker study. This small study compared job activities of 32 bookkeepers in Russell County, Virginia with job activities contained in textbooks and practice sets used in Russell County, Virginia bookkeeping classes.

A checklist of 52 job activities was developed through interview with bookkeepers. The 32 bookkeepers (nonrandomly selected) were interviewed and asked whether they performed the activities on the c' cklist. They were also asked to add any additional bookkeeping activities performed that were not on the checklist.

The job activities taught in bookkeeping classes were compiled by an examination of the textbooks used in Russell County bookkeeping classes. The researcher devised a judgmental counting and difficulty weighting system as a base to relate the job activities of bookkeepers to job activities taught by the textbook in high school bookkeeping classes. Analysis revealed considerable differences between bookkeeping activities on the job and in school.

The Gosman and Henrich studies. Both the Gosman and the Henrich studies were part of a national allied health project[2] designed to determine appropriate content for health occupations curricula. A selected national sample of 48 hospitals and extended care facilities had been drawn as part of the overall project. Questionnaires constructed through literature review and the expert help of national technical advisory committees were used to analyze tasks performed by medical personnel.

The Gosman study collected data about 249 tasks performed within the medical records departments of the 48 health institutions in the national sample. Tasks were grouped by 17 functions and by 6 occupational titles of which medical records clerk most closely resembled a bookkeeper or accounting worker. Analysis of the data having implications for accounting and bookkeeping training revealed that the tasks of the medical records clerk were clearly clerical and did not require specific training in accounting and bookkeeping. General data analysis revealed that 25 percent of the respondents had no previous training before employment in medical record departments. Implications for curriculum development in the medical records

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[2]Allied Health Professions Projects, USOE Grant C-8-080627 (Los Angeles: University of California, Division of Vocational Education, 1969) ED 037 350.

field were that task training might best be developed by using a group of educational categories that developed a progression of clerical skills and knowledge that provided personnel mobility.

The Henrich study focused on medical facility purchasing. A questionnaire concerning 208 task elements in general purchasing practices was completed by 126 persons in 29 of the original 48 institutions. Data were analyzed by 6 occupational categories of which accountant was one. Data were reported in three ways: (1) percentage of respondents who performed the task (this was considered to be the most important aspect of performance); (2) modal frequency of performance; and (3) difficulty level. The study found that medical purchasing agent is not a clearly defined profession for which specific qualifications exist, and that the diversity of procedures and practices within this occupation calls for flexible training programs. Henrich classified only 4 of the 126 respondents as accountants, finding like Gosman, no specific implications for accounting and bookkeeping.

The NOBELS study (Lanham). Planning and instrumentation for the New Office and Business Education Learning System (NOBELS), began July 1, 1968. Responding to the need for business education curricula renewal and a changing market for office job preparation, NOBELS was spawned by the actions of the Research Foundation, the National Business

Education Association, and Delta Pi Epsilon. The project was sponsored through federal grants, publishing grants from Southwestern and Gregg, and developed by a consortium of four institutions of higher learning representing New York, Georgia and Tennessee, Minnesota and Wisconsin, and California. The National Association of State Supervisors for Business and Office Education acted as reactors to and disseminators of progress during the study. The NOBELS project was the most comprehensive research done to date in the field of business education.

The overall purpose of NOBELS was to assess and modify business education curriculum. The data in this study were drawn by interview from employed office workers, and while many educational implications were and remain to be drawn from these data, no statistical data about what was actually being taught in schools were reported in NOBELS. The major product of NOBELS was the development of an inventory of educational specifications in behavioral terms that represented basic tasks actually performed by office workers. Analysis of the 373 educational specifications or task statements was pointed toward office education curriculum renewal.

The NOBELS study was based on an analog systems model. The development of the model has been reported by

Lanham in a feasibility study[3] for NOBELS. The model was consistently tested, modified, and retested. Thirty-five different interview protocols were made prior to pilot testing, each one representing modifications from field testing. Pilot testing took place in California and Georgia from January to May, 1969. Principal data collections took place from June to October, 1969. Data were collected by interview from 1,232 office employees and their supervisors in four major areas of the United States, New York, Georgia and Tennessee, Minnesota and Wisconsin, and California. The 1,232 interviews yielded 4,564 basic job tasks performed in offices, with the identification of 32,447 steps involved in these job task. The 4,564 basic job tasks were refined into 373 task performance statements. The 373 task performance statements included a variety of detail about the steps involved in the performance of each task, illustrative flowcharts of the steps in the task, hardware and software used in the performance of the task, educational cues applicable to the task, and criteria for evaluation of task performance.

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[3]Frank Lanham et al., A Planning Study to Determine the Feasibility of Developing a New Business and Office Education Curriculum, Moonshot--an Office Occupation Curriculum, Final Report, Project No. 7-1223 (Columbus, Ohio: Center for Research and Leadership Development in Vocational and Technical Education, 1968) ED 023 894.

The office jobs examined closely approximated the existing office employment situation; a judgmental sampling design was used to yield data in proportion to the demographic location of office workers found in census information. Interviewers, typically certified business teachers having office experience and currently enrolled in master's programs attached to the collection areas, were carefully trained through a planned training program. The interview form included employer and employee background information and space to list the six major job tasks performed on the job. Employees were interviewed, and supervisors were also interviewed to check the validity of employee information. Additional information was obtained about job tasks such as difficulty, frequency of performance, time percentage, prospects of tasks changing in the future, and consequences of failure of performance. Data were also collected about software and hardware used in task performance, criteria for successful performance, required skills, cues that initiated performance, and critical incidents that occurred in task performance. The collection of 780 critical incidents allowed for analysis of the social context of office work.

The analysis of data required some adjustments of the original model; these adjustments are in line with the original NOBELS philosophy of assessment and modification where necessary to strengthen output. The final report

groups the 373 task performance statements into 12 functional classifications. The task statements were listed by the frequency of task sheets represented.

Of the 1,232 office employees interviewed, 514 or 41 percent were identified as performing numerical recording and data processing tasks. When classified by job title, 251 were accounting clerks, 128 were data processing operators, and 135 were general clerks (NOBELS, p. 311). Of the 4,564 task sheets collected, 1,851 applied to accounting and bookkeeping job tasks; of the 1,851 task sheets, 980 were from the classification Numerical Clerical Records, 398 from Electronic Data Processing, 198 from Client Related Services, 79 from Sales, 63 from Inventory, Shipping and Receiving, 94 from Purchasing, and 39 from Production.

The final products of NOBELS are: 373 Task Performance Statements (NOBELS, pp. 66-87); the Taxonomy of Office Activities;[4] data collection reports from Calhoun,[5]

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[4]Harry Huffman, Mary M. Brady, et al., A Taxonomy of Office Activities for Business and Office Education (Columbus: Center for Research and Development in Vocational and Technical Education, Ohio State University, 1968).

[5]Calfrey C. Calhoun, et al., Development of Performance Goals for a New Office and Business Education Learnings System, Final Report, Project 91-E (Athens, Georgia: Georgia University, 1970) ED 073 256. Note that Calhoun's report also includes an analysis of hardware used by office workers and an analysis of social interaction critical incidents.

Erickson,[6] Price and Hopkins,[7] and Tonne;[8] Huffman's report on the emergent office;[9] a concordance of verbs and objects (NOBELS, pp. 300-307); and a talent inventory.[10]

The Frame study. The purpose of Frame's study was to determine what relationships existed between office tasks performed by first and second year office employees and the office tasks performed by senior high school students enrolled in vocational office education courses.

Using a questionnaire listing 600 office tasks (a modification of the Perkins, Byrd, and Roley instrument), Frame studied tasks performed by 166 office employees and those performed by 448 Arizona public high school seniors currently enrolled in vocational office education. The 166

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[6]Lawrence W. Erickson, New Office and Business Education Learnings Systems, Final Report, Project 91-D (Los Angeles: University of California Graduate School, 1969).

[7]Ray G. Price, and Charles R. Hopkins, New Office and Business Education Learnings System, Final Report, Project 91-F (Minneapolis: University of Minnesota, 1970).

[8]Herbert A. Tonne, New Office and Business Education Learning System, Final Report, Project 91-G (Albany: Research Foundation of the State of New York, 1969).

[9]Harry Huffman, and Dale D. Gust, Business Education for the Emergent Office, Interim Report (Columbus: Center for Vocational and Technical Education, Ohio State University, 1970) ED 043 754.

[10]Fred S. Cook, F. W. Lanham, and R. Schwartz, Talent Inventory for New Office and Business Education Learnings System, Final Report, Project 91-B (Detroit: Department of Business and Distributive Education, Wayne State University, 1970).

office employees had less than two years of work experience, and all of them had been enrolled in Arizona public high school vocational office education programs. Of the 600 tasks listed on the questionnaire, 144 applied to financial and recordkeeping tasks. Of the 166 employees surveyed, 22 were classified job titlewise as bookkeepers, and 4 as data processors.

Study of the collected data revealed significant differences between the tasks performed by office employees and those performed by high school students. The high school students performed considerably more tasks than did the office workers.

The United States Air Force studies, (English and Morsh, and Garza). The United States Air Force Occupational Research Project started in 1959 and has operated continuously ever since. The purpose of the Project is to expand and improve Air Force methods for: job analysis, job evaluation; job structure; job requirements with emphasis on aptitude and training; career development; personnel utilization; and job satisfaction, particularly relating to personnel retention.

Information for job analysis in the Air Force is collected through a job task inventory system. Each job inventory is composed of background questions which gather task-related information; task statements for which the job incumbent indicates performance or nonperformance; and task

attribute scales on which individual tasks may be rated. The Air Force inventories have been carefully polished through a series of pilot tests, modifications, and expert reviews. The samples used for data collection frequently represent an entire population or large percentage of a population. Analysis of data is made through CODAP[11] programs, 1,400 of which are available to provide sophisticated mathematical and statistical methods for analyzing and reporting occupational information to answer as wide a range of management problems as possible.

The job inventory approach claims many advantages. Melching and Borcher summarize these advantages concisely:

> 1. The technique is economical. Data can be collected from hundreds of workers in an occupational field for less than it would cost to collect data from a few cases using professional job analysis.
>
> 2. The information collected is quantifiable. The number of people performing any given task can be counted and their characteristics described.
>
> 3. Since the data collected by task inventory techniques are quantifiable, they can be stored, manipulated, analyzed, and reported by computer.
>
> 4. The results of the task inventory can be validated and checked for stability using conventional statistical techniques.
>
> 5. The technique yields information that is accurate.[12]

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[11]United States Air Force Comprehensive Occupational Data Analysis Programs (CODAP).

[12]William A. Melching, and Sidney D. Borcher, Procedures for Constructing and Using Task Inventories, Research and Development Series No. 91 (Columbus: The Center for Vocational and Technical Education, Ohio State University, 1973) p. 3.

Dr. Raymond Christal, head of the Air Force Occupational Research Project and a leading researcher in job analysis, has offered evidence of the accuracy and reliability of workers who fill out job inventories.[13] Christal found that double-checking and filling out the same information on separate occasions yielded split-half reliabilities ranging from .95 to .99, that supervisors agreed with information received from subordinates, and that daily work records agreed with worker statements (Christal, p. 6).

The Air Force has developed and uses a "Relative Time Spent" rating scale. Researchers found that while many workers cannot indicate an exact percentage of the time they spend on each specific task performed, they can confidently state that more time is spent on one task than on another. This led to the development of a 7-point scale on which workers report the amount of time spent on each task relative to the amount of time spent on other tasks. This "Relative Time Spent" rating scale allows quantification not possible from "Frequency of Performance" data (Christal,

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[13]Raymond Christal, "The United States Air Force Occupational Research Project " (paper presented at the State-of-the Art Symposium at the Occupational Research and Development Center, San Diego, California, July 10-12, 1973) ED 094 187. Major Christal is head of the USAF Occupational Research Division, Air Forces Human Resources Laboratories, Lackland AFB, Texas.

p. 7). Work is currently being done by Mead and Christal[14] on a universal job difficulty index equation, as well as on time emphasis in training for entry level jobs.

The door to using military occupational information in general education training is opening. A study by Smith and Callahan[15] demonstrated that, with the exception of combat operations, military and civilian occupations can be coherently compared. The Center for Vocational and Technical Education at Ohio State University is applying task inventory concepts to educational programs. One directory of task inventories[16] had already been published by the Center, with a second one scheduled for publication in the near future.

Two Air Force studies specifically pertaining to job task analysis in bookkeeping and accounting have been completed. Both of these studies, the English and Morsh

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[14]D. F. Mead, and Raymond Christal, Development of a Constant Standard Weight Equation for Evaluation Job Difficulty, AFHRL TR-70-44, AD 720-255 (Lackland AFT, Texas: Personnel Research Lab, Aerospace Medical Division, Sept. 1967).

[15]Janice B. Smith, and W. Thomas Callahan, Coordination and Integration of Military Education with National Career Education, Phase 2: Final Report, Technical Report 890 (Silver Spring, Maryland: Operations Research Inc., 1975) ED 105 250.

[16]Directory of Task Inventories, Vol. 1 (Columbus: The Center for Vocational and Technical Education, Bureau of Occupations and Adult Education, Ohio State University, 1974) ED 106 332.

study, and the Garza study, were performed under Project 7734, Development of Methods for Describing, Evaluating, and Structuring Air Force Occupations; Task 773401, Development of Methods for Collecting, Analyzing, and Reporting Information Describing Air Force Specialties.

The guidelines for Project 7734 were established as a result of research done by Clyde Mayo, Project Director. Mayo[17] constructed, administered, and prepared for analysis 19 job inventories covering 28 enlisted career ladders. Job inventory construction started from a review of literature, then proceeded through field interviews with 150 technical advisors in each of the 19 career fields. Technical advisors came from the four major skill areas: apprentice, journeyman, techician, and superintendent. Modifications and further refinements of the inventories were made by post-field interviews and conferences. Field review added an average of 54 new tasks to each inventory, representing an average increase of 15 percent to the tasks already in the inventories.

A variety of background variables were included in the background section of each job inventory booklet. These variables included experience, education, rank, equipment, types of paperwork processed, job interest, job

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[17]Clyde Mayo, Survey of Twenty-Eight Air Force Career Ladders with Nineteen Job Inventories, AFHRL-TR-68-109 (Lackland AFB, Texas: Personnel Research Division, Air Force Human Resources Laboratory, Air Force Systems Command, July 1968).

satisfaction, and special skill requirements. Subjects were asked to rank tasks on 7 point "Relative Time Spent" rating scales, which were used on all inventories as the primary rating factor. Some of the secondary rating factors used were: training required, importance, where training was acquired, time required to learn job, and work experience on tasks.

Job inventories were mailed to Air Force installations all over the world. If the career ladder being surveyed had 3,000 members or less, 100 percent sampling was attempted. For career ladders having over 3,000, random sampling was used. Sample size per inventory ranged from 407 to 1,715 with a mean of 1,119. A post-sampling questionnaire was mailed to the Test Control Officers, who had administered the inventories, to learn whether administrative instructions were clear. Results showed that over 95 percent of the Test Control Officers encountered no difficulties in administration.

English and Morsh, using the guidelines and inventories established by Mayo as part of Project 7734, conducted the occupational survey of the Air Force Accounting and Finance Career Ladder 671X1, 671X3, 67170, and 67290. The purpose of the survey was to collect data about the job tasks performed in this career ladder. The career codes are described as follows:

671X1-AF 67131 Apprentice General Accounting Specialist
AF 67133 Apprentice General Disbursements Specialist
671X3 AF 67151 General Accounting Specialist
AF 67153 General Disbursements Specialist
67170 Accounting and Finance Supervisor
67290 Accounting and Finance Superintendent

The survey instrument was a job inventory consisting of background information and 468 task statements, grouped under 14 duty categories. The inventory was administered to 1,543 airmen in 18 major air commands. The 1,543 airmen represented 44.5 percent of the total population in the Accounting and Finance career field.

The Garza study also used the guidelines and methods established by Mayo in Project 7734. The Garza study was designed to test the effectiveness of Air Force job analysis techniques on civilian jobs as well as to compare the content of those civilian jobs with those in the same career area having military incumbents. This initial effort involved civil service workers at Air Force installations grouped in the following Accounting and Finance series:

GS-501 General Accounting Clerical and Administrative Series
GS-520 Accounts Maintenance Clerical Series
GS-525 Accounting Technician Series
GS-530 Cash Processing Series
GS-540 Voucher Examiner Series
GS-544 Payroll Series
GS-545 Military Payroll Series

The survey instrument, a job inventory of 683 task statements grouped under 14 duty categories, was administered to the total Air Force civilian population of 6,460 persons

in the seven Accounting and Finance series classifications. The number of usable returns equaled 5,555 or 86 percent of the total population. As the current computer's hierarchical grouping capacity was slightly under 2,000 cases, a statified subsample of 1,936 cases was extracted from the total sample of 5,555. Analysis of data was made using CODAP programs.

A comparison of the seven series, in terms of time incumbents spent on tasks, revealed a significant amount of overlap between the series, particularly series GS-520 and GS-525. Recommendations included consideration of a consolidation of series GS-520 and GS-525 with some restructuring also taking place among the other series. Preliminary comparisons between the civilian and military Accounting and Finance survey data indicated similar grouping structures at the cluster and sub-level type, but at the job-level type fewer military job types appeared to be comparable to civilian job types. The civilian data being compared came from the Garza study, while the military data being compared came from the English and Morsh study. This lack of identification between military and civilian job types may possibly be due to the different and broader coverage of the seven civil service Accounting and Finance series compared to the narrower coverage of the six airmen ladders, 671X1, 671X3, 67170, and 67290. More detailed comparisons of civilian and military Accounting and Finance occupations are in progress and are yet to be reported.

The application of Air Force job analysis methodology to civilian occupations appears to be fruitful. The research by Garza showed that the use of Air Force methods resulted in describing civilian jobs as effectively as those same Air Force methods describe military jobs.

The Battelle Memorial Institute study. This section of a Michigan state series on vocational education reported on four occupations in business: clerk typist, clerk stenographer, bookkeeper, and salesperson. The Michigan series was designed to collect information about job tasks performed and about employers' skill requirements. The purpose of the series was to reduce discrepancies between the skills employers desire and the skills students acquire in vocational education.

To obtain information about the occupation of bookkeeper, four businesses in Grand Rapids, Michigan, and four in Columbus, Ohio, were studied by interview. Fifty accounting and bookkeeping tasks were compiled and divided into five functional areas. The report, which omitted specific information and should be considered as interim, concluded that bookkeeping in high school was nonfunctional and should be replaced by more relevant business courses.

The Borcher and Joyner study. The Borcher and Joyner study, done under the aspices of the Ohio State University Center for Vocational and Technical Education, was an interim

report on the results of a task inventory survey for data processing occupations. The purpose of the study was to design and revise curricula in one-or two-year post-secondary data processing programs.

The influence of Air Force job analysis techniques was evident in Borcher and Joyner's study. The 752-item job inventory was constructed by literature review and revised by expert opinion. Borcher and Joyner thought that a national survey was not necessary, as, in their opinion, duties and tasks performed by data processing workers were primarily related to size and type of computer installation, rather than to geographic location. A random sample of 38 local data processing facilities was drawn from a local list compiled by the Columbus, Ohio Chamber of Commerce. Usable responses were obtained from 406 of a possible 500 workers. A "Relative Time Spent" rating scale was the primary analysis factor; but performance frequencies, task commonalities, and time allotments were also gathered.

Analysis of the results of this data processing survey will be reported in detail in the major project report of Borcher.

The West study. The West study sought to provide a basis for updating the high school curriculum in recordkeeping and bookkeeping. West sought answers to questions about commonalities between high school curricula and job activities, about the differences firm size makes, and about

the advantage of formal school training for advancement in bookkeeping employment. Two groups, bookkeeping employees and accounting supervisors, and two methods, questionnaires and interviews, were used in this study.

Questionnaires were sent to a sample of New York City bookkeepers and upstate New York bookkeepers. Usable questionnaires were returned by 597 bookkeepers employed by 337 firms of all types and sizes in New York City and by 59 bookkeepers employed in 3 small upstate New York cities--Auburn, Batavia, and Elmira. The questionnaire collected background information, opinions about training, equipment used, and the details of present job activities of bookkeepers. The list of 131 job activities contained in the questionnaire was derived from an examination of high school textbooks used in high school accounting and bookkeeping and recordkeeping. Respondents were asked whether each of the 132 activities was currently performed and to indicate whether that job activity had been learned at school or on the job. Space was provided on the questionnaire to list additional job activities as well as to rank those activities most frequently performed.

Interview data were collected from 16 establishments in 10 industries. The establishments were selected to cover the range of industrial classifications and firm size and not by any formal sampling procedure. Interviews were conducted by professional job analysts who inquired into the

hiring prerequisites of employers, job descriptions, and conceptual knowledge required for job performance. Interviewers also examined the effects of computerization and collected record forms for analysis.

West found from analysis of the data that computerization had reduced the need to understand bookkeeping concepts, that prior school training was rarely a requirement for an entry-level position, that job advancement relied heavily on work experience and post-secondary training, and that high school instruction beyond the trial balance was unnecessary. A job-level code developed during the study (West, pp. 17-20) appears to hold better possibilities for job analysis in accounting and bookkeeping than the code presently available in the Dictionary of Occupational Titles.

SYNTHESIZING THE IDENTIFIED JOB TASK LISTS INTO ONE LIST OF THE JOB TASKS OF THE BEGINNING ACCOUNTING AND BOOKKEEPING WORKER

Reducing the number of research studies from 16 to 12

Four of the 16 identified research studies were eliminated from attempts to combine the job tasks of beginning accounting and bookkeeping workers. Each study had some characteristic that would prevent its findings from being generalized to the entire population of beginning accounting and bookkeeping workers. The four studies and reasons for their elimination were:

1. The Honaker study - surveyed only 32 bookkeepers on a non randomized basis, all from the same county in the state of Virginia.

2. and 3. The Gosman and Henrich studies - the majority of job task information collected in these two Allied Health studies was clearly clerical; very few job tasks could be specifically identified as accounting or bookkeeping.

4. The Battelle Memorial study - information about the job tasks of bookkeepers was collected from only 10 business establishments; methods of sampling were not explained in this interim report.

Ranking the job tasks of the beginning accounting and bookkeeping worker

Job tasks in each of the remaining 12 research studies were listed and ranked by frequency of representation.[18] Frequency of representation was the total number of respondents who performed each job task. Five of the studies, Burton, Spanswick, Bangs and Hillestad, Ertel, and West had reported both the number and percentage of workers performing each job task. Frame reported the number of workers performing each job task. NOBELS reported the number of task sheets reported by workers. Five of the studies, Stelter, Perkins, Byrd, and Roley, English and Morsh, Garza, and Borcher and Joyner reported only

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[18]Refer back to Chapter 1, p. 27.

the percentage of workers performing each task; these percentages were converted to numbers, as follows:

1. Stelter had reported job tasks in two ways, as duties performed by percentage of workers in cities under 2,000 population, and in cities over 10,000 population. For purposes of this study, the tasks for both large and small cities were combined; then the percentage was applied to the total number of respondents, e.g., 80 percent of the respondents prepare deposits for the bank, .80 x 154 = 123.

2. Perkins had reported job tasks as a percentage of bookkeeping workers performing financial and record-keeping tasks. For purposes of this study, the percentage was applied to the total number of respondents identified as bookkeepers, e.g., 75 percent of the respondents keep books and/or ledgers for any purpose, .75 x 131 = 98.

3. English and Morsh, Garza, and Borcher and Joyner all reported job task data according to United States Air Force methods, as percent of members performing, and as relative time-spent ratings. For purposes of this study the percent of members performing was applied to the total number of respondents in the study, e.g., 83.02 percent of the respondents operate key punch machines and verifiers, .8302 x 406 = 337.

The search for criteria and/or a rating index to assign weight in combining the job task lists

The synthesis of the 12 job task lists into one ranked list of the job tasks of beginning accounting and bookkeeping workers required a consideration of different weighting measures. The 12 research studies apparently could be combined, even though they would probably not be equally reliable, or be equally intercorrelated with one another.

The job tasks collected in the 12 research studies were basically nominal data. Ranking by frequency of representation allowed the transformation of this basically nominal data into ordinal data. Using sophisticated statistical techniques to weight and combine the studies did not appear to be appropriate for data below the interval level. A search for an appropriate statistical weighting measure and/or rating index had been made in the review of literature outlined in the beginning of this chapter (pp. 33-34), but none had been located.

An examination of the writings of research authorities was then undertaken in the search for weighting criteria. The examination revealed that while authorities agreed generally about validity and reliability as criteria for research, no reliable quantifiable hierarchy of research

criteria was available.[19] A list of the research authorities reviewed and their suggested criteria for research follows.

Kerlinger listed the following criteria of research design:

> Design research to answer research questions.
> Randomize wherever possible.
> Control the independent variable so that extraneous and unwanted sources of systematic variance have minimal opportunity to operate.
> To whom and what can we generalize the results of the study?[20]

Campbell and Stanley[21] said that internal validity is the most important criteria for research, but external validity is also necessary for the ideal research design. Internal validity centers around control in an experiment and asks whether the experimental manipulation really makes a significant difference. External validity concerns generalizability, to what populations can this research be generalized.

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[19]This situation is similar to the situation existing among job analysis experts. Refer back to the definition of job task in Chapter 1, p. 23.

[20]Fred N. Kerlinger, Foundations of Behavioral Research (2d ed.; New York: Holt, Rinehart and Winston, 1973) pp. 322-324.

[21]Donald T. Campbell and Julian Stanley, Experimental and Quasi-Experimental Designs for Research (Skokie, Illinois: Rand McNally, 1966) pp. 16-17.

Engelhart[22] did not identify criteria for research specifically but spoke in general terms about relevance to the problem, validity (is the data collected valid for the purpose implied by the problem), reliability of data and measurement, representativeness, and dependability of conclusions.

Borg[23] cautioned that the following factors should be considered in the evaluation of research: deliberate bias or distortion, sampling bias, observer bias, placebos, Hawthorne effects, and contamination. He suggested that important variables were often overlooked in studies and that the reader make a careful and critical evaluation of measurement techniques.

Perdew[24] identified seven characteristics of good research: (1) a definite problem carefully stated and delimited, (2) a collection of data suitable to the problem, (3) the proper refinement and analysis of data, (4) a definite technique to solve the problem, (5) formulation and testing of hypotheses, (6) conclusions and generalizations

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[22]Max D. Engelhart, Methods of Educational Research (Chicago: Rand McNally, 1973) pp. 88-89, 472.

[23]Walter R. Borg, Educational Research, An Introduction (New York: David McKay, 1963) pp. 327-343.

[24]Philip W. Perdew, "Criteria of Research in Educational History," Journal of Educational Research, XL (1950), 217-223.

based on data, and (7) presentation of data in a clear and logical manner.

Gephart, in a 1965 study,[25] synthesized and criticized research criteria generated by research authorities. The authorities used in Gephart's synthesis were: American Institute of Research, Walter Bog, Donald Campbell, Julian Stanley, Frederick Cyphert, Ernest Spaights, Egon Guba, Fred Kerlinger, Robert Travers, and Maurice Tatsuoka. The criteria summarized by Gephart revolve around two categories--lacking data available regarding validity and reliability, or having data available regarding validity and reliability. Specific criteria offered by Gephart as his findings are:

Criteria for evaluating the problem:
- does the research establish the existence of a problem
- does the research develop a conceptual framework
- does the research describe specific goals to be achieved
- does the research state its limits

Criteria for evaluating a hypothesis:
- does the hypothesis state or directly imply the existence of two variables
- does the hypothesis state the relationship between the variables
- are the variables empirically observable
- is the hypothesis based on accepted theory

Criteria for research design:
- does the research define the population
- does the research describe sample selection methods

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[25] William J. Gephart, Criteria for Methodological Adequacy for Research on Educational Change, USOE Grant EA 000 382 (Madison: University of Wisconsin, Director of Research and Experimentation, 1965) ED 011 46.

does the research describe sample characteristics
are controls included
are valid data collection techniques used

Criteria for analysis of data:
are the accumulated data systematically organized
are appropriate statistical procedures used

Criteria for conclusions drawn from research findings:
are the hypotheses confirmed or disconfirmed
are conclusions drawn from the findings
are conclusions limited to the data
does report imply modifications in theory
are additional research problems suggested

Attempts to combine the 12 job task lists

A variety of methods were used to try to combine the 12 job task lists into one list that would be a representative ranking of the job tasks performed by beginning accounting and bookkeeping workers. As a preliminary procedure, work sheets were designed to allow for analysis of the 12 job task lists.

Fourteen categories were used to group the data. The first 13 of these categories were taken from West's survey of bookkeeping activities (West, pp. 116-120). West's categories represented a fair outline of accounting and bookkeeping duties as traditionally defined and were geared also towards textbook analysis which would be useful in the second half of this research. A fourteenth category, computing and checking, was added to allow for the accumulation of job tasks in computing and checking activities that cut across categories. The 14 categories were:

1. Sales or services rendered
2. Cash receipts
3. Accounts receivable
4. Purchases or services received
5. Cash disbursements
6. Accounts payable
7. Merchandise records
8. Petty cash
9. Payroll
10. Financial statements
11. General ledger and general journal
12. Data processing
13. Miscellaneous
14. Computing and checking

The 12 job task lists were then placed on the work sheets under the appropriate categories. Job tasks from the 12 lists were combined if they clearly indicated the same activity; otherwise they were listed separately under the appropriate category. Preliminary analysis showed that approximately 381 different job tasks were represented in the 12 research studies. The following attempts to combine the 12 job task lists were made:

Weighting the 12 research studies. The most consistent criteria for acceptable research revolved around reliability and validity. The writer attempted to construct a scale that could be used to measure the weight of a research study

using reliability, validity, sample size, geographic range, and refinement of data collection methodology. Attempts at construction showed, however, that any constructed weighting scale would be judgmentally based on personal opinion. As no opportunity presented itself to test the weighting scale at this point, the idea of weighting to equalize the combination of the 12 job task lists was rejected.

Adding job tasks at face value. The next combination attempt consisted of adding up the number of respondents who performed each separate job task, e.g., the total number of respondents from all 12 research studies who "prepared sales invoices" totaled 252. An analysis of the results, however, showed that some of the most important studies lost their influence in the composite result and that some of the lesser studies showed too much influence in the composite result. The NOBELS study, a national study, had allowed each respondent to name only the six major tasks which were central to the job, while the Ertel study, a merchandising study limited to two counties in Washington, allowed respondents to select activities actually performed from a questionnaire listing 225 job tasks. Numbers of respondents and numbers of job tasks became the primary factors in this method, eliminating such factors as reliability and validity. The idea of adding job tasks from the 12 lists at their face value was rejected as data collection

bases and methods were too varied among the 12 studies to allow for an assumption of equal reliability for all of the 12 studies.

Comparing the ten top tasks from each list. The original premise had been that the findings of several research studies on the same topic could be combined even though information was obtained through a variety of methods.[26] At this point in the investigation, the premise showed signs of being untenable.

The 12 job task lists were then examined to see whether the studies were yielding consistent data. A comparison of the ten highest ranked job tasks from each of the 12 studies showed very little consistency in the data yielded. Of the top ten job tasks on each of the 12 job task lists, none were on all of the lists, nor were any on even half of the lists. Three of the tasks--prepares payroll, prepares checks for cash disbursement, and posts to accounts in subsidiary ledger--were found on four of the 12 job task lists. Four of the top ten tasks--verify totals, prepare deposits for the bank, record in a cash receipts journal, and punch cards--were found on three of the 12 job task lists. Tables 1-12 show the ten tasks ranked highest on each of the job task tests.

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[26]Refer back to Chapter 1, pp. 25-26.

Table 1

Ten Highest Ranked Job Tasks
The Burton Study

Rank	Job Task
1	Verify totals on forms
2	Punch cards from coded material
3	Record transactions
4	Calculate rates or payments
5	Cash checks
6	Receive and deposit money
7	Enter deposit in passbook
8.5	Code information for processing
8.5	Balance totals
10	Use proof machine

Table 2

Ten Highest Ranked Job Tasks
The Spanswick Study

Rank	Job Task
1	Work with debit and credit entries
2	Prepare checks for payment
3	Preparation of deposits
4	Record information in a cash receipts journal
5	Rule and balance ledger accounts
6.5	Record information in a cash payments journal
6.5	Post items to the accounts receivable and/or accounts payable subsidiary ledger
8	Reconcile the bank statement with the checkbook
9.5	Prepare schedule of accounts receivable
9.5	Check employee time records and calculations

Table 3

Ten Highest Ranked Job Tasks*
The Stelter Study

Rank	Job Task
2	Prepare deposits for the bank
2	Reconcile the bank statement with the checkbook
2	Check employee time records and calculations
5	Prove cash and record cash short and over
5	Prepare statements of customers' accounts
5	Draw payroll checks or prepare payroll envelopes
14.5	Record information in a general journal
14.5	Post items to general ledger accounts
14.5	Record information in a sales journal
14.5	Record information in a cash receipts journal
14.5	Record information in a cash payments journal
14.5	Post items to the accounts receivable subsidiary ledger
14.5	Prepare schedules of accounts receivable
14.5	Use a withholding table to calculate withholding taxes for employees
14.5	Prepare and record information in a payroll register
14.5	Prepare and record information in individual employee's earnings records
14.5	Journalize salaries and withholding entries
14.5	Journalize the emyloyer's liability for federal and state unemployment taxes
14.5	Journalize entries for social security taxes
14.5	Prepare emyloyer's quarterly federal tax returns
14.5	Prepare withholding tax statements (W-2)

*The data presentation in the Stelter study was not designed for ranking. Using ranking, job tasks 7 through 22 were equal candidates for rank 7.

Table 4

Ten Highest Ranked Job Tasks
The Perkins, Byrd, and Roley Study

Rank	Job Task
1	Keep books and/or ledgers for any purpose
2	Make journal entries (any type of journal)
3	Check bills and/or invoices (verify extensions, etc.)
4	Write checks (for any purpose as part of your job)
5	Make entries in special journals (Cash Receipts, Sales, Cash Payments, Purchases, etc.)
6	Use ledger accounts with "balance" column (balance form)
7	Post (transfer) entries from journals to a ledger (group of accounts)
8	Work with subsidiary ledger (accounts receivable, accounts payable, etc.)
8	Deposit checks and/or cash in bank or cashier's office
10	Compute payrolls for employees

Table 5

Ten Highest Ranked Job Tasks
The Bangs and Hillestad Study

Rank	Job Task
1	Operate computer
2	Punch cards
3	File and register tapes
4	Operate the sorter
5	Operate the reproducer
6	Operate interpreter
7	Verify punched cards
8	Operate accounting machines
9	Operate high speed printer
10	Operate collator

Table 6

Ten Highest Ranked Job Tasks
The Ertel Study

Rank	Job Task
1	Use sales register and handle money
2	Write sales tickets
3	Take phone orders and sell by telephone
4	Receive checks from customers
5	Process merchandise returns and exchanges
6	Record charge sales
7	Count and record till and deposit money with cashier
8	Check out register at end of day
9	Count and record stock
10	Record cash sales

Table 7

Ten Highest Ranked Job Tasks
The English and Morsh Study

Rank	Job Task
1	Answers inquiries concerning military pay or allowances
2	Interprets accounting and finance procedures to subordinates
3	Gives informal training to individuals
4	Co-ordinates accounting activities with data systems for preparation of machine listings
5	Plans workbooks or work assignments
6	Establishes job priorities
7	Prepares airmen performance reports
8	Established work standards, work controls, or office procedures
9	Writes correspondence about military pay matters
10	Provides counter service for Military Pay section

Table 8

Ten Highest Ranked Job Tasks
The Garza Study

Rank	Job Task
1	Performs accounting and finance functions at base or installation level
2	Gives informal training to individuals
3	Writes communications regarding accounting and finance matters
4	Co-ordinates processes or problems with upper and lower accounting and finance echelons
5	Interprets accounting and finance procedures to subordinates
6	Plans methods for organizing and filing records
7	Examines machine listings
8	Maintains library of manuals, directives, or publications
9	Plans workloads or work assignments
10	Evaluates accuracy of account codes

Table 9

Ten Highest Ranked Job Tasks
The NOBELS Study

Rank	Job Task
1	The worker punches cards from source documents such as invoices, orders, time cards, and instructions
2	The worker maintains supplies and stock inventory
3	The worker prepares payroll
4	The worker computes accounts payables from source documents
5	The worker types invoices from such documents as sales tickets, contracts, and receiving reports
6	The worker records accounts receivables from such documents as salesmen's orders, cash receipts, and invoices.
7.5	The worker records accounts payables

Table 9 (continued)

Ten Highest Ranked Job Tasks
The NOBELS Study

Rank	Job Task
7.5	The worker types insurance documents
9	The worker codes forms such as purchase orders, invoices, and applications for keypunching
10	The worker checks source documents such as orders, invoices, punched cards, and printouts with computer printouts/listings

Table 10

Ten Highest Ranked Job Tasks
The Frame Study

Rank	Job Task
1	Write receipts
2	Make journal entries
3	Give checks to employer to sign
4	Deposit checks and/or cash
5	Cash checks
6	Write checks
7	Keep current files of invoices or purchase orders
8	Make entries in special journals
9	Keep books and/or ledgers for any purpose
10	Take orders in person or on phone for merchandise service

Table 11

Ten Highest Ranked Job Tasks
The Borcher and Joyner Study

Rank	Job Task
1	Load program and data cards
2.5	Determine cause of machine stops and malfunctions
2.5	Operate console
4	Operate card reader
6	Set up computer for operation
6	Select and mount tapes
6	Select and mount disks
8.5	Locate tapes in storage media or tape library
8.5	Perform card-to-printer operation
9.5	Perform tape-to-printer operation
9.5	Operate magnetic tape unit

Table 12

Ten Highest Ranked Job Tasks
The West Study

Rank	Job Task
1	Do you find balances in accounts (Receivables)
2	Do you total cash receipts records, registers, or journals
3	Do you post to accounts, checks or cash received (Receivables)
4	Do you list or prepare schedules of end-of-month balances of accounts (Receivables)
5	Do you prepare stubs and checks for cash disbursements
6	Do you make correction entries in journals and ledgers when mistakes are found
7	Do you list or total sales invoices, bills, or credit memos
8	Do you record bank deposits in a cash receipts journal

Table 12 (continued)

Ten Highest Ranked Job Tasks
The West Study

Rank	Job Task
9.	Do you enter incoming checks in a cash receipts journal
10.	Do you prepare statements of accounts

If the 12 research studies had been consistently reporting the same job tasks for beginning accounting and bookkeeping workers, the tasks most frequently performed on each list should have been fairly common on all or at least most of the lists. This did not turn out to be the case, however, since 90 of a possible 120 job tasks, taking the top ten job tasks from each of the 12 lists, were different. The idea of combining the 12 job task lists was then abandoned as the data were too inconsistent from study to study.

Using the United States Air Force studies as most representative of the 12 studies

The examination of the two Air Force studies, the English and Morsh study and the Garza study had indicated that these two studies had been the most carefully designed and researched of all the studies identified in the search to answer the problem. The highly refined job inventories, the world-wide collection of data, the large sample size,

44.5 percent of the population from English and Morsh, and 86 percent from Garza, as well as the highly sophisticated analysis of data made through the CODAP programs, indicated high reliability and validity for these two studies. That a combination of the job tasks in these two studies could be taken as representative of the job tasks performed by the entire population of beginning accounting and bookkeeping workers was quite probable.

Reconsideration of the job tasks in the Air Force studies, however, showed that this combination attempt must also be rejected, as most of the Air Force job tasks revolved around planning and organizing activities, military payrolls, and travel reimbursements. Although several of the job tasks were similar to civilian job tasks, the nature of accounting and bookkeeping activities at Air Force installations, even if performed by civilians as in the Garza study, centered around military organizational structures and government regulations. This military focus precluded the use of these two studies as being representative of all bookkeeping and accounting workers from a variety of industrial classifications.

Selecting one study as most representative of the 12 studies

The possibility of one of the 12 research studies qualifying as representative of accounting and bookkeeping workers was investigated next. Of the 12 studies, the NOBELS study, even though a judgmental rather than a random

sampling, appeared to be the study most likely to make that claim. The Air Force studies were focused on military-government organization; the Bangs and Hillestad study and the Borcher study were specifically data processing studies. The Stelter study and the Spanswick study were both small scale studies; the Perkins, Byrd, and Roley study, the Frame study, and the Burton study were each confined to one state. The Ertel study was basically a merchandising study and confined to two countries. The West study, while clearly a contender for being representative, was confined to New York and to job task data obtained by questionnaire which West himself recognized as having "playback" components (West, p. 173). The later balancing of that questionnaire by interview in the West study was not reflected in the job task list, nor were West's interviews on a ramdom basis.

The NOBELS study satisfied many of the diverse criteria that had emerged in the review of the writings of research authorities. The sample size was large, data had been collected from 1,232 respondents. A judgmental sampling design was used to match the demographic characteristics of office workers as found in census data. Nine collection centers had been originally planned, but the cost and unwieldiness of training data collectors and providing uniformity of collection and checking caused the reduction of collection centers from nine to four. The survey was geographically well distributed; data were collected from four regions of the United States: New York, California,

Georgia and Tennessee, and Minnesota and Wisconsin. These four regions represented four subdivisions used for classifying and collecting U. S. Census data. The type of data collected quite closely matched the type of data sought in the original research design. How well the collected data fit the desired formula can be seen by a comparison of the original design with the collected data:

Data Sought	Data Collected
1. a minimum of 1,000 cases	1. 1,232 cases
2. respondents between 16-24 years of age, to correspond with those most likely to benefit from curriculum renewal	2. mean age of respondents, 21.1 years
3. appropriate classification scheme for analysis of data, job title, job cluster, or job task	3. job task classification found most appropriate
4. 2/3 of respondents should be from service; public administration; finance, insurance and real estate; and manufacturing	4. 81 percent of respondents came from these four groups
5. 7/9 of respondents should be from SMSA's of 100,000 or more	5. 80 percent of respondents came from SMSA's of 100,000 or more
6. 4/5 of respondents from firms having 100 or more employees	6. 81 percent of respondents came from these firms.
7. a ratio of 1-4/5 males to females to match clerical population	7. 1-4/5 ratio of males to females obtained

Interview protocols were extensively tested, modified, and retested. Data collectors were experienced,

knowledgeable, and specifically trained to conduct interviews for NOBELS. The use of the NOBELS interview protocol allowed for a greater depth of information than was obtained in any of the other identified research studies. Each respondent had been asked to list a maximum of six basic tasks constituting the central purpose of his job. The basic tasks were to include the most difficult, the most time consuming, and the most responsible aspects of the job. Interviewers verified the validity of those six tasks as basic through a series of probing questions; a collection of job descriptions, work samples, and forms; and through additional interviews with the respondent's immediate supervisor.

Data analysis methods were extensively and rigorously applied and selected through a process of elimination. The combination and reduction of 4,564 basic tasks into 373 task performance statements illustrated the sophistication of NOBELS data analysis techniques. Recognizing the lack of a common hierarchy of job analysis terminology, NOBELS designers supplied a taxonomy of language and, when that proved insufficient, a list of action verbs and synonyms for classification use. Data analysts had the wealth of information garnered through interview to help them decide which of the 4,564 basic tasks could be combined. Analysts were cautioned against combining unlike tasks; the combining of tasks was only appropriate if tasks were part

of the same process. Clues for the combination of basic tasks were offered in the instructions for writing the task performance statements:

1. How do you know when this task is to be performed? (Cues and Source)
2. What does the employee do in performing this task?
3. What tools (equipment), special supplies, or reference materials are necessary for performing this task?
4. (Listed as your final step) How do you know when you have completed the task?
5. What kinds and levels of special skills are required for this task?
6. What are the standards (or criteria) necessary for successful completion?
7. Special requirements for performance: Decision making? (NOBELS, p. 339)

The final 373 task performance statements in NOBELS represented detailed summaries of the components of office work. Each of these summaries provided a clear understanding of the nature of an individual job task. Of the 373 task performance statements found in NOBELS, 150 applied to the job tasks of beginning accounting and bookkeeping workers.

Additional weight must be given to the selection of NOBELS as representing the actual work performed by the office worker because of its origins and its products. The original impetus for NOBELS was the occupational research done by the armed forces. Moonshot, Lanham's feasibility

study for NOBELS; Perkins and Boyd's model at Washington State; Cook and Lanham's OREOS,[27] which led into the senior intensified programs (SIP) by Lanham and Cook;[28] and Educational Systems for the '70's[29] provided a foundation for the NOBELS project. NOBELS was a consortium effort, sponsored and directed by leaders in business and education and administered through four university centers well known for research in business education. The products of NOBELS[30] were numerous and will, no doubt, continue to emerge as the original data are re-examined. For these reasons, the job task list taken from the NOBELS study was selected as being most representative of the job tasks actually performed by the beginning accounting and bookkeeping worker.

The list of 150 job tasks of the beginning accounting and bookkeeping worker presented here was selected from the 373 generalized task statements found in the NOBELS

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[27]Fred S. Cook, and Frank W. Lanham, Opportunities and Requirements for Initial Employment of School Leavers with Emphasis on Office and Retail Jobs, Cooperative Research Project No. 2378 (Detroit: Wayne State University, 1966).

[28]Francis J. Brown, "Final Outcome Analysis to Compare the Effectiveness of an Experimental Business Education System to Prepare Students to Secure Entry Jobs in Office and Retail Occupations," SIP follow-up (Doctoral dissertation, Wayne State University, 1968).

[29]ES '70 News (New York: E. F. Shelley and Company, 866 United Nations Plaza, 1968).

[30]Refer to p. 51 of this chapter.

study. The 373 task statements were the result of a reduction and refinement of 4,564 task sheets collected by interview from clerical workers. The writer selected the list in conformance with the kinds of tasks generally included in the conventional high school accounting and bookkeeping curriculum. The job tasks on the list were ranked by frequency of task sheet representation.

The list of 150 job tasks of the beginning accounting and bookkeeping worker was taken from the NOBELS classifications as shown in Table 13. The list of the job tasks that are representative of the national population of beginning accounting and bookkeeping workers was presented in Table 14.

Table 13

NOBELS Classifications From Which the 150 Job Tasks of the Beginning Accounting and Bookkeeping Worker Were Taken

Code	Nobels Classification	Number of Task Sheets	Number of Job Tasks
01.	NUMERICAL CLERICAL RECORDS	980	76
04.	CLIENT RELATED SERVICES	198	22
06.	ELECTRONIC DATA PROCESSING	398	35
08.	SALES	79	5
09.	INVENTORY, SHIPPING, RECEIVING	63	9
10.	PURCHASING	94	1
11.	PRODUCTION	39	2
	Total	1,581	150

Table 14

Presentation of a List of the Job Tasks of the Beginning Accounting and Bookkeeping Worker Ranked by Frequency of Representation

Rank	NOBELS Code	Job Task
1	06.01.01	The worker punches cards from source documents such as invoices, orders, time cards, and instructions.
2	10.00.01	The worker maintains supplies and stock inventory.
3	01.03.01	The worker prepares payroll.
4	01.02.01	The worker computes accounts payables from source documents.
5	01.01.01	The worker types invoices from such documents as sales tickets, contracts, and receiving reports.
6	01.01.02	The worker records accounts receivables from such documents as salesmen's orders, cash receipts, and invoices.
7.5	01.02.02	The worker records accounts payables.
7.5	04.01.01	The worker types insurance documents.
9	06.04.01	The worker codes forms such as purchase orders, invoices, and applications for keypunching.
10	06.02.01	The worker checks source documents such as orders, invoices, punched cards, and printouts with computer printouts/ listings.
11.5	01.01.03	The worker prepares billings of sales.
11.5	04.01.02	The worker processes insurance inquiries.
13	06.01.02	The worker operates a verifier.
14	06.03.01	The worker operates reproducer from punched cards, printed lists, and summary cards.
15.5	01.02.03	The worker prepares payments from documents such as invoices, bills, and vouchers.
15.5	01.07.01	The worker compiles unit costs of jobs and sales/production estimates from expense sheets and/or total sales figures.
17.5	01.04.01	The worker checks the accuracy of source documents such as sales, purchasing, tax reports, and forms.

Table 14 (continued)

Rank	NOBELS Code	Job Task
17.5	01.06.01	The worker records data for financial reports from schedules, license fee forms, and damage claims.
20	01.01.04	The worker writes delinquent customer.
20	01.03.02	The worker records payroll information.
20	01.05.01	The worker prepares the bank deposit from cash receipts.
22	01.06.02	The worker prepares financial reports.
23	08.00.02	The worker processes requests by telephone and over the counter.
24	09.01.02	The worker processes orders from inventory.
25	11.00.01	The worker processes schedules and adjustment of scheduled production orders.
26.5	06.05.01	The worker operates unit-record equipment such as the sorter, reproducer, collator, and interpreter.
26.5	06.02.02	The worker performs electronic data processing tasks from such items as computer printouts, accounting forms, manuals, maps, and instructions.
28	01.04.02	The worker verifies totals of cancelled checks, computer tapes, and tellers' balance sheets.
29	04.01.03	The worker processes insurance claims.
30	01.05.02	The worker receives payments over the counter.
31	08.00.04	The worker types sales items from rough drafts, proposals, lists, and other source documents.
32	01.01.05	The worker verifies customer's account receivable.
34	06.06.01	The worker writes computer programs.
34	01.06.03	The worker records items such as stocks, bonds, deposit slips, and passbooks.
34	01.04.03	The worker verifies cash receipts for deposit.
37.5	01.05.03	The worker records payments received.
37.5	01.08.01	The worker processes credit applications.
37.5	01.03.03	The worker computes payroll changes.
37.5	04.02.02	The worker processes membership and loan applications in financial institutions such as a credit union.

Table 14 (continued)

Rank	NOBELS Code	Job Task
41	08.00.05	The worker types orders, memos, and invoices.
41	01.05.04	The worker records payments for medical services.
41	11.00.02	The worker types production reports.
44	01.01.06	The worker completes medical charges for insurance reimbursement.
44	01.03.04	The worker compiles payroll reports from payroll sheets, time sheets, job cards, and printouts.
44	01.04.04	The worker performs routine check on such items as deposit slips, adding machine tapes, and advices.
46	01.06.04	The worker records receipts and withdrawals in the ledger.
49	01.05.05	The worker records deposits to customer accounts.
49	01.04.05	The worker corrects checks, savings and withdrawal slips, balance sheets, and other source documents.
49	01.09.01	The worker prepares disbursements from customer accounts.
49	01.07.02	The worker prepares bids and costs estimates of products and services.
49	01.01.07	The worker completes sales reports.
53	01.09.02	The worker prepares disbursements of funds.
53.5	08.00.09	The worker processes customer orders.
53.5	04.04.01	The worker processes stock certificates.
56	09.03.01	The worker records inbound shipments.
56	08.00.10	The worker records orders, printouts, and changes.
56	04.04.02	The worker prepares stock forms for buying, selling, and transferring stock.
62.5	01.01.08	The worker prepares statements from patients' accounts and charge slips.
62.5	01.03.05	The worker punches payroll data.
62.5	01.08.02	The worker verifies customer credit.
62.5	01.08.03	The worker processes credit information.
62.5	01.04.06	The worker checks computations with proofing machine.
62.5	01.05.06	The worker prepares reconciliation of bank account.

Table 14 (continued)

Rank	NOBELS Code	Job Task
62.5	04.02.03	The worker processes new accounts, transfers of accounts, and trust accounts for customers.
62.5	04.08.01	The worker processes welfare assistance claims.
62.5	06.01.03	The worker operates a keytape machine punching magnetic tape.
62.5	09.01.03	The worker records finished-goods inventory from production and shipping data.
69	01.07.03	The worker compiles variance reports from actual and standard cost figures.
69	01.08.04	The worker informs applicant and company department of approved/rejected credit applications.
69	06.01.04	The worker punches corrections in cards.
73	04.03.06	The worker receives activity funds and fees from students.
73	04.04.04	The worker answers questions about securities.
73	06.03.02	The worker operates (decollates, bursts, binds) computer output.
73	09.01.04	The worker completes physical inventory.
73	09.02.03	The worker processes shipping and billing forms on completed jobs.
76.5	01.08.05	The worker processes credit memorandums.
76.7	06.05.02	The worker codes forms such as account statements, production figures, inventory listings, punched cards, wired or unwired boards for keypunching.
84	01.01.09	The worker calls delinquent customers.
84	01.07.04	The worker types cost analysis reports.
84	01.09.03	The worker prepares disbursement of petty cash funds.
84	04.02.05	The worker checks securities and amounts.
84	04.05.02	The worker records guest charges on room folios.
84	04.06.03	The worker processes patient funds.
84	06.02.03	The worker codes payment cards, checks, and deposit/withdrawal slips for keypunching.
84	06.03.03	The worker places magnetic tapes on a computer tape drive.

Table 14 (continued)

Rank	NOBELS Code	Job Task
84	06.03.04	The worker prepares weekly payroll from payroll tapes.
84	06.03.05	The worker verifies manually prepared totals with computer detailed totals.
84	06.05.03	The worker operates optical scanning equipment to convert printed data to punched data.
84	06.06.02	The worker checks computer programs.
84	09.01.05	The worker maintains inventory records on stock sent to production.
93.5	01.07.06	The worker processes credit information request.
93.5	01.05.07	The worker processes money for library books and films from check-out requests and late and lost book notices.
93.5	04.02.06	The worker processes estate settlements for customers.
93.5	06.03.03	The worker writes computer programs in final form.
93.5	09.03.03	The worker issues a claim or an adjustment against the carrier/supplier for damaged/short/overshipments.
106	09.03.02	The worker arranges expediting of inbound shipments.
106	01.01.10	The worker processes changes in status of account.
106	01.01.11	The worker requests payment from delinquent patients.
106	01.07.05	The worker determines cost estimates by observing production and scanning blueprints.
106	01.07.06	The worker compiles relevant statistics and determines improvements in methods by submitting cost analysis of proposed changes.
106	01.07.07	The worker processes new accrual accounts from current cost analyses and additional specifications.
106	01.03.06	The worker records payroll changes for hospital employees.
106	01.08.07	The worker answers charge account billing inquiries.

Table 14 (continued)

Rank	NOBELS Code	Job Task
106	01.04.07	The worker distributes daily cash to tellers in branch banks.
106	01.04.08	The worker sorts coins from the federal reserve bank daily.
106	04.02.11	The worker processes settlement of buy and sell orders.
106	04.02.09	The worker checks claims for transfer, trade, or exchange of securities.
106	06.01.05	The worker operates optical scanner for printout.
106	06.01.06	The worker performs quality control checks on the optical-font printing adding machine operator's tape production.
106	06.02.04	The worker maintains control of input/output work flow between corporate trust department and data processing department.
106	06.02.05	The worker corrects computer-rejected debits/credits.
106	06.03.07	The worker sorts batches of checks.
106	06.03.08	The worker prepares punched cards for computer run.
106	06.03.09	The worker determines computer malfunction by running diagnostics.
133	01.01.12	The worker processes follow-up records of patient's visit.
133	01.03.07	The worker prepares a dummy payroll.
133	01.03.08	The worker computes salesmen's commissions.
133	01.03.09	The worker prepares time cards.
133	01.03.10	The worker updates weekly payroll time cards.
133	01.03.11	The worker maintains records of time spent developing new products from weekly activity tickets.
133	01.03.12	The worker processes status time slips.
133	01.03.13	The worker compiles an employee transfer list from output cards.
133	01.04.09	The worker verifies installment loan balances.
133	01.04.10	The worker prepares night deposits.
133	01.04.11	The worker performs audit of particular functions in individual departments of the bank.

Table 14 (continued)

Rank	NOBELS Code	Job Task
133	01.04.12	The worker codes transaction tax on tickets.
133	01.05.08	The worker performs bookkeeping duties of a small bank.
133	01.06.05	The worker records loan payment reversing entries.
133	01.06.06	The worker records monies received for or spent from internal accounts.
133	01.06.07	The worker adjusts property tax records from transfer forms.
133	01.08.08	The worker updates delinquent account lists.
133	01.08.09	The worker determines extension of additional credit.
133	01.08.10	The worker compiles delinquent receipts report from a computer printout, amounts of paper sold, and cash receipts.
133	01.08.11	The worker verifies wire request of amount due a customer.
133	04.02.17	The worker processes outgoing cash letters in foreign currency.
133	04.02.18	The worker processes incoming cash letters from foreign correspondent banks.
133	04.02.20	The worker prepares currency for shipping orders.
133	04.02.25	The worker checks errors for large corporations.
133	04.02.27	The worker processes savings certificates to be redeemed.
133	04.02.28	The worker prepares travelers checks for customers.
133	06.01.07	The worker punches cards coded for school withdrawal.
133	06.02.06	The worker types cash letters for checks drawn on bank but cashed elsewhere.
133	06.03.10	The worker determines accuracy of data speed machine sending installation.
133	06.05.04	The worker adjusts errors on computer input tape.
133	06.06.04	The worker adjusts present computer programs.
133	06.06.05	The worker punches prescribed program changes for new computer.

Table 14 (continued)

Rank	NOBELS Code	Job Task
133	06.06.06	The worker arranges a time schedule for a new computer program.
133*	09.03.05	The worker processes freight bills for payment.

*This final job task represents the final job task in the list of 150 job tasks.

SUMMARY OF THE DATA CONCERNING THE JOB TASKS OF THE BEGINNING ACCOUNTING AND BOOKKEEPING WORKER

A list of 150 job tasks of beginning accounting and bookkeeping workers was presented in Table 14. The list resulted from an identification and synthesis of the research pertaining to the job tasks of those beginning workers.

Identification of the research studies

A total of 64 studies which pertained to the content area of high school accounting and bookkeeping were identified. Of these 64 studies, 48 were nontask specific. These nonspecific studies are listed in Appendix A and are intended, when combined with the 16 task specific studies, to provide a review of the content area of high school accounting and bookkeeping for the eight years, 1968 to 1975.

A total of 16 studies containing specific job task information about beginning accounting and bookkeeping

workers were identified. Information from the 16 studies provided the data for the findings summarized below.

1. Data about sample size. The data in the sixteen studies were collected from 22,848 respondents: 522 in the Burton study, 80 in the Spanswick study, 154 in the Stelter study, 663 in the Perkins, Byrd, and Roley study, 10,807 in the Bangs and Hillestad study, 609 in the Ertel study, 1,543 in the English and Morsh study, 32 in the Honaker study, 131 in the Henrich study, 1,232 in the NOBELS study, 448 in the Frame study, 5,555 in the Garza study, 406 in the Borcher study, and 666 in the West study. Besides this total of 22,848 respondents, Gosman reported data in her interim report from 48 health institutions, and the Battelle Memorial Institute collected data from 8 businesses according to its interim report.

2. Data about the geographic range of the 16 studies. Two of the studies, those of Garza and English and Morsh, were world-wide studies. Garza collected from the total Air Force civilian population in seven accounting and finance civil service classifications. English and Morsh collected data from airmen in 18 major Air Force commands around the world.

Four of the studies collected data on a national basis. Bangs and Hillestad from 39 states; Cosman and Henrich, both from a national sampling; and NOBELS from four geographic regions in the country.

Five of the studies were state-based--Burton from Connecticut; Perkins, Byrd, and Roley from Washington; Frame from Arizona; West from New York; and Stelter from rural Minnesota.

The remaining five studies were of a more local nature--Borcher and Joyner collected from Columbus, Ohio; Battelle Memorial from Grand Rapids, Michigan and Columbus, Ohio; Spanswick from New York and Chicago; Ertel from two counties in Washington; and Honaker from one county in Virginia.

3. Data about collection methods. Interviews, questionnaires, and combinations of these methods were used in the collection of data. The job task inventory concept developed by the Air Force and extended by the Center for Vocational and Technical Education at Ohio State was the predominant influence for collecting data in the studies.

The following studies used comparable collection methods; Garza, English and Morsh, and Borcher and Joyner used the Air Force job inventory method for collecting and classifying data. Perkins, Byrd and Roley, Ertel, Burton, and Frame used a job inventory method that incorporated many aspects of the Air Force method. Gosman and Henrich used a job inventory method specific for health institutions.

Spanswick, Stelter, and Honaker used a type of questionnaire listing the traditional kinds of bookkeeping tasks, as did West, but the West survey was considerably more extensive and multi-faceted. The Battelle Memorial

method was not clearly explained in its interim report except that interviews were used. NOBELS designed a major task collection method to yield most significant job tasks, and Bangs and Hillestad used a combination of interviews and questionnaires to collect from businesses, high schools, and colleges.

4: Focus of the studies. The review of literature proved that the search for data about accounting and bookkeeping must not be limited to studies that deal exclusively with accounting and bookkeeping. Only 7 of the 16 studies dealt exclusively with accounting and bookkeeping. West dealt with bookkeepers in New York, Spanswick dealt with bookkeepers using manual methods, and Stelter's study was somewhat similar to Spanswick's in the focus on rural jobs. Data from Honaker and Battelle Memorial were extremely limited, and the 2 Air Force studies, though most extensive and valid, could not be extrapolated to the national population of beginning accounting and bookkeeping workers.

Both of the two data processing studies--Borcher and Joyner and Bangs and Hillestad--contained job task information of value to curriculum planners in accounting and bookkeeping. The health studies of Gosman and Henrich, as well as Ertel's merchandising study, yielded some job task information about accounting and bookkeeping workers in those specific fields.

The four clerical office work surveys--Burton; Frame; Perkins, Byrd, and Roley; and NOBELS--were all clearly

relevant for the collection of data about beginning accounting and bookkeeping workers, yielding in most cases more information about those workers than the studies that dealt exclusively with beginning accounting and bookkeeping.

Synthesizing the research studies into one list of the job tasks of the beginning accounting and bookkeeping worker

The number of research studies was reduced from 16 to 12. Attempts to locate criteria and/or a rating index to assign weight in combining the job task lists prepared from the 12 research studies were unsuccessful, as were a series of attempts to combine the data.

The NOBELS study was selected as representative of the job tasks performed by the national population of beginning accounting and bookkeeping workers. The selection was based on the origin and products of NOBELS.

The job task list from NOBELS. The list of 150 job tasks of the beginning accounting and bookkeeping worker presented in Table 14 was selected from the 373 task statements pertaining to office workers that was one of the products of NOBELS. The 150 job tasks were ranked by frequency of task sheet representation. Table 13 identified the source in NOBELS of the 150 accounting and bookkeeping job tasks. Findings concerning the 150 job tasks of the accounting and bookkeeping worker included:

1. The first 18 job tasks on the list accounted for approximately 50 percent of the 1,851 task sheets represented. The 18 tasks consisted of 6 tasks from the Electronic Data

Processing category, 4 from Miscellaneous Specific Tasks, 2 from Inventories, 2 from Sales and Accounts Receivable, 2 from Purchases and Accounts Payable, 1 from Financial Statements, and 1 from Payroll.

2. The first 39 job tasks on the list accounted for approximately 75 percent of the 1,851 task sheets represented. The 39 tasks consisted of 9 from the Electronic Data Processing category, 6 from Sales and Accounts Receivable, 6 from Miscellaneous Specific Tasks, 5 from Cash Receipts and Cash Disbursements, 4 from Inventories, 4 from Payroll, 2 from Purchases and Accounts Payable, 2 from Financial Statements, 1 from General Journal and General Ledger.

3. The mean age of the workers reporting the job tasks on the list was 21.1.

Chapter 3

WHAT JOB TASKS ARE INCLUDED IN THE CONVENTIONAL HIGH SCHOOL ACCOUNTING AND BOOKKEEPING CURRICULUM?

An assumption was made in this study that the conventional high school accounting and bookkeeping curriculum was determined by the textbooks used in class.[1] Chapter 3 discusses the methods and procedures used to answer the question posed in its title. The chapter identifies the textbooks most commonly used in the conventional accounting and bookkeeping curriculum, analyzes those textbooks to find what job tasks are included in them, and synthesizes the job task lists from each textbook into one list.

TEXTBOOKS MOST COMMONLY USED IN THE CONVENTIONAL HIGH SCHOOL ACCOUNTING AND BOOKKEEPING CURRICULUM

Two textbooks published by the South-Western Publishing Company, Century 21 Accounting, First-Year Course, and Clerical Record Keeping, Course 1, 3d ed., were identified as representative of national instruction in the conventional high school accounting and bookkeeping curriculum. The identification of those two textbooks resulted from a three-step procedure: (1) a literature

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[1]Refer to Chapter 1, p. 4.

search, (2) compilation of a list of accounting, bookkeeping, and recordkeeping texts, and (3) application of sales and enrollment figures against that list.

The literature search

The best method for identifying and ranking the textbooks used in the high school accounting and bookkeeping curriculum would be an actual count of the kinds and numbers of textbooks used across the nation. The review of the literature, as outlined in Chapter 2, showed that no research was available that could yield that count.

Compilation of a list of textbooks

An examination of publisher listings yielded a list of eight high school accounting, bookkeeping, and recordkeeping textbooks of three major publishers. The list of eight textbooks agreed with the list of the eight textbooks used in the West study,[2] except for differences in edition dates.[3] The two businesses education members of the

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[2]Leonard J. West, Survey of Entry-Level Bookkeeping Activities in Relation to the High School Bookkeeping Curriculum, Research Report 73-1 (New York: City University of New York, Institute for Research and Evaluation in Occupational Education, 1973) p. 199.

[3]West appears to have used those editions most currently available at the date of his research, except that he used the 2d edition of Clerical Record Keeping, Course 1 dated 1965 instead of the 3d edition dated 1971, and the 23d edition of 20th Century Bookkeeping and Accounting, First-Year Course instead of the 1st edition of Century 21 Accounting, First Year Course dated 1972.

research advisory committee, Dr. Arthur Allee and Dr. Kenneth Brown, agreed that the list represented the textbooks most commonly used.

The textbooks are:

1. Baron, H. and S. C. Steinfeld, Clerical Record Keeping, Course 1, 3d ed. Cincinnati: South-Western, 1971.

2. Baron, H. and S. C. Steinfeld, Clerical Record Keeping, Course 11, Cincinnati: South-Western 1970.

3. Boynton, L. D., R. M. Swanson, P. A. Carlson, and H. L. Forkner, Century 21 Accounting, First-Year Course. Cincinnati: South-Western, 1972.

4. Boynton, L. D., R. M. Swanson, P. A. Carlson, and H. L. Forkner, Century 21 Accounting, Advanced Course. Cincinnati: South-Western, 1974.

5. Huffman, H., J. R. Stewart, and E. Schneider, General Recordkeeping, 6th ed. New York: Gregg Division, McGraw-Hill, 1971.

6. Freeman, M. H., J. M. Hanna, and G. Kahn, Accounting 10/12, 2d ed. New York: Gregg Division, McGraw-Hill, 1973.

7. Hanna, J. M. and G. Kahn, Gregg Accounting, Advanced Course, 2d ed. New York: Gregg Division, McGraw-Hill, 1969.

8. Janis, A. and M. Miller, Fundamentals of Modern Bookkeeping (First Course). New York: Pitman, 1965.

Separate textbooks in data processing or computers were not included on the list as the accounting texts provided substantial coverage in those areas.

Only the most current edition of each of the eight textbooks was included on the list even though some older editions might still be in use. Although publishers

usually revise accounting and recordkeeping textbooks on a five-year cycle, some schools will use a single edition for as long as ten or twelve years. To determine whether some of the older editions of the eight textbooks should be added to the list, two sets of comparisons were made between current and older editions.

1. A comparison of two editions of South-Western's first year accounting textbooks, Century 21 Accounting, First-Year Course, and 20th Century Bookkeeping and Accounting, First-Year Course, 23d ed. A page-by-page comparison between the two editions showed that page coverage of topics in the current edition was approximately 15 percent different than the earlier edition. Data processing coverage had increased approximately 5.5 percent, special journal treatment had decreased approximately 6 percent, and the treatment of miscellaneous entries had decreased approximately 3.5 percent. As those changes matched the changes taking place in the business world, according to the NOBELS job task list, the older South-Western edition was not added to the list.

2. A comparison of two editions of Gregg's first year accounting textbooks, Accounting 10/12, 2d ed., and Accounting 10/12. A page-by-page comparison between these two editions showed that the current edition was approximately 13 percent different in page coverage of topics than the earlier edition. Payroll coverage had increased approximately 2 percent, cycle emphasis had increased approximately

1 percent, data processing had increased approximately 3 percent, accounts receivable increased approximately 1 percent, closing activities had decreased approximately 2 percent, and the treatment of notes had decreased about 4 percent. As these changes were relatively minor, the older Gregg edition was not added to the list.

Application of enrollment and sales figures against the list

Enrollment figures showed that one year of bookkeeping instruction predominated in high schools across the nation. Public secondary statistics for 1972-1973[4] showed a total of 576,781 students enrolled in first year bookkeeping and accounting, and 64,611 students enrolled in bookkeeping II, III, or IV. As 90 percent of total enrollment was in the first-year course, the two textbooks dealing with advanced courses in bookkeeping were dropped from the list of eight textbooks, reducing the total to six.

Three major publishers were represented in the list of textbooks: South-Western, Gregg Division of McGraw-Hill, and Pitman. Sales information yielded through correspondence indicated that South-Western sold slightly over 90 percent of the bookkeeping textbooks and 75 percent of the

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[4]Logan Osterndorf, Summary of Offerings and Enrollments in Public Secondary Schools, 1972-73, National Center for Educational Statistics, Bulletin NCES 76-150 (Washington: U. S. Government Printing Office, 1975), Table A, pp. 15-16.

recordkeeping textbooks used in the United States.[5] This information resulted in the further reduction of the textbook list from six textbooks to three with the removal of the two remaining Gregg and the one Pitman texts.

Census figures for 1972-73 showed a total of 739,625 students enrolled in Accounting, Bookkeeping I, and Recordkeeping. Of this total, 162,844 were enrolled in Recordkeeping (Osterndorf, pp. 15-16), or a rough ratio of one recordkeeping student to every five accounting and bookkeeping students. As South-Western claimed 75 percent of the recordkeeping texts comprising only 20 percent of the total textbooks impacting the curriculum, the Gregg recordkeeping text, General Recordkeeping, 6th ed., was eliminated from the textbook list.

To further substantiate the removal of the Gregg textbooks from the list representing the conventional high school accounting and bookkeeping curriculum, a comparison was made of South-Western's first-year accounting textbook, Century 21 Accounting, and Gregg's first-year accounting textbook, Accounting 10/12, 2d ed. A page-by-page comparison between the two books showed that South-Western gave 11 percent more total page coverage to additional problems, 9 percent more coverage to partnerships and corporations, and 6 percent more coverage to the basic elements of

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[5]Based on personal communications with Mr. C. F. Templeman, Assistant Vice-President, South-Western Publishing Co., November 13, 1975 and December 29, 1975.

bookkeeping. Gregg gave 4 percent more page coverage to special journals and 14 percent more coverage to data processing. Differences in treatment of other topics were minor. Order of presentation of topics was not considered. The two textbooks were similar enough in content so that removal of the Gregg textbook would not negate the identification of the South-Western textbook as representative of what is being taught nationally in the conventional high school accounting and bookkeeping curriculum.

The list of textbooks had now been reduced to three, all published by South-Western: Century 21 Accounting, First-Year Course, Clerical Record Keeping, Course 1, 3d ed., and Clerical Record Keeping, Course 11. No separate national enrollment figures for second-year recordkeeping courses were available, indicating that enrollment in second-year recordkeeping courses was not substantial. For that reason, the textbook for a second course in recordkeeping was dropped from the list of textbooks.

Of the two textbooks remaining on the list, consideration was given to the possible deletion of the recordkeeping text. Enrollment figures (Osterndorf, pp. 15-16) showed a total of 162,844 students in 1972-1973 recordkeeping courses, a ratio of one student to every five taking accounting, bookkeeping, and recordkeeping courses. To discover whether the recordkeeping text was substantially different from the bookkeeping text, comparison was made between two

South-Western textbooks, Clerical Record Keeping, Course 1, 3d ed., and Century 21 Accounting, First-Year Course. A page-by-page comparison showed substantial differences between the two texts, with only 46 percent of the total page coverage being similar. For this reason the recordkeeping text remained on the textbook list.

Summary. Of the initial list of eight textbooks originally compiled, only two were identified as representative of national instruction in the conventional high school accounting and bookkeeping curriculum. Both textbooks were published by South-Western, Century 21 Accounting, First-Year Course, and Clerical Record Keeping, Course 1, 3d ed.

CONTENT ANALYSIS OF THE TWO TEXTBOOKS MOST COMMONLY USED IN THE CONVENTIONAL HIGH SCHOOL ACCOUNTING AND BOOKKEEPING CURRICULUM

Analysis of the two textbooks proceeded along the lines of content analysis suggested by Berelson[6] and Holsti.[7] Both Berelson and Holsti suggested a four-step procedure to use in analyzing the content of textbooks:

Step 1. Define the universe of content to be analyzed.

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[6]Bernard Berelson, Content Analysis in Communication Research (Glencoe, Illinois: Free Press, 1952).

[7]Ole Holsti, Content Analysis for the Social Sciences and Humanities (Reading, Massachusetts: Addison-Wesley, 1969).

Step 2. Partition the universe into categories.

Step 3. Select appropriate units of analysis.

Step 4. Quantify through counting, ranking, or rating.

Step 1 had been completed through the identification of the two textbooks as representative of national high school instruction. Step 2 consisted of preparing a list of ten categories to be used for sorting the job tasks. The 150 job tasks of beginning accounting and bookkeeping workers presented in Chapter 2 were sorted into the ten categories. In Step 3, the 150 job tasks were used as units for analyzing the content of the two textbooks. The quantification in Step 4 consisted of measuring the amount of space in inches assigned to each of the job tasks represented in the textbooks. The volume of space for each job task was then accumulated and totaled, and the list of job tasks was ranked with the job task having the largest volume of space in the textbooks ranked as number 1 and the job task having the least volume of space ranked last.

Partitioning the textbooks into categories

A group of ten categories was used to partition the textbook content. Each of the ten categories represented the accounting and bookkeeping activities associated with the content of that category. The ten categories with descriptions of their content were:

Category 1. Sales and Accounts Receivable. Includes sales journal, accounts receivable ledger, controlling accounts receivable, aging accounts receivable, valuation of accounts receivable, schedule of accounts receivable, credit selling, sales invoices, statements of accounts receivable, sales taxes.

Category 2. Purchases and Accounts Payable. Includes voucher register, purchases journal, accounts payable ledger, controlling accounts payable, schedule of accounts payable, credit buying, purchases invoices, freight, discount, vouchers.

Category 3. Cash Receipts and Cash Disbursements. Includes cash journals, cash register, receiving or disbursing cash or checks, entries for discounting notes, checkbook, bank statement reconciliation, petty cash, proving or controlling cash.

Category 4. Payroll. Includes all calculations, records, tax returns, and reports relating to payroll.

Category 5. Inventories. Includes inventory records, inventory counts, cost records, production reporting.

Category 6. Electronic Data Processing. Includes coding, comparing, correcting, processsing, and programming.

Category 7. General Journal and General Ledger. Includes general journal entries, posting, general ledger, adjusting, closing, correcting and reversing entries, balancing and ruling, chart of accounts, and transaction analysis into debits and credits.

Category 8. Financial Statements. Includes trial balance, worksheet, balance sheet, the accounting equation as it relates to the balance sheet, income statement, statement of capital, miscellaneous financial statements and schedules, tax returns other than payroll and sales taxes.

Category 9. Miscellaneous Specific Tasks. Includes specific tasks not included elsewhere, recording (not analyzing) combination journal entries, calculating interest on notes, selecting depreciation methods, calculating gain or loss on sale of fixed assets, calculating partnership distributions.

Category 10. Miscellaneous Generalized Tasks. Includes the nature of business, types of business organization, the accounting cycle, business terms outside of categories 1-9.

The 150 job tasks of beginning accounting and bookkeeping workers presented in Chapter 2, Table 14, were selected as appropriate units to analyze the two textbooks. Table 15 shows the transition of the 150 job tasks from NOBELS classifications into the ten categories used for textbook analysis. Table 16 shows the total number of job tasks sorted into each of the ten categories used for textbook analysis. Appendix B contains a list of the ten categories used to partition the textbooks, the job tasks included in each category, explanations to clarify the job task statements, and the number of task sheets representing each job task.

Table 15

Sorting the 150 Job Tasks of the Beginning Accounting and Bookkeeping Worker into the Ten Categories Used for the Textbook Analysis

NOBELS Classification	No. of Job Tasks	Sorted for Textbook Category Analysis
01. Numerical Clerical Records	76	26-Category 1 2-Category 2 21-Category 3 11-Cagegory 4 8-Category 5 1-Category 6 1-Category 7 2-Category 8 4-Category 9
02. Client Related Services	22	3-Category 1 9-Category 3 10-Category 9
06. Electronic Data Processing	35	35-Category 6
08. Sales	5	5-Category 1
09. Inventory, Shipping, Receiving	9	1-Category 1 4-Category 2 4-Category 5
10. Purchasing	1	1-Category 5
11. Production	2	2-Category 5
Total	150	150

Table 16

The 150 Job Tasks of the Beginning Accounting and Bookkeeping Worker Sorted into the Ten Categories Used for the Textbook Analysis

	Category	No. of Job Tasks	No. of Task Sheets
1.	Sales and Accounts Receivable	35	420
2.	Purchases and Accounts Payable	6	131
3.	Cash Receipts and Cash Disbursements	30	268
4.	Payroll	11	140
5.	Inventories	15	238
6.	Electronic Data Processing	36	406
7.	General Journal and General Ledger	1	18
8.	Financial Statements	2	54
9.	Miscellaneous Specific Tasks	14	176
10.	Miscellaneous General Tasks	0	0
	Total	150	1,851

Analyzing and quantifying the content of the textbooks

The two textbooks were then analyzed page by page to determine how much space had been allotted to each job task. The analysis of both textbooks shared these common features:

1. Only numbered text pages were analyzed. The frontispiece, table of contents, and index were omitted.

2. Illustrations were analyzed except where noted otherwise.

3. As both texts used proportional type varying from 15 to 19 characters per linear inch and occupying 6 lines per vertical inch, the space requirements of type in both books were considered similar.

4. The coding system used in analysis of the textbooks retained the original NOBELS code for each job task preceded by the textbook analysis category number, e.g., job task 01.03.01, the worker prepares payroll, had been classified into textbook category 4-Payroll. In the textbook analysis this job task would be coded as 4.01.03.01.

5. The length of each textbook page in both books was 8 inches.

6. Much of the textbook content lacked specificity. Analysis of the content followed the following list of choices in descending order:

a. content covering a specific job task
b. content covering a specific category
c. content falling into category 9--miscellaneous specific tasks not included in other categories
d. content falling into category 10--general, non task--specific information

The analysis of Century 21 Accounting, First-Year Course had these special features:

1. A total of 701 pages were analyzed. The book had a total of 736 pages, plus 10 unnumbered transvision pages which contained job task information. A total of 45 pages were not analyzed, 42 of which referred to sets or projects, and 3 which were illustrations which could not be analyzed.

2. The width of the printed line on each page was 4.5 inches wide. Top and bottom margins varied considerably from a total of .5 to .875 inches. Side margins varied from 1-2 inches with many illustrations and notes extending into the side margins. Considering these variations, the number of square inches on each page was considered to be 36 square inches (4.5 inches by 8 inches). The total 701 pages by 36 square inches = 25,236 square inches of text content minus 212.38 square inches of unused space left blank at the end of chapters, or a final total of 25,023.62 square inches of space in this textbook.

3. The textbook was marked and measured for each job task and accumulated by inches on worksheets. The accumulation of inches for each job task was totaled. The accumulation of inches for each category was also totaled.

The analysis of Clerical Record Keeping, Course 1, 3d ed., had these special features:

1. A total of 625 pages was analyzed. The book had a total of 626 pages, one page illustrating a multiplication matrix was not analyzed.

2. The width of the printed line on each page was 4.625 inches. Top and bottom margins totaled about 1.375 of an inch. Side margins were uniform. As the top and bottom margins were about .5 inch more than those in the Century 21 Accounting, First-Year Course, the length of each page was considered to be 7.5 inches rather than 8. The number of square inches on each page was considered to be 34.6875 square inches (4.625 by 7.5 inches). The total 625 pages by 34.6875 square inches = 21,679.68 square inches of text content minus 534.53 square inches of unused space left blank at the end of chapters, or a final total of 21,145.15 square inches of space in this textbook.

3. The textbook was marked and measured for each job task and accumulated by fractions of pages on worksheets. The accumulation of pages for each job task was totaled and converted into square inches (number of pages by 34.6875). The accumulation of inches for each category was also totaled.

The content analysis of each textbook yielded a list of the amount of space given to each job task. The job tasks of the beginning accounting and bookkeeping worker were then listed and ranked according to the amount of space allotted to each job task. Table 17 presents a ranked list of the job tasks included in Century 21, Accounting, First-Year Course. Table 18 presents a ranked list of the job tasks included in Clerical Record Keeping, Course 1, 3d ed.

Table 17

Job Tasks Included in Century 21 Accounting, First-Year Course

Rank	Code	Total Square Inches*	Job Task
1.	4.01.03.01	864	The worker prepares payroll.
2.	3.01.05.03	520.86	The worker records payments received.
3.	3.01.04.02	518.03	The worker verifies totals of cancelled checks, computer tapes, and tellers' balance sheets.
4.	3.01.09.02	462.25	The worker prepares disbursements of funds.
5.	3.01.05.02	433.87	The worker receives payments over the counter.
6.	6.06.06.01	421.87	The worker writes computer programs.
7.	6.06.05.03	383.50	The worker operates optical scanning equipment to convert printed data into punched data.
8.	1.01.01.02	375.75	The worker records accounts receivable from such documents as salesmen's orders, cash receipts, and invoices.
9.	2.01.02.02	338.62	The worker records accounts payable.
10.	1.01.01.03	285.75	The worker prepares billings of sales.
11.	6.06.04.01	271.12	The worker codes forms such as purchase orders, invoices, and applications for keypunching.
12.	3.01.05.06	262.13	The worker prepares reconciliation of bank accounts.
13.	3.01.09.03	212.6	The worker prepares disbursement of petty cash funds.
14.	3.01.02.03	193.86	The worker prepares payments from documents such as invoices, bills, and vouchers.
15.	2.01.02.01	150.75	The worker computes accounts payable from source documents.
16.	6.06.03.06	139.5	The worker operates electronic computer and peripheral equipment.

Table 17 (continued)

Rank	Code	Total Square Inches*	Job Task
17.	6.06.05.01	132.75	The worker operates unit-record equipment such as the sorter reproducer, collator, and interpreter.
18.	4.01.03.04	95.62	The worker compiles payroll reports from payroll sheets, time sheets, job cards, and printouts.
19.	6.06.01.01	93.38	The worker punches cards from source documents such as invoices, orders, time cards, and instructions.
20.	4.01.03.02	85.5	The worker records payroll information.
21.	2.09.03.03	76.5	The worker issues a claim or adjustment against the carrier/supplier for damaged/short/overshipments.
22.	5.10.00.01	73.5	The worker maintains supplies and stock inventory.
23.	1.01.08.05	69.75	The worker processes credit memorandums.
24.	3.01.05.01	67.5	The worker prepares the bank deposit from cash receipts.
25.5	1.01.01.01	47.25	The worker types invoices from such documents as sales tickets, contracts, and receiving reports.
25.5	1.01.01.08	47.25	The worker prepares statements from patients' accounts and charge slips.
27.	7.06.01.03	39.38	The worker operates a keytape machine punching magnetic tape.
28.	6.06.03.03	25.87	The worker places magnetic tape on a computer tape drive.
29.	6.06.03.08	24.75	The worker prepares punched cards for computer run.
30.	6.06.01.02	15.75	The worker operates a verifier.
31.	6.01.03.05	18	The worker verifies manually prepared totals.

Table 17 (continued)

Rank	Code	Total Square Inches*	Job Task
32.	6.06.03.04	12.38	The worker prepares weekly payroll from payroll tapes.
33.5	6.06.06.02	9	The worker checks computer programs.
33.5	3.01.04.03	9	The worker verifies cash receipts for deposit.

*The total square inches covered by all 34 job tasks amounts to 6,776.59 square inches.

Table 18

Job Tasks Included in Clerical Record Keeping, Course 1, 3d ed.

Rank	Code	Total Square Inches*	Job Task
1.	4.01.03.01	3110.08	The worker prepares payroll.
2.	3.01.09.02	1806.84	The worker prepares disbursement of funds.
3.	3.01.05.03	1464.68	The worker records payments received.
4.	3.01.05.02	1123.98	The worker receives payments over the counter.
5.	1.01.01.03	1083.64	The worker prepares billings of sales.
6.	3.01.09.03	948.36	The worker prepares disbursements of petty cash funds.
7.	1.01.01.08	832.50	The worker prepares statements from patients' accounts and charge slips.
8.	5.09.01.02	731.21	The worker updates inventory records from office supply inventory documents.
9.	1.01.01.02	682.30	The worker records accounts receivable from such documents as salesmen's orders, cash receipts, and invoices.
10.	1.01.08.05	621.95	The worker processes credit memorandums.
11.	1.01.01.01	615.70	The worker types invoices from such documents as sales tickets, contracts, and receiving reports.
12.5	2.01.02.02	562.34	The worker records accounts payables.
12.5	5.10.00.01	562.34	The worker maintains supplies and stock inventory.
14.	3.01.05.06	520.35	The worker prepares reconciliation of bank accounts.
15.	3.01.05.01	484.03	The worker prepares the bank deposit from cash receipts.
16.	3.01.04.02	421.80	The worker verifies totals of cancelled checks, computer tapes, and tellers' balance sheets.

Table 18 (continued)

Rank	Code	Total Square Inches*	Job Task
17.	4.01.03.02	335.43	The worker records payroll information.
18.	2.01.02.01	242.81	The worker computes accounts payable from source documents.
19.	5.01.07.02	225.47	The worker prepares bids and cost estimates of products and services.
20.	4.01.03.04	115.86	The worker compiles payroll reports from payroll sheets, time sheets, job cards, and printouts.

*The total square inches covered by all 20 job tasks amounts to 16,511.67 square inches.

SYNTHESIZING THE JOB TASK LISTS FROM TWO TEXTBOOKS INTO ONE LIST OF THE JOB TASKS INCLUDED IN THE CONVENTIONAL HIGH SCHOOL ACCOUNTING AND BOOKKEEPING CURRICULUM

The job task lists from the two textbooks were synthesized on the basis of the enrollment figures mentioned earlier in this chapter (Osterndorf, 1975). The rough ratio of one recordkeeping student to every five bookkeeping and accounting students provided the basis for synthesizing the two job task lists. The total square inches for each job task on the list from the analysis of Century 21 Accounting, First-Year Course were multiplied by five and then added to

the total square inches for each job task on the list from the analysis of Clerical Record Keeping, Course 1.[8] The synthesized list was then ranked according to the amount of space allotted to each job task, with the job task occupying the largest total amount of space ranked as 1. The presentation of the list of job tasks included in the conventional high school accounting and bookkeeping curriculum follows in Table 19.

[8] 6,776.59 sq. in. from Century 21 Accounting, First-Year Course, multiplied by 5, and added to 16,511.67 square inches from Clerical Record Keeping, Course 1, totaled 50,394.62, the weighted total of square inches applying to specific job tasks in the combined textbooks. 25,023.65 square inches from Century 21, Accounting, First-Year Course, multiplied by 5 and added to 21,145.15 square inches from Clerical Record Keeping, Course 1, totaled 146,263.4 square inches, the weighted total applying to the total content of the combined textbooks.

Table 19

Job Tasks Included in the Conventional High School Accounting and Bookkeeping Curriculum

Rank	Code	Job Task
1.	4.01.03.01	The worker prepares payrolls.
2.	3.01.09.02	The worker prepares disbursement of funds.
3.	3.01.05.03	The worker records payments received.
4.	3.01.05.02	The worker receives payments over the counter.
5.	3.01.04.02	The worker verifies totals of cancelled checks, computer tapes, and tellers' balance sheets.
6.	1.01.01.02	The worker records accounts receivable from such documents as salesmen's orders, cash receipts, and invoices.
7.	1.01.01.03	The worker prepares billings of sales.
8.	2.01.02.02	The worker records accounts payables.
9.	6.06.06.01	The worker writes computer programs.
10.	3.01.09.03	The worker prepares disbursement of petty cash funds.
11.	6.06.05.03	The worker operates optical scanning equipment to convert printed data to punched data.
12.	3.01.05.06	The worker prepares reconciliation of bank accounts.
13.	6.06.04.01	The worker codes forms such as purchase orders, invoices, and applications for keypunching.
14.	1.01.01.08	The worker prepares statements from patients' accounts and charge slips.
15.	2.01.02.01	The worker computes accounts payable from source documents.
16.	1.01.08.05	The worker processes credit memorandums.
17.	3.01.02.03	The worker prepares payments from documents such as invoices, bills, and vouchers.
18.	5.10.00.01	The worker maintains supplies and stock inventory.
19.	1.01.01.01	The worker types invoices from such documents as sales tickets, contracts, and receiving reports.
20.	3.01.05.01	The worker prepares the bank deposit.
21.	4.01.03.02	The worker records payroll information.
22.	5.09.01.02	The worker updates inventory records from office supply inventory documents.

Table 19 (continued)

Rank	Code	Job Task
23.	6.06.03.06	The worker operates electronic computer and peripheral equipment.
24.	6.06.05.01	The worker operates unit-record equipment such as the sorter, reproducer, collator, and interpreter.
25.	4.01.03.04	The worker compiles payroll reports from payroll sheets, time sheets, job cards, and printouts.
26.	6.06.01.01	The worker punches cards from source documents such as invoices, orders, time cards, and instructions.
27.	2.09.03.03	The worker issues a claim or an adjustment against the carrier/supplier for damaged/short/overshipments.
28.	5.01.07.02	The worker prepares bids and cost estimates of products and services.
29.	6.06.01.03	The worker operates a keytape machine punching magnetic tape.
30.	6.06.03.03	The worker places magnetic tape on a computer tape drive.
31.	6.06.03.09	The worker prepares punched cards for computer run.
32.	6.01.03.05	The worker punches payroll data.
33.	6.06.01.02	The worker operates a verifier.
34.	6.06.03.04	The worker prepares weekly payroll from payroll tapes.
35.5	6.06.06.02	The worker checks computer programs.
35.5	3.01.04.03	The worker verifies cash receipts for deposit.

SUMMARY OF THE DATA ABOUT THE JOB TASKS INCLUDED IN THE CONVENTIONAL HIGH SCHOOL ACCOUNTING AND BOOKKEEPING CURRICULUM

A list of 36 job tasks included in the conventional high school accounting and bookkeeping curriculum was presented in Table 19. Based on the assumption that textbooks

determine the high school accounting and bookkeeping curriculum, the list resulted from an identification, content analysis, and synthesis of textbooks.

Two South-Western Publishing Company textbooks, Century 21 Accounting, First-Year Course, and Clerical Record Keeping, Course 1, 3d ed., were identified as representative of national instruction. Sales figures, enrollment figures, and comparisons made between textbooks established that identification.

Content analysis of the textbooks

The 150 job tasks of beginning accounting and bookkeeping workers were used as units to analyze the contents of the two selected textbooks.

The findings from the analysis of Century 21 Accounting, First-Year Course:

1. Table 17 presented a ranked list of the 34 specific job tasks found in this text. Of the 150 job tasks used as units of analysis, 116 could not be specifically identified in the text.

2. The total number of square inches covered by the 34 job tasks listed in Table 17 amounted to 6,776.59 square inches or 27 percent of the total amount of 25,023.65 square inches of space analyzed in the text. See Table 20 for the details supporting this statement.

3. The total number of square inches covered by information specific only to the extent that it could be identified as fitting into a category amounted to 18,247.06 square inches or 73 percent of the total amount of 25,023.65 square inches of space analyzed in the text. See Table 20 for the details supporting this statement.

4. The first 7 job tasks on the list of 34 job tasks in Table 17 accounted for approximately 50 percent of the total 6,776.59 square inches covered by the 34 tasks. Of these 7 tasks, four were in the Cash Receipts and Cash Disbursements category, 2 in Electronic Data Processing, and 1 in Payroll.

5. The first 12 job tasks on the list of 34 job tasks in Table 17 accounted for approximately 75 percent of the total 6,776.59 square inches covered by the 34 tasks. Of these 12 tasks, 5 were in the Cash Receipts and Cash Disbursements category, 3 in Electronic Data Processing, 2 in Sales and Accounts Receivable, 1 in Payroll, and 1 in Financial Statements.

Table 20

Content Analysis of the Ten Categories Used to Analyze Century 21 Accounting, First-Year Course

Category	Rank	Total Square Inches	Total Sq. Inches for Specific Job Tasks	Total Sq. Inches for General Information
* 1.	5	1,827.56	825.75	1,001.81
2.	8	989.72	565.87	423.85
3.	3	3,562.11	2,680.10	882.01
4.	6	1,532.99	1,045.12	487.87
5.	10	81.37	73.50	7.87
6.	4	2,539.50	1,586.25	953.25
7.	1	7,088.56	--	7,088.56
8.	2	5,064.82	--	5,064.56
9.	7	1,518.02	--	1,518.02
10.	9	819.00	--	819.00
		25,023.65	6,776.59	18,247.06
		100%	27%.	73%

*Read line 1 as follows: Category 1 occupied the fifth largest amount of space in the text. Of the total 1,827.56 square inches occupied, 825.75 square inches applied to specific job tasks, 1,001.81 square inches can only be identified as applying to this category.

The findings from the analysis of Clerical Record Keeping, Course 1, 3d ed.:

1. Table 18 presented a ranked list of the 20 specific job tasks found in this text. Of the 150 job tasks used as units of analysis, 130 could not be specifically identified.

2. The total number of square inches covered by the 20 specific job tasks in Table 18 amounted to 16,511.67 square inches or 78 percent of the 21,145.15 square inches

of space analyzed in the text. See Table 21 for the details supporting this statement.

3. The total number of square inches covered by information specific only to the extent that it could be identified as fitting into a category amounted to 4,633.48 square inches or 22 percent of the 21,145.15 square inches of space analyzed in the text. See Table 21 for the details supporting this statement.

4. The first 5 job tasks on the list of 20 job tasks accounted for approximately 50 percent of the total 16,511.67 square inches covered by the 20 tasks. Of these 5 job tasks, 3 were in the Cash Receipts and Cash Disbursements category, 1 was in Payroll, and 1 was in Sales and Accounts Receivable.

5. The first 10 job tasks on the list of 20 job tasks accounted for approximately 75 percent of the total 16,511.67 square inches covered by the 20 tasks. Of these 10 tasks, four were in the Cash Receipts and Cash Disbursements category, 4 in Sales and Accounts Receivable, 1 in Inventories, and 1 in Payroll.

Table 21

Content Analysis of the Ten Categories Used to Analyze Clerical Record Keeping, Course 1, 3d ed.

Category	Rank	Total Square Inches	Total Sq. Inches for Specific Job Tasks	Total Sq. Inches for General Information
* 1.	2	4,237.15	3,836.09	401.06
2.	7	832.49	815.15	17.34
3.	1	6,963.94	6,770.04	193.90
4.	3	3,742.19	3,561.37	80.82
5.	5	1,529.02	1,529.02	--
6.	-	--	--	--
7.	6	902.50	--	902.50
8.	8	386.77	--	386.77
9.	4	2,316.02	--	2,316.02
10.	9	335.07	--	335.07
		21,145.15	16,511.67	4,633.48
		100%	78%	22%

*Read line as follows: Category 1 occupied the second largest amount of space in the text. Of the total 4,237.15 square inches occupied, 3,836.09 square inches applied to specific job tasks, ~~3,836.09~~ 74.8% square inches can only be identified as applying to this category.

Synthesizing the lists from the two textbooks into one list

The job task lists from the two textbooks were synthesized into one list using the enrollment ratio of one recordkeeping student for every five accounting and bookkeeping students. The total square inches for each job task on the list from Century 21 Accounting, First-Year Course were multiplied by five and then added to the total square inches for each job task on the list from Clerical Record

Keeping, Course 1, 3d ed. The findings from the representative list:

1. A list of 36 job tasks representing the conventional high school accounting and bookkeeping curriculum was presented in Table 19, Chapter 3. Of the 150 job tasks used as units of analysis, 114 could not be specifically identified.

2. The total number of square inches covered by the 36 job tasks amounted to 50,394.62 weighted square inches or 34 percent of the weighted total of the 146,263.4 square inches of spaces analyzed in the two textbooks. See Table 22 for the details supporting this statement.

3. The total number of square inches covered by information specific only to the extent that it could be identified as fitting into a category amounted to 95,868.78 weighted square inches or 66 percent of the weighted total of the 146,263.4 square inches of space analyzed in the two textbooks. See Table 22 for the details supporting this statement.

4. The first 7 job tasks on the list of 36 job tasks accounted for approximately 50 percent of the weighted total of 50,394.62 square inches of space covered by the 36 job tasks. Of these 7 tasks, 4 were in the Cash Receipts and Cash Disbursements category, 2 in Sales and Accounts Receivable, and 1 in Payroll.

5. The first 13 job tasks on the list of 36 job tasks accounted for approximately 75 percent of the weighted

total of 50,394.62 square inches of space covered by the 36 tasks. Of these 13 tasks, 6 were in the Cash Receipts and Disbursements category, 3 in Electronic Data Processing, 2 in Sales and Accounts Receivable, 1 in Purchases and Accounts Payable, and 1 in Payroll.

Table 22

Content Analysis of the Ten Categories Used to Analyze the Combined and Weighted Textbooks

Category	Rank	Total Square Inches	Total Sq. Inches for Specific Job Tasks	Total Sq. Inches for General Information
* 1.	4	13,374.95	7,964.84	5,410.11
2.	8	5,781.09	3,644.50	2,136.59
3.	3	24,774.49	20,170.54	4,603.95
4.	6	11,307.14	8,786.97	2,520.17
5.	10	1,935.87	1,896.52	39.35
6.	5	12,697.50	7,931.25	4,766.25
7.	1	36,345.30	--	36,345.30
8.	2	25,710.87	--	25,710.87
9.	7	9,906.12	--	9,906.12
10.	9	4,430.07	--	4,430.07
		146,263.40	50,394.62	95,868.78
		100%	34%	66%

*Read line as follows: Category 1 occupied the fourth largest amount of space in the combined texts. Of the total 13,374.95 square inches occupied, 7,964.84 square inches applied to specific job tasks, 5,410 square inches can only be identified as applying to this category.

Chapter 4

TO WHAT EXTENT DOES THE CONVENTIONAL HIGH SCHOOL ACCOUNTING AND BOOKKEEPING CURRICULUM INCLUDE AND PRIORITIZE THE JOB TASKS OF THE BEGINNING ACCOUNTING AND BOOKKEEPING WORKER?

The extent to which the conventional high school curriculum includes and prioritizes the job tasks of the beginning accounting and bookkeeping worker is examined through the application of rank correlation statistics and a comparison of the contents of the two lists presented in Tables 14 and 19. For purposes of comparison the two lists are referred to as the NOBELS job task list and the curriculum job task list.

THE FINDINGS FROM STATISTICAL APPLICATIONS

The NOBELS job task list had been collected and ranked by frequency of job task representation. The curriculum job task list had been collected and ranked by volume of space used in textbooks. To describe the relationship between the two lists, a product-moment correlation coefficient was computed. The value ascribed to the product-moment correlation coefficient ranged from -1 to +1 and equals 1 only if each set of pairs had exactly the same rank on each variable.

1. No significant relationship was found between the NOBELS job task list and the curriculum job task list when the lists were grouped by category. As no tied ranks appeared when the job tasks were grouped by category, the Spearman formula for finding a product-moment correlation coefficient was used. A correlation coefficient of -.233 was computed, which when applied to a critical value table showed no significance at any level of confidence from .01 to .10. Table 23 shows the computations supporting this statement.

2. No significant relationship was found between the NOBELS job task list and the curriculum job task list grouped by the specific job tasks common to both lists. As there were several tied ranks on both lists, the computational formula for a product-moment correlation coefficient suggested by Glass and Stanley[1] was used. A correlation coefficient of .17 was computed, which when applied to a critical value table showed no significance at any level of confidence from .01 to .10. Table 24 shows the computations supporting this statement. To substantiate the lack of relationship demonstrated linearly by the correlation coefficient, a scatter

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[1]Gene Glass and Julian Stanley, Statistical Methods in Education and Psychology (Englewood Cliffs, N. J.: Prentice-Hall, 1970) p. 175 and p. 114.

diagram was built and examined to determine whether a curvilinear relationship might exist between the two lists. Figure 1 indicates the lack of any significant curvilinear relationship between the two lists.

Table 23

Illustration of Spearman's Rank Correlation Coefficient Applied to the Ranks Assigned to Job Task Categories by NOBELS (X) and the Curriculum (Y)*

Category	NOBELS X	Curriculum Y	X^2	Y^2	$(X-Y)^2$
1.	1	4	1	16	9
2.	7	8	49	64	1
3.	3	3	9	9	0
4.	6	6	36	36	0
5.	4	9	16	81	25
6.	2	5	4	25	9
7.	9	1	81	1	64
8.	8	2	64	4	36
9.	5	7	25	49	4
Sums:	45	45	285	285	148

$$r_s = 1 - \frac{6\ (X-Y)^2}{n\ (n^2-1)}$$

$$= 1 - \frac{6 \times 148}{9\ (81-1)}$$

$$= -.233$$

Critical value of n = 9 at .10 = .600
at .05 = .683
at .01 = .833

*As Category 10 was ranked by Y (the curriculum job task list) but not by X (NOBELS job task list), it was omitted from the statistical treatment in this table.

Table 24

Illustration of the Correlation Coefficient Method Applied to the Ranks Assigned to 36 Job Tasks Common to NOBELS (X) and to the Curriculum (Y)

Job Task	NOBELS Rank X	Curriculum Rank Y	X^2	Y^2	(XY)
4.01.03.01	3	1	9	1	3
3.01.09.02	23	2	529	4	46
3.01.05.03	20	3	400	9	60
3.01.05.02	17	4	289	16	68
3.01.04.02	16	5	256	25	80
1.01.01.02	6	6	36	36	36
1.01.01.03	9	7	81	49	63
2.01.02.02	7	8	49	64	56
6.06.06.01	18.5	9	342.25	81	166.5
3.01.09.03	30.5	10	930.25	100	305
6.06.05.03	30.5	11	930.25	121	335.5
3.01.05.06	25	12	625	144	300
6.06.04.01	8	13	64	169	104
1.01.01.08	25	14	625	196	350
2.01.02.01	4	15	16	225	60
1.01.08.05	27	16	729	256	432
3.01.02.03	11	17	121	289	187
5.10.00.01	2	18	4	324	36
1.01.01.01	5	19	25	361	95
3.01.05.01	12.5	20	156.25	400	250
4.01.03.02	12.5	21	156.25	441	262.5
5.09.01.02	14	22	196	484	308
6.06.03.06	34.5	23	1,190.25	529	79.35
6.06.05.01	15	24	225	576	360
4.01.03.04	21	25	441	625	525
6.06.01.01	1	26	1	676	26
2.09.03.03	34.5	27	1,190.25	729	931.5
5.01.07.02	22	28	484	784	616
6.06.01.03	25	29	625	841	725
6.06.03.03	30.5	30	930.25	900	915
6.06.03.08	36	31	1,296	961	1,116
6.01.03.05	30.5	32	930.25	1,024	976

Table 24 (continued)

Job Task	NOBELS Rank X	Curriculum Rank Y	X^2	Y^2	(XY)
6.06.01.02	10	33	100	1,089	330
6.06.03.04	30.5	34	930.25	1,156	1,037
6.06.06.02	30.5	35.5	930.25	1,260.25	1,082.75
3.01.04.03	18.5	35.5	342.25	1,260.25	656.75
Sums	666	666	16,185	16,205.50	12,979.85

$$r_{xy} = \frac{\Sigma XY - (\Sigma X)(\Sigma Y)/n}{\sqrt{[\Sigma X^2 - (\Sigma X)^2/n][\Sigma Y^2 - (\Sigma Y)^2/n]}}$$

$$= \frac{12,979.85 - [(666)(666)/36]}{\sqrt{[16,185 - (666)^2/36][16,205.5 - (666)^2/36]}}$$

$$= \frac{658.85}{3,874.24} = .17$$

Critical value of n = 36
at .10 = .275
at .05 = .325
at .01 = .418

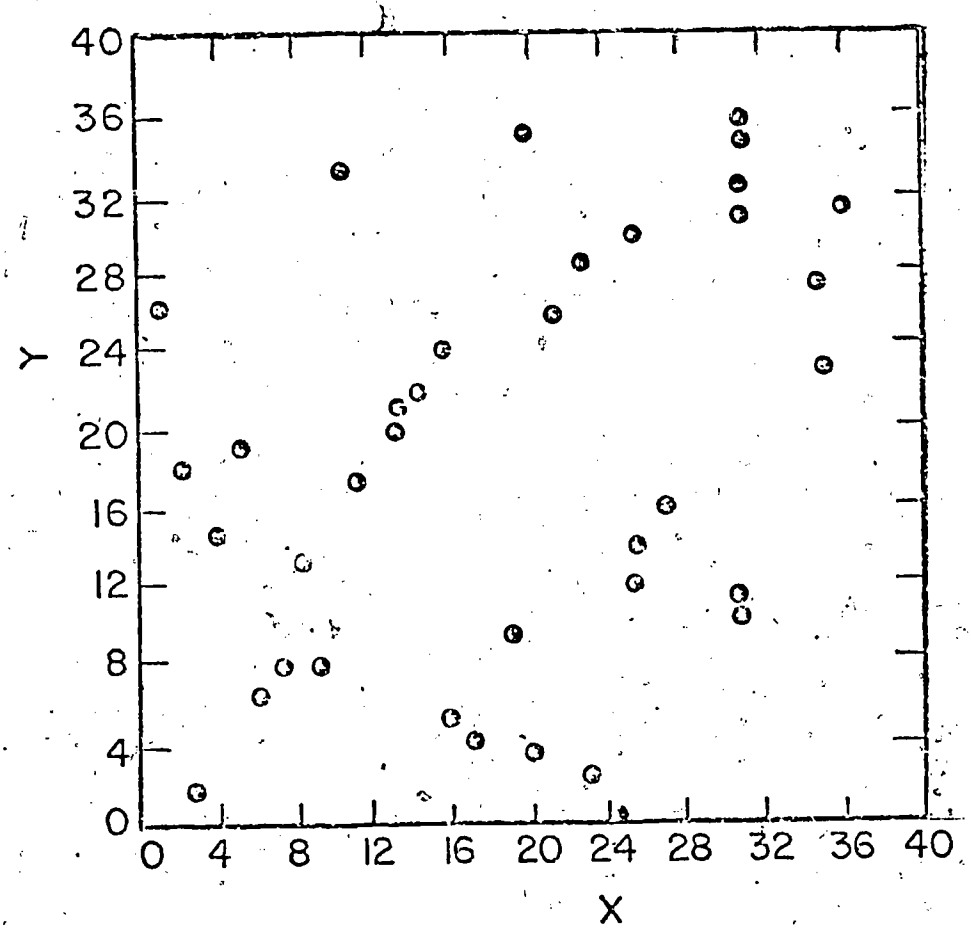

Figure 1

Scatter Diagram of the Ranks Assigned to 36 Job Tasks Common to NOBELS (X) and the Curriculum (Y)

Table 25

Illustration of the Correlation Coefficient Method Applied to the Ranks Assigned to 36 Job Tasks Common to NOMELC (X) and to the Curriculum (Y)

Job Task	NOMELC Curriculum Rank X	Rank Y	X^2	Y^2	(XY)
4.01.03.01	3	1	9	1	3
3.01.09.02	23	2	529	4	46
3.01.05.03	20	3	400	9	60
3.01.03.02	17	4	289	16	68
3.01.04.02	16	5	256	25	80
1.01.01.02	6	6	36	36	36
1.01.01.03	9	7	81	49	63
2.01.02.02	7	8	49	64	56
6.06.06.01	18.5	9	342.25	81	166.5
3.01.09.03	30.5	10	930.25	100	305
6.06.05.03	30.5	11	930.25	121	335.5
3.01.05.05	25	12	625	144	300
6.06.04.02	8	13	64	169	104
1.01.01.08	25	14	625	196	350
2.01.02.01	4	15	16	225	60
1.01.08.05	27	16	729	256	432
3.01.02.03	11	17	121	289	187
5.10.00.01	2	18	4	324	36
1.01.01.01	5	19	25	361	95
3.01.05.01	12.5	20	156.25	400	250
4.01.03.02	12.5	21	156.25	441	262.5
5.09.01.02	14	22	196	484	308
6.06.03.06	34.5	23	1190.25	529	79.35
6.06.05.01	15	24	225	576	360
4.01.03.04	21	25	441	625	525
6.06.01.01	1	26	1	676	26
2.09.03.03	34.5	27	1190.25	729	931.5
5.01.07.02	22	28	484	784	616
6.06.01.03	25	29	625	841	725
6.06.03.03	30.5	30	930.25	900	915
6.06.03.08	36	31	1296	961	1116
6.01.03.05	30.5	32	930.25	1024	976
6.06.01.02	10	33	100	1089	330
6.06.03.04	30.5	34	930.25	1156	1037
6.06.06.02	30.5	35.5	930.25	1260.25	1082.75
3.01.04.03	18.5	35.5	342.25	1260.25	656.75
Sums	666	666	16185	16205.50	12979.85

$$r_{xy} = \frac{\sum XY - (\sum X)(\sum Y)/n}{\sqrt{\left(\sum X^2 - (\sum X)^2/n\right)\left(\sum Y^2 - (\sum Y)^2/n\right)}}$$

$$= \frac{12979.85 - (666)(666)/36}{\sqrt{16185 - (666)^2/36}\sqrt{16205.5 - (666)^2/36}}$$

$$= \frac{658.85}{3874.24} = .17$$

Critical value of n=36
at .10=.275
at .05=.325
at .01=.418

Table 23

Illustration of Spearman's Rank Correlation Coefficient Applied to the Ranks Assigned to Job Task Categories by NOBELS (X) and by the Curriculum (Y)*

Category	NOBELS X	Curriculum Y	X^2	Y^2	$(X-Y)^2$
1.	1	4	1	16	9
2.	7	8	49	64	1
3.	3	3	9	9	0
4.	6	6	36	36	0
5.	4	9	16	81	25
6.	2	5	4	25	9
7.	9	1	81	1	64
8.	8	2	64	4	36
9.	5	7	25	49	4
Sums	45	45	285	285	148

$$r_s = 1 - \frac{6\ (X-Y)^2}{n\ (n^2-1)}$$

$$= 1 - \frac{6 \times 148}{9\ (81-1)}$$

$$= -.233$$

Critical value of n = 9 at .10=.600
at .05=.683
at .01=.833

* As Category 10 was ranked by Y (the curriculum job task list) but not by X (NOBELS job task list), it was omitted from the statistical treatment in this table.

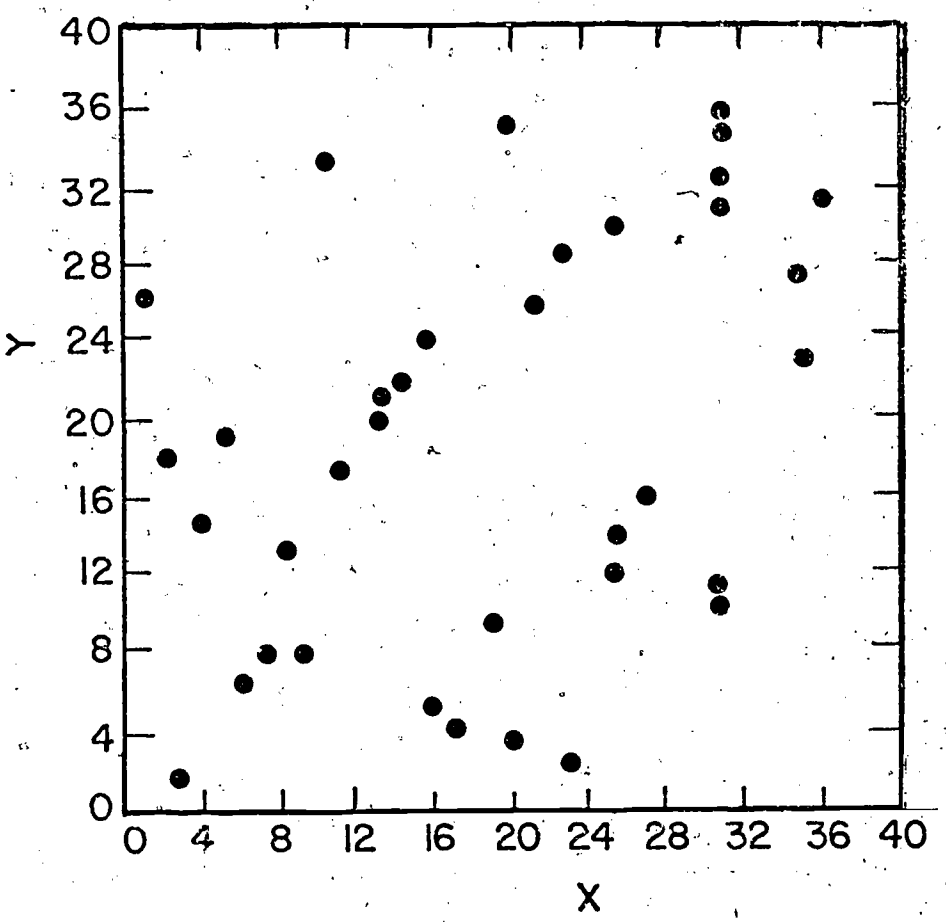

Figure 1

Scatter Diagram of the Ranks Assigned to 36 Job Tasks Common to NOBELS (X) and the Curriculum (Y)

THE FINDINGS FROM COMPARING THE CONTENTS OF THE TWO LISTS

To determine the extent to which the job tasks of beginning accounting and bookkeeping workers were included and prioritized in the curriculum, the job tasks on the NOBELS list were tallied against the job tasks on the curriculum list.

1. A total of 150 job tasks were on the NOBELS job task list, but only 36 were on the curriculum job task list.

2. The 36 job tasks on the curriculum list accounted for 34 percent of the textbook volume in inches. The 36 matching job tasks on the NOBELS list accounted for 51 percent of the total task sheet representation.

3. A high percentage of textbook volume, 66 percent, was specific only to the extent that information could be identified as fitting into a category. Of the ten categories used to analyze the textbooks, four categories, Category 7 (General Journal and General Ledger), Category 8 (Financial Statements), Category 9 (Miscellaneous Specific Tasks), and Category 10 (Miscellaneous General Information) contained no individual specific job tasks common to both lists. The 4 categories accounted for 52 percent of the total weighted volume of the textbooks.

4. The job tasks ranked 1-39 on the NOBELS list accounted for 75 percent of the total task sheet representation. Only 21 of these job tasks, which accounted for 46 percent of the total task sheets represented, were found on the curriculum list.

5. The two categories ranked 1 and 2 on the curriculum list, Category 7 (General Journal and General Ledger), and Category 8 (Financial Statements) were the two categories ranked lowest, 9 and 8, on the NOBELS list. Categories 7 and 8 accounted for 42 percent of the weighted total of 146,263.4 square inches analyzed in the textbooks and 4 percent of the total 1,851 task sheets represented in the NOBELS list. Table 25 presents the details supporting this statement.

6. The three categories ranked 1, 2, and 3 on the NOBELS list, Category 1 (Sales and Accounts Receivable), Category 6 (Electronic Data Processing), and Category 3 (Cash Receipts and Cash Disbursements), were ranked 4, 5, and 3 on the curriculum list. Categories 1, 6, and 3 accounted for 59 percent of the total job tasks represented on the NOBELS list and 35 percent of the total volume of space analyzed for the curriculum list. Table 25 presents the details supporting this statement.

Table 25

A Comparison of the Ranks of Category Groupings in the NOBELS Job Task List and the Curriculum Job Task List

	NOBELS List		Curriculum List	
Category	Rank	Task Sheets Represented	Rank	Total Square Inches
1.	1	420	4	13,374.95
2.	7	131	8	5,781.09
3.	3	268	3	24,774.49
4.	6	140	6	11,307.14
5.	4	238	10	1,935.87
6.	2	406	5	12,697.50
7.	9	18	1	36,345.30
8.	8	54	2	25,710.87
9.	5	176	7	9,906.12
10.	-	-	9	4,430.07
Sums		1,851		146,263.40

Chapter 5

CONCLUSIONS AND RECOMMENDATIONS

This study sought to identify the descrepancy existing between the high school accounting and bookkeeping curriculum and the actual job tasks of employed accounting and bookkeeping workers. The job tasks representative of the national population of beginning accounting and bookkeeping workers were presented in Chapter 2. The content of the conventional high school accounting and bookkeeping curriculum was examined in Chapter 3. Chapter 4 examined the extent to which the curriculum included and prioritized those job tasks. Chapter 5 draws conclusions from the findings of the previous chapters and makes recommendations for improving the content of the curriculum.

LIMITATIONS OF THE DATA

Claims to a randomized statistical sampling of beginning accounting and bookkeeping workers representing the United States are not made. Claims are made, however, that the list of job tasks drawn from the NOBELS study is representative of the job tasks of beginning accounting and bookkeeping workers on a national basis. Although a quantitative combination of those 16 studies identified as task

specific was not possible, so many of the job tasks reported in NOBELS were consistently reported in the other 15 studies that generalizations of NOBELS findings can be applied to all beginning accounting and bookkeeping workers.

The basis used for identifying and ranking the textbooks most commonly used in the conventional accounting and bookkeeping curriculum was enrollment and sales information. As none of the major publishers was willing to supply specific sales figures for specific publications, the general percentages offered by South-Western Publishing Company were used as the basis for the sales information.

The study was concerned only with the content area of the curriculum as determined by textbooks. No inferences are drawn that ranking in the job task lists includes the amount of time needed to learn different job tasks.

CONCLUSIONS

The conclusions are discussed in two parts, conclusions about the job tasks of workers and conclusions about the high school curriculum.

Conclusions about the job tasks of the beginning accounting and bookkeeping worker

1. The job tasks of the beginning accounting and bookkeeping worker require little or no understanding of the principles of debit and credit. Only one job task on the list of 150, 8.01.06.02, "The worker prepares financial reports," indicated any need for understanding how to

analyze a business transaction into debit and credit parts. At that, job task 8.01.06.02 did not concern any original preparation of financial reports.

2. The job tasks of the beginning accounting and bookkeeping worker did not include recording in either a sales or a purchases journal. The job tasks included much recording in accounts receivable and accounts payable ledgers, possibly indicating that separate journals for sales and purchases are becoming obsolete in a machine age.

3. The job tasks of the beginning accounting and bookkeeping worker did not include any job tasks requiring posting in a general ledger. Ten tasks of the 150 tasks, 1.01.01.07, 1.01.06.04, 3.01.04.03, 3.01.05.06, 3.01.05.08, 4.01.03.04, 5.01.07.01, 7.01.06.03, 8.01.06.02, and 9.01.04.11 included verification from a general ledger account.

4. Job tasks in the electronic data processing category were the most frequently performed of all the job tasks of the beginning accounting and bookkeeping worker. Out of 39 job tasks accounting for 75 percent of the job task sheets represented, 9 job tasks were in electronic data processing.

5. The job tasks of the beginning worker included the usual aspects of payroll accounting except that no tasks included the preparation of payroll tax reports, possibly indicating that manual preparation of payroll tax reports is becoming obsolete in a machine age.

6. The job tasks of the beginning accounting and bookkeeping worker required little or no understanding of those steps in the accounting cycle past the trial balance. Job task 8.01.06.02, "The worker prepares financial reports," required preparation of statements from handwritten reports using already established formats. Some of the job tasks in Category 5 (Inventories), 5.01.07.01, 5.01.07.02, 5.09.01.02, and 5.11.00.01 were fairly complex but could be performed without understanding the duality of the accounting cycle.

7. The job tasks of the beginning accounting and bookkeeping worker were more concerned with segments of the accounting cycle than with tasks requiring understanding of the whole accounting cycle. Criteria mentioned in NOBELS for performance of job tasks stressed computational skills, accuracy, and checking rather than double-entry bookkeeping skills.

8. The job tasks of the beginning accounting and bookkeeping worker indicated that the worker deals with a great variety of financial operations, business papers, and forms.

9. Overlapping of tasks exists among many office jobs. Both the NOBELS study and the West study showed that classification of data by function rather than by job title reveals more information about the nature of bookkeeping work.

10. Most of the job tasks of the beginning accounting and bookkeeping worker dealt with the preparation and handling of original business documents rather than with the actual accounting entries for those documents. The words preparing, processing, operating, checking, computing, compiling, verifying, and receiving were used throughout the NOBELS job tasks list. No mention is made on the list of analyzing, preparing trial balances, adjusting or reversing entries, balancing, ruling, or summarizing. The one mention of statement preparation really concerned compiling; the few tasks in posting referred to posting to customers' or creditors' accounts. While many tasks included recording accounts receivable, accounts payable, payroll, and cash, those tasks required only a portion of what is meant by journalizing and posting in the double-entry accounting system.

Conclusions about the conventional high school accounting and bookkeeping curriculum

1. The conventional high school accounting and bookkeeping curriculum included a minor amount of specific job task training for the beginning accounting and bookkeeping worker. Of the 150 job tasks on the NOBELS list, only 36 could be identified in the textbooks representing the curriculum. The 36 tasks represented only 34 percent of the textbook volume (see Table 22)

2. The major part of the conventional high school accounting and bookkeeping curriculum was devoted to general information. Of the total textbook volume representing the curriculum, 66 percent of the volume of space could only be identified as fitting into a general category (see Table 22).

3. The tasks taught in the conventional high school accounting and bookkeeping curriculum have no significant relationship to the job tasks necessary for employment in in beginning accounting and bookkeeping occupations when grouped and ranked by specific job tasks common to both lists (see Table 24). Even when a comparison was made between the curriculum job task list and the NOBELS job list grouped and ranked by generalized categories, no significant relationship was found (see Table 23).

4. The bookkeeping tasks most extensively covered in the conventional high school accounting and bookkeeping curriculum are those most rarely performed by the beginning accounting and bookkeeping worker. The two categories using 42 percent of the space available in the textbooks, Category 7 (General Journal and General Ledger), and Category 8 (Financial Statements) accounted for only 4 percent of the task sheets represented on the NOBELS job task list. Four of the categories used to analyze the textbooks, Category 7, Category 8, Category 9 (Miscellaneous Specific Tasks), and Category 10 (Miscellaneous General Information) accounted for 52 percent of the total weighted

volume of the textbooks but contained no individual specific job tasks common to both lists.

5. Both textbooks selected as representative of the high school accounting and bookkeeping curriculum, Century 21 Accounting, First-Year Course, and Clerical Record Keeping, Course 1, 3d ed., are nonfunctional for the purpose of preparing students for occupational employment as beginning accounting and bookkeeping workers. While Century 21 Accounting, First-Year Course covers the entire double-entry accounting cycle, it is far too general (see Table 20) to meet the needs of the vocational high school student who needs job-entry skills for employment. Century 21 Accounting, First-Year Course might fill some of the survey course objectives of students planning to take higher level training in accounting but could not be considered a substitute for the intensive first course in accounting offered on a four-year college level. Much of the general business and personal knowledge available in this text is also available from general business texts.

Clerical Record Keeping, Course 1, 3d ed. is much more specific than Century 21 Accounting, First-Year Course, allocating 78 percent of its total volume of space to specific job tasks, and only 22 percent to general information (see Table 21). However, only 20 specific job tasks were covered in this text; and, while much practice in manual processing of these 20 tasks is given, the omission

of the other 130 tasks on the NOBELS list, and particularly the omission of all electronic data processing tasks, makes this textbook relatively useless in meeting either vocational or general objectives for the preparation of accounting and bookkeeping workers.

DISCUSSION AND RECOMMENDATIONS

The conventional high school curriculum in accounting and bookkeeping is nonfunctional. Not only does the curriculum fail to prepare students for vocational job entry, the personal and social objectives so frequently cited are not being reached with any measurable amount of success. When objectives are vague and general, the evaluation of how well those objectives have been met is also vague and general. Textbooks in the high school curriculum are responsible for much of the dissatisfaction expressed by accounting and bookkeeping teachers.

Teachers look to textbooks in accounting, bookkeeping, and recordkeeping for expert guidance in developing the content of their courses. Recognition of the general value of concept learning, recognition of the need for general business vocabulary and knowledges, recognition of the need to stay abreast of new equipment and procedures, recognition of the need to prepare job-entry students as well as to start career training for ongoing students has resulted in the entrenchment of a textbook-oriented curriculum that skirts but fails to adequately meet any one of its many stated objectives.

A need exists for beginning accounting and bookkeeping workers who enter employment from high school. The review and synthesis undertaken in this study clearly indicates that many of the job tasks of the beginning accounting and bookkeeping worker are different from those of the general clerical worker. A place should exist in the high school curriculum to train those workers. That training place in high school, however, may no longer exist in the separate courses in Accounting, Bookkeeping, Recordkeeping, Data Processing, and Computers, currently plugged into the course-segmented and crowded high school business education sequence. The following recommendations offer suggestions for change in the high school accounting and bookkeeping curriculum that are part of a major change in the entire high school business education curriculum. Some additional suggestions about future research in high school accounting and bookkeeping are also made.

Recommendation 1. Restructure the high school business education curriculum to move educational emphasis from courses to goals and/or competencies. The segmentation of the curriculum into too many courses which overlap, repeat, or overlook needed business awareness and skills should be replaced by an integrated, flexible core curriculum. The new business education curriculum should contain the following components:

a. general knowledge all high school students should have, e.g., taxes, social security, medicare, insurance, consumer buying, consumer law, credit, banking services, economic understanding, values exploration, preparation for employment.

b. general knowledge students planning to enter business careers should have, e.g., business machines, filing, basics of data processing and computers, communication skills, business forms, numeric procedures including computation, checking, and accuracy, fundamentals of office work.

c. specific training for job entry from high school.

d. preparation for business careers requiring post high school training.

Recommendation 2. Specific training for job entry as a beginning accounting and bookkeeping worker should include:

a. a series of modules built around the segmented jobs of the beginning accounting and bookkeeping worker with priority given to those categories ranked highest on the NOBELS, list, e.g., Sales and Accounts Receivable, Electronic Data Processing, Cash Receipts and Cash Disbursements, Inventories, Payroll, Purchases and Accounts Payable. The modules should include those specific job tasks on the NOBELS list that were well represented by task sheets reporting them as major job duties.

b. introduction of a large number of continuously updated business papers, forms, and terms with practice in their use to achieve flexibility and efficiency in handling diverse forms and tasks.

c. extensive training in the tasks performed in electronic data processing and computer systems, particularly punching, coding, and checking original documents against machine output. Enough hands-on training should be given on equipment to provide at least minimal proficiency.

d. using typewriters, adding machines, and calculators.

e. . general knowledge of the steps of the double-entry accounting cycle. Practice in the steps of the cycle should deal with the initial stages of processing and recording business transactions and should not extend past the trial balance. Conceptual understanding should not be completely eliminated but must be judiciously balanced with understanding the kinds of segmented, specific job tasks performed on the job.

Recommendation 3. Curriculum builders in high school accounting and bookkeeping should look to studies of the job tasks of clerical workers as well as beginning accounting and bookkeeping workers to gain information about appropriate content for training.

Recommendation 4. Curriculum builders designing specific training for job entry as a beginning accounting and bookkeeping worker should look to the detailed summaries of job tasks contained in NOBELS.

Recommendation 5. Textbook publishers should provide textbooks that are in closer agreement with the actual job tasks of the accounting and bookkeeping worker. While a blend of accounting principles and accounting tools is necessary, the large proportion of generalized, concept-oriented content found in textbooks is not in accord with the segmented, task specific job of the employed worker. Textbook priorities that allocate 66 percent of their content to generalized information and 52 percent to content not represented in real employment are providing neither expert guidance nor the implementation of objectives in the conventional accounting and bookkeeping curriculum.

Recommendation 6. Regularly update information about the job tasks of business workers. The job task inventory system developed by the Air Force offers the most reliable method for collecting and classifying job task information. The NOBELS system designed for continuous business education renewal also offers a reliable but less expensive system for collecting information.

Recommendation 7. Research should be undertaken about time emphasis and difficulty levels in training for specific accounting and bookkeeping tasks. Christal's work on the "Relative Time Spent" rating scale and on a difficulty index equation offer possibilities for instrumentation.

Recommendation 8. A study similar to this one should be made within 8 to 10 years. Synthesis and review about the job tasks of beginning accounting and bookkeeping workers should be undertaken on a regular basis to insure appropriate curricula in high school training.

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APPENDIXES

APPENDIX A*

Studies Relating to the Content Area of Beginning Accounting and Bookkeeping

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*The 48 studies listed here plus the 16 studies reviewed in Chapter 2 provided a review of the research done in the content area of beginning accounting and bookkeeping for the years 1968-1975.

APPENDIX B

The Categories and Job Tasks Used for Textbook Analysis

Category 1. Sales and Accounts Receivable. Includes sales journal, accounts receivable ledger, controlling accounts receivable, aging accounts receivable, valuation of accounts receivable, schedule of accounts receivable, credit selling, sales invoices, statements of accounts receivable, sales taxes (35 job tasks represented by 420 task sheets).

1.01.01.01 The worker types invoices from such documents as sales tickets, contracts, and receiving reports. (prepares invoices, computes charges, discount dates, freight, prepares bills of lading)* 59 t.s.

1.01.01.02 The worker records accounts receivable from such documents as salesmen's orders, cash receipts, and invoices. (records on accounts receivable ledger cards) 48 t.s.

1.01.01.03 The worker prepares billings of sales. (receives and sorts sales data, prepares sales order forms, summarizes sales and accounts receivable, prepares sales tax forms) 41 t.s.

1.01.01.04 The worker writes delinquent customer. (compiles past due accounts, calls, writes) 27 t.s.

1.01.01.05 The worker verifies customer's accounts receivable. (checks, corrects, rebills) 18 t.s.

1.01.01.06 The worker completes medical charges for insurance reimbursement. (computes extensions, deductions, reimbursements, verifies charges) 15 t.s.

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*Read as follows: Job task 1.01.01.01 fits into Category 1, can be found in the NOBELS study as 01.01.01. The notes enclosed in parentheses are offered to explain the nature of the job task, 59 t.s. means that 59 task sheets reported this job task.

1.01.01.07 The worker completes sales reports. 12 t.s.

1.01.01.08 The worker prepares statements from patients' accounts and charge slips. (monthly statements) 8 t.s.

1.01.01.09 The worker calls delinquent customers. (subsequent to writing) 4 t.s.

1.01.01.10 The worker processes changes in status of account. 2 t.s.

1.01.01.11 The worker requests payments from delinquent patients. (writes, types delinquent account list, batches long overdue payments for referral) 2 t.s.

1.01.06.04 The worker records receipts and withdrawals in the ledger. (bank payments recorded in customer's ledger account) 13 t.s.

1.01.08.01 The worker processes credit applications. 17 t.s.

1.01.08.02 The worker verifies customer credit. (switchboard verification) 8 t.s.

1.01.08.03 The worker processes credit information. (for outsiders) 8 t.s.

1.01.08.04 The worker informs applicant and company department of approved/rejected credit applications. 7 t.s.

1.01.08.05 The worker processes credit memorandums. (prepares and records in customer's account) 5 t.s.

1.01.08.06 The worker processes credit information request. (completes credit ratings) 3 t.s.

1.01.08.07 The worker answers charge account billing inquiries. 2 t.s.

1.04.02.02 The worker processes membership and loan applications in financial institutions such as a credit union. (computes loan principal, interest, and payments; records in journal and customer's ledger account) 17 t.s.

1.04.02.03 The worker processes new accounts, transfers of accounts, and trust accounts for customers. (prepares and records on customer's ledger account) 8 t.s.

1.04.05.02 The worker records guest charges on room folios. 4 t.s.

1.08.00.02 The worker processes requests by telephone and over the counter. (refers to inventory, computes price, types invoice, and shipping order) 25 t.s.

1.08.00.04 The worker types sales items from rough drafts, proposals, lists, and other source documents. 19 t.s.

1.08.00.09 The worker processes customers' orders. (new orders, change orders, computes extensions and weights, records on order cards) 10 t.s.

1.08.00.10 The worker records orders, printouts, and changes. (records on customers' cards, types salesmen's monthly sales call lists) 9 t.s.

1.08.00.25 The worker types orders, memos, and invoices. (applies customers' credit ratings, computes taxes, types invoices). 16 t.s.

1.09.02.03 The worker processes shipping and billing forms on completed jobs. (records shipping information, gets shipping charges, computes discounts, types invoices) 6 t.s.

1.01.01.12 The worker processes follow-up records of patient's visit. 1 t.s.

1.01.06.05 The worker records loan payment reversing entries. (for bounced checks on loan cards) 1 t.s.

1.01.06.06 The worker records monies received for or spent from internal accounts. 1 t.s.

1.01.08.08 The worker updates delinquent account lists. 1 t.s.

1.01.08.09 The worker determines extension of additional credit. 1 t.s.

1.01.08.10 The worker compiles delinquent receipts report from a computer printout, amounts of paper sold, and cash receipts. 1 t.s.

1.01.08.11 The worker verifies wire request of amount due a customer. 1 t.s.

Category 2. Purchases and Accounts Receivable. Includes voucher register, purchases journal, accounts payable ledger, controlling accounts payable, schedule of accounts payable, credit buying, purchases invoices, freight, discount, ouchers. (6 job tasks represented by 131 task sheets).

2.01.02.01 The worker computes accounts payable from source documents. (checks, verifies, computes extensions and discounts, authorizes payments) 69 t.s.

2.01.02.02 The worker records accounts payables. (in accounts payable ledger) 47 t.s.

2.09.03.01 The worker records inbound shipments. (checks merchandise, compares invoices with receiving documents) 9 t.s.

2.09.03.03 The worker issues a claim or an adjustment against the carrier/supplier for damaged/short/over-shipments. (purchase returns and allowances) 3 t.s.

2.09.03.04 The worker processes damage claims. 2 t.s.

2.09.03.05 The worker processes freight bills for payment. 1 t.s.

Category 3. Cash Receipts and Cash Disbursements. Includes cash journals, cash register, receiving or disbursing cash or checks, entries for discounting notes, checkbook, bank statement reconciliation, petty cash, proving or controlling cash. (30 job tasks represented by 268 task sheets).

3.01.02.03 The worker prepares payments from documents such as invoices, bills, and vouchers. (accounts payable clerk verifies accuracy, draws checks, records in cash register) 33 t.s.

3.01.04.02 The worker verifies totals of cancelled checks, computer tapes, and tellers' balance sheets. (verifies cash accuracy, checks cash drawer etc.) 21 t.s.

3.01.04.03 The worker verifies cash receipts for deposit. (verifies and records cash receipts) 18 t.s.

3.01.04.04 The worker performs routine checks on such items as deposit slips, adding machine tapes, and advices. 15 t.s.

3.01.04.05 The worker corrects checks, savings and withdrawal slips, balance sheets, and other source documents. 12 t.s.

3.01.04.06 The worker checks computations with proofing machine. 8 t.s.

3.01.04.07 The worker distributes daily cash to tellers in branch bank. 2 t.s.

3.01.04.08 The worker sorts coins from the federal reserve bank daily. 2 t.s.

3.01.05.01 The worker prepares the bank deposit from cash receipts. (records in cash receipts journal) 27 t.s.

3.01.05.02 The worker receives payments over the counter. (including cash from accounts receivable, also uses cash register) 20 t.s.

3.01.05.03 The worker records payments received. (records in cash receipts journal and accounts receivable ledger) 17 t.s.

3.01.05.04 The worker records payments for medical services. (on customers' ledger cards) 16 t.s.

3.01.05.05 The worker records deposits to customers' accounts. (passbooks and customers' records) 12 t.s.

3.01.05.06 The worker prepares reconciliation of bank account. 8 t.s.

3.01.05.07 The worker processes money for library books and films from check-out requests and late and lost book notices. 3 t.s.

3.01.09.01 The worker prepares disbursements from customer accounts. (banking, cashes checks, records withdrawals) 12 t.s.

3.01.09.02 The worker prepares disbursements of funds. (records payments other than accounts payable in check register, writes checks) 11 t.s.

3.01.09.03 The worker prepares disbursement of petty cash funds. 4 t.s.

3.04.03.06 The worker receives activity fees and funds from students. 6 t.s.

3.04.06.03 The worker processes patient funds. (requests for withdrawal of funds) 4 t.s.

3.04.08.01 The worker processes welfare assistance claims. (checks, determines needs, codes, computes, records) 8 t.s.

3.01.04.09 The worker verifies installment loan balances. 1 t.s.

3.01.05.08 The worker performs the bookkeeping duties of a small bank. 1 t.s.

3.04.02.17 The worker processes outgoing cash letters in foreign currency. 1 t.s.

3.04.02.18 The worker processes incoming cash letters from foreign correspondent banks. 1 t.s.

3.04.02.20 The worker prepares currency for shipping orders. 1 t.s.

3.04.02.25 The worker checks errors for large corporations. (errors on checks) 1 t.s.

3.04.02.27 The worker processes savings certificates to be redeemed. 1 t.s.

3.04.02.28 The worker prepares travelers checks for customers. 1 t.s.

3.01.04.10 The worker prepares night deposits. 1 t.s.

Category 4. Payroll. Includes all calculations, records, tax returns, and reports relating to payroll. (11 job tasks represented by 140 task sheets).

4.01.03.01 The worker prepares payroll. (sorts and checks time cards, computes wages and deductions, records in payroll register, prepares checks or cash) 73 t.s.

4.01.03.02 The worker records payroll information. (on employees' ledger cards) 27 t.s.

4.01.03.03 The worker computes payroll changes. 17 t.s.

4.01.03.04 The worker compiles payroll reports from payroll sheets, time sheets, job cards, and printouts. (tax returns not included) 15 t.s.

4.01.03.06 The worker records payroll changes for hospital employees. (on master salary schedules) 2 t.s.

4.01.03.07 The worker prepares a dummy payroll. 1 t.s.

4.01.03.08 The worker computes salesmens' commissions. (for payroll purposes) 1 t.s.

4.01.03.09 The worker prepares time cards. (sets up for new pay period) 1 t.s.

4.01.03.10 The worker updates weekly payroll time cards. 1 t.s.

4.01.03.12 The worker processes status time slips. 1 t.s.

4.01.03.13 The worker compiles an employee transfer list from output cards. 1 t.s.

Category 5. Inventories. Includes inventory records, inventory counts, cost records, production reporting. (15 job tasks represented by 238 task sheets).

5.01.07.01 The worker compiles unit costs of jobs and sales/production estimates from expense sheets and/or total sales figures. 33 t.s.

5.01.07.02 The worker prepares bids and cost estimates of products and services, 12 t.s.

5.01.07.03 The worker compiles variance reports from actual and standard cost figures. 7 t.s.

5.01.07.04 The worker types cost analysis reports. 4 t.s.

5.01.07.05 The worker determines cost estimates by observing production and scanning blueprints.(checks, computes, analyzes) 2 t.s.

5.01.07.06 The worker compiles relevant statistics and determines improvements in methods by submitting cost analysis of proposed changes. 2 t.s.

5.01.07.07 The worker processes new accrual accounts from current cost analyses and additional specifications. 2 t.s.

5.09.01.02 The worker updates inventory records from office supply inventory documents. (records on stock records, compares physical inventory to book data, computes inventory value and costs) 24 t.s.

5.09.01.03 The worker records finished-goods inventory from production and shipping data. 8 t.s.

5.09.01.04 The worker completes physical inventory. 6 t.s.

5.09.01.05 The worker maintains inventory records on stock sent to production. 4 t.s.

5.10.00.01 The worker maintains supplies and stock inventory. (prepares purchase documents and orders, records, figures costs and totals) 94 t.s.

5.11.00.01 The worker processes schedules and adjustment of scheduled production orders. (includes some cost accounting) 23 t.s.

5.11.00.02 The worker types production reports. (compiles, composes, checks, verifies) 16 t.s.

5.01.03.11 The worker maintains records of time spent developing new products from weekly activity tickets. 1 t.s.

Category 6. Electronic Data Processing. Includes coding, comparing, correcting, processing, and programming. (36 job tasks represented by 406 task sheets).

6.01.03.05 The worker punches payroll data. 8 t.s.

6.06.01.01 The worker punches cards from source documents such as invoices, orders, time cards, and instructions. 96 t.s.

6.06.01.02 The worker operates a verifier. 40 t.s.

6.06.01.03 The worker operates a keytape machine punching magnetic tape. 8 t.s.

6.06.01.04 The worker punches corrections in cards. 7 t.s.

6.06.01.05 The worker operates optical scanner for payroll printout. 2 t.s.

6.06.01.06 The worker performs quality control checks on the optical-font printing adding machine operator's tape production. 2 t.s.

6.06.02.01 The worker checks source documents such as orders, invoices, punched cards, and printouts with computer printouts/listings. (compares, finds errors) 42 t.s.

6.06.02.02 The worker performs electronic data processing tasks from such items as computer printouts, files, accounting forms, manuals, maps, and instructions. 22 t.s.

6.06.02.03 The worker codes payment cards, checks, and deposit/withdrawal slips for keypunching. (uses microfilm and encodes for banks) 4 t.s.

6.06.02.04 The worker maintains control of input/output work flow between corporate trust department and data processing department. 2 t.s.

6.06.02.05 The worker corrects computer rejected debits/credits. (corrects with encoding machine) 2 t.s.

6.06.03.01 The worker operates reproducer from punched cards, printed lists, and summary cards. 35 t.s.

6.06.03.02 The worker operates (decollates, bursts, binds) computer output. 6 t.s.

6.06.03.03 The worker places magnetic tape on a computer tape drive. 4 t.s.

6.06.03.04 The worker prepares weekly payroll from payroll tapes. 4 t.s.

6.06.03.05 The worker verifies manually prepared totals. 4 t.s.

6.06.03.06 The worker operates electronic computer and peripheral equipment. 3 t.s.

6.06.03.07 The worker sorts batches of checks. 2 t.s.

6.06.03.08 The worker prepares punched cards for computer run. 2 t.s.

6.06.03.09 The worker determines computer malfunction by running diagnostics. 2 t.s.

6.06.04.01 The worker codes forms such as purchase orders, invoices, and applications for keypunching. 45 t.s.

6.06.05.01 The worker operates unit-record equipment such as the sorter, reproducer, collator, and interpreter. 22 t.s.

6.06.05.02 The worker codes forms such as account statements, production figures, inventory listings, punched cards, wired or unwired boards for keypunching. 5 t.s.

6.06.05.03 The worker operates optical scanning equipment to convert printed data to punched data. 4.t.s.

6.06.06.01 The worker writes computer programs. 18 t.s.

6.06.06.02 The worker checks computer programs. 4 t.s.

6.06.06.03 The worker writes computer programs in final form. 3 t.s.

6.06.01.07 The worker punches cards coded for school withdrawal. 1 t.s.

6.06.02.06 The worker prepares batches of checks for data processing. 1 t.s.

6.06.02.07 The worker types cash letters for checks drawn on bank but cashed elsewhere. (uses microfilmer, encodes, prepares for data processing) 1 t.s.

6.06.03.10 The worker determines accuracy of data speed machine sending installation. 1 t.s.

6.06.05.04 The worker adjusts errors on computer input tape. 1 t.s.

6.06.06.04 The worker adjusts present computer programs. 1 t.s.

6.06.06.05 The worker punches prescribed program changes for new computer. 1 t.s.

6.06.06.06 The worker arranges a time schedule for a new computer program. 1 t.s.

Category 7. General Journal and General Ledger. Includes general journal entries, posting, general ledger, adjusting, closing, correcting and reversing entries, balancing and ruling, chart of accounts, and transaction analysis into debits and credits. (1 job task represented by 18 task sheets).

7.01.06.03 The worker records items such as stocks, bonds, deposit slips, and passbooks. 18 t.s.

Category 8. Financial Statements. Includes trial balance, worksheet, the balance sheet, the accounting equation as it relates to the balance sheet, income statement, statement of capital, miscellaneous financial statements and schedules, tax returns other than payroll and sales tax. (2 job tasks represented by 54 task sheets).

8.01.06.01 The worker records data for financial reports from schedules, license fee forms, and damage claims. (sorts financial forms, computes fees, computes claims, types) 28 t.s.

8.01.06.02 The worker prepares financial reports. (checks, verifies, compiles, types using handwritten statements as source). 26 t.s.

Category 9. Miscellaneous Specific Tasks. Includes specific tasks not included elsewhere, recording (not analyzing) combination journal entries, calculating interest on notes, selecting depreciation methods, calculating gain or loss on sale of fixed assets, calculating partnership distributions. (14 job tasks represented by 176 task sheets).

9.01.04.01 The worker checks the accuracy of source documents such as sales, purchasing, tax reports and forms. (checks and corrects records) 28 t.s.

9.04.01.01 The worker types insurance documents. (checks policy, determines premium, receives money, adjusts payments, types invoices and forms) 48 t.s.

9.04.01.02 The worker processes insurance inquiries. 41 t.s.

9.04.01.03 The worker processes insurance claims. 20 t.s.

9.04.02.05 The worker checks securities and amounts. (checks accuracy of work already done) 4 t.s.

9.04.02.06 The worker processes estate settlements for customers. 3 t.s.

9.04.02.09 The worker checks claims for transfer, trade, or exchange of securities. 2 t.s.

9.04.02.11 The worker processes settlement of buy and sell orders. 2 t.s.

9.04.04.01 The worker processes stock certificates. 10 t.s.

9.04.04.02 The worker prepares stock forms for buying, selling, and transferring stocks. 9 t.s.

9.04.04.04 The worker answers questions about securities. (gives quotations, handles complaints) 6 t.s.

9.01.06.07 The worker adjusts property tax records from transfer forms. 1 t.s.

9.01.04.11 The worker performs audit of particular functions in individual departments of the bank. 1 t.s.

9.01.04.12 The worker codes transaction tax on tickets. 1 t.s.

Category 10. Miscellaneous Generalized Tasks. Includes the nature of business, types of business organization, the accounting cycle, business terms outside of categories 1-9. (No job tasks specified in NOBELS in this category).

VITA

Margaret Casey Reap was born to John Leo and Mary McKenna Casey in Jersey City, New Jersey, on January 14, 1927. She graduated from St. Peter's High School, New Brunswick, N. J. in June 1944. In June 1948, she received a Bachelor of Science Degree in Business Administration with a major in Accounting from Fordham University, New York, N. Y. In May 1970, she received a Master of Arts degree in General Business Studies and Accounting from Montclair College, Montclair, N. J. having completed an M. A. T. program. She entered the doctoral program in the College of Education at the University of Houston in 1974.

Her background includes eleven years of business experience and twelve years of teaching experience at the high school and college level. She married Edward John Reap on April 17, 1949 and has five children, Edward John Reap, Deborah Ann Reap, Mary Frances Reap, Lynn Alison Reap, and John Casey Reap. Her permanent address is 6118 Morningcrest Court, Spring, Texas 77379.