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ABSTRACT

This report relates principles of system analysis and work study techniques to library activities in crder to aid librarians in their assessment of library work. The meaning and methods of system analysis and work study are explored and the system concepts of organization purpose, work goals and performance objectives are defined and applied to libraries. The subdivisicn of work into components suitable for measurement and procedures fcr collecting work performance data are explained. The use of wcrk-study techniques is demonstrated in an examination of two types of school library activity: instructional support of education programs and information services to school personnel. Task sequences for these activities are presented with forms and procedural suggestions for recording performance data and cumulating statistics on them. (Author/JG)

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SYSTEM ANALYSIS + WORK STUDY = LIBRARY ACCOUNTABILITY

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ROWENA WEISS SWANSON

ABSTRACT

This report relates principles of system analysis and techniques of work study to libraries and library activities. System concepts of organization purpose, work goals, and performance objectives are defined and applied to libraries, particularly school libraries. The subdivision of work into components suitable for measurement and procedures for collecting work performance data are explained; the discussion includes illustrations of the applicability of time study and work sampling techniques to library work. The use of work-study techniques is demonstrated in a detailed examination of two types of school library activity; instructional support of education programs and information services to teachers, principals, and other school personnel. Task sequences for these activities are presented together with forms and procedural suggestions for recording performance data and cumulating statistics on them.

The system analysis and work study approaches presented in this report are seen as aids to librarians in their assessment of library organizations and programs and in their measurement of library work. They provide an orderly and realistic means by which librarians can acquire needed management and accountability data and explain and make decisions about their programs. The author contends that the important role of libraries in society necessitates the acquisition of these data for the mutual benefit of libraries and the publics they serve.

$ 2.00

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PART ONE

INTRODUCTION

Economic, technological, social, and cultural changes are occurring at a rapid rate in the United States. We, the people, have set them in motion and they, in turn, affect us, sometimes in unanticipated ways, causing us to react and produce other changes.

In this dynamic milieu, the education of people has become of paramount importance. Education is essential to enable people to understand and cope with their environment as well as contribute to it constructively.

As education affects the environment, so education is affected by it. The last two or three decades have introduced changes and pressures for change in the content of educational materials, in teaching strategies, in the application of learning principles, and in the preparation of teachers.

Though people outside the library profession may not have much awareness of the impact of environmental changes on libraries or even on their own individual needs for information, librarians are painfully aware of this impact. School libraries and their staffs have, in particular, been bearing the brunt of change. They have had to become instructional materials and media centers and specialists, respectively, within a very short period of time. The remarkable response to change exhibited by many school libraries and their staffs has, ironically, often not been fully perceived or appreciated by the people whom they serve --- but this is not the theme of this document.

Whether adequately supported with personnel, materials, facilities, and funds or not, a library can best meet the needs of its users with the resources it has if it operates in accordance with a well-thought-through plan for employing its resources. A set of policies and implementing procedures by which funds and personnel time are allocated and services are provided can make a vast difference in the degree to which a library can be effective and efficient in meeting its objectives.

The formulation of a plan that starts with objectives and details policies, procedures, and work tasks must be done by all organizations. Libraries are no exception. Frequently, however, many organizations, libraries included, do planning in an ad hoc and incomplete way. This document addresses both elements of planning from a system viewpoint and specifics on the collection of data for planning and accountability reporting by libraries. The aim of this document is to demonstrate pragmatic applications of system analysis and work study to libraries so that libraries can use these approaches in developing library statements and in collecting work data that meet modern societal needs for information about libraries.

Planning includes the determination of costs of doing particular kinds of work and the comparison of costs with objectives to assess the benefits or values of particular alternatives before decisions are made on the work that will or will not be done within a given budget. This component

of planning is not considered in this document. It should be noted, however, that budgets are often established in the absence of the aspects of planning that are considered in this document. This practice puts the cart before the horse. Decision-making requires the exercise of judgment -- a subjective, qualitative factor -- but also the evaluation of such facts and data as can be made available. Decision-making needs the information that is contained in statements of purpose, performance objectives, policies, and work data. The conceptualizations and data collection techniques that are discussed in this document are viewed by the author as the most difficult parts of the planning process.

PART TWO
SYSTEM ANALYSIS IN LIBRARIES

What is system analysis?

Seeing an entity composed of parts as both an entity and as a sum of its parts simultaneously is the essence of system analysis. More concretely, system analysis has been defined as:

> inquiry to assist decisionmakers in choosing preferred future courses of action by (1) systematically examining and reexamining the relevant objectives and the alternative policies or strategies for achieving them; and (2) comparing quantitatively where possible the economic costs, effectiveness (benefits), and risk of the alternatives.[1]

The term "system analysis" refers to the approach that is employed in solving a problem, rather than to the use of any particular solution techniques. In fact, one or more scientifically valid inquiry procedures may be chosen in performing a system analysis.

The term is applied to investigations of phenomena that are complex or that are embedded in a structure that is complex. The complexity precludes the study of one phenomenon independently because of the possible effect decisions about that phenomenon may have on others. For example, Part 4 of this document discusses procedures for doing work studies of several types of library activities. The intent of Part 4 is to describe certain procedures, not to analyze the extent to which the activities can be performed in a particular library. Can a librarian make a decision that a particular activity will or will not be performed by a library solely on the basis of the activity? The answer is obviously no. A library performs many activities. A decision about one activity depends on the others that are being performed, the totality of available resources, and on priorities that are set not only by the library but also by the library's various patrons. This is an illustration of the type of complexity requiring system analysis, that is, a study of the parts, in this case each of the activities, and the parts as they interrelate to form the whole or system, in this case the entire library program.

The quoted definition above indicates that the problems to be solved are likely to have more than one possible solution and even more than one solution in a "preferred" category. Thus, the problem-solving approach must include some criterion or measure for comparing and evaluating possible solutions and some mechanism for monitoring performance and introducing modifications or switching from one solution to another when the need for change becomes evident. The text that follows on elements of system analysis and their application to libraries discusses the development of these measures

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1. Gene H. Fisher, Cost Considerations in Systems Analysis, American Elsevier Publishing Co., Inc., N. Y., 1971, pg. 6.

and mechanisms during the course of a system analysis. Parts 3 and 4 of this document examine component parts of the library system; these are the sources of data that provide the bases for establishing performance measures and monitoring mechanisms.

How is system analysis performed?

To be able to do a system analysis, it is necessary to have information about the following system characteristics:

1. The purpose(s) to be accomplished by the system
2. The work goals by which (1) is to be realized
3. The performance objectives by which (2) is to be attained
4. The resources required for (2) and (3)
5. The organization/program structure that uses (4) to produce (3)
6. The work components structure within (5)
7. A set of information models of resource inputs, allocations, outputs, and communication patterns by which (4), (5), & (6) are monitored with respect to (1), (2), & (3).[2]

Four principles guide the analytic strategy and the use of results:

1. All elements of a system are interrelated and interdependent, and each system is in turn embedded in an environment of interrelationships and interdependencies with other systems.
2. Analysis means determining, to an operational level of specificity, (a) the functional characteristics of an organization (enumerated above) and (b) the working relationships an organization has with other organizations.
3. Analysis to implementable completion is accomplished through the discovery and assessment of all relevant alternatives dictated by actual or potential system and subsystem goals, interrelationships, and interdependencies; this may and is likely to be an iterative process.
4. System analysis provides data for decision-making; it is a decision-making tool but not a substitute for the exercise of judgment and responsibility in the discharge of managerial duties.

2. These elements of the system analysis approach are also specified as elements of the analytic strategies of "organization theory," "management science," "operations research," and, recently, "cost-benefit analysis," "performance contracting," and "accountability" techniques.

The foregoing capsule description indicates that system analysis is a modus operandi of inquiry that examines all of the factors that contribute to or influence a real system. In practice, such constraints as time, manpower, and available information limit the comprehensiveness of many system analyses. All too frequently, study of part of a system is not viewed in a system context and insufficient manpower and time are allocated to it. These limitations may or may not negate an investigation as a system analysis. The description above is a model for system analysis. Adherence to its spirit and to its elements to an operational degree distinguish a system analysis from a study not so oriented. A principal feature of a system analysis is the importance it places on an understanding of the purpose, work goals, and performance objectives of the system being studied. These are not perfunctory specifications, nor are they simple to ascertain or to reduce to writing.

A statement of purpose is, for an organization, an expression of its reason for existence, its conceptual foundation, its overall products-and-services orientation to customer and public needs. Work goals derive from the statement of purpose and describe particular work targets selected by the organization to realize the purpose. Goals express immediate, short-range, and long-range expectations concerning resources to be used, product and service outputs, activities to be performed, and relationships to be established. Goals reflect the organization's intentions with respect to its own continuity and growth and with respect to its climate for personnel (employee) growth, development, and self-fulfillment.

Performance objectives specify the work programs that implement the work goals in terms of resulting products, services, and other types of output. They state the parameters by which output will be measured, thereby providing a device for monitoring and assessing progress toward goal attainment. Performance objectives incorporate existing standards and criteria of performance and, through the assessment process, lead to new or improved methods of measuring performance and to new or more realistic standards and criteria.[3] The dependence of particular work programs and activities on these overall elements necessitates that any system analysis begin with their determination for organizations lacking them. Thus, studies of subsystems or smaller organizational units, if they are system analyses, will elicit and be based on specifications of the system's purpose, work goals, and performance objectives.

The resources element refers to the amounts of manpower, money, equipment, facilities, and time available for the work. Information about how the work is or can be performed is also a resource, though it is not universally regarded as such. The need to state and weigh alternatives, though mentioned only once above as one of the principles of system analysis, is present at all stages of system analysis. For example, individuals who found an organization will usually consider alternative purposes before selecting one. Various work goals may accomplish a purpose but only a few may be able to be implemented, necessitating an examination of alternatives.

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3. See Charles L. Hughes, Goal Setting, Key to Individual and Organizational Effectiveness, American Management Assn., N. Y., 1965. This is an informative text on goals, performance objectives, and human motivational factors that should be meaningful to all professionals who work in organizations.

The alternatives principle is reintroduced at this point because the typical system analysis investigates some part of an existing system and a major portion of the analysis is likely to be an assessment of possible combinations of available resources to meet particular performance objectives. Resource allocation studies may indicate the practical impossibility of achieving some performance objectives, necessitating the formulation and examination of alternative objectives and possibly, in turn, work goals. An exhaustive application of the alternatives principle is not usually practical because of the large number of combinations that can be specified. Policies and priorities, as well as the resources available for the system analysis, guide the selection of alternatives that appear most appropriate for resource allocation studies.[4] For example, a hiring policy may be more restrictive on the number of professional librarians who may be employed in a school library than on the number of aides. This policy directs the study of alternatives for the performance of particular types of work to those that employ larger proportions of aide time than professional time. Policies and priorities reduce but don't necessarily eliminate the need to iterate or make some adjustments in performance objectives followed by a re-examination of resource alternatives. Planned and explicit use of the alternatives principle is another distinguishing feature of system analysis.

The information structures for an organization, often called the organization's information system, symbolically represent the work of the organization. Subsystems are often described and monitored by input-output systems that record the consumption of resources, details of human performance and materials flow, and production data. Ideally, data collection in an organization does not occur haphazardly but is related to some element of an information system that is designed with the same care accorded to the system analysis. "Data collection" refers to the acquisition of quantitative and qualitative information about the allocation and consumption of resources, human performance, use or sale of products, etc., in short, to the acquisition of all items of information about system performance that are found necessary to monitor the materials and work flow and to assess performance for future planning, budgeting, and change. The work of information system design proceeds in a fashion similar to that of system analysis in the sense that the final design is achieved after much iteration or specification at different levels of detail followed by forward and backward comparisons to ensure that the levels are properly interrelated.

Data elements that reflect organization/program structure and work components information requirements are considered in Parts 3 and 4 of this document. The levels of an information system that provide summary data, unit data such as cost/item or time/item, and comparisons of actual with predicted performance are frequently called management information systems. Caution is expressed in Part 4 about excessive data collection. The number of data elements necessary to describe the work of an organization increases

4. A good, brief analysis of the types of policies employed in organizations with illustrations for libraries is given in: Duane E. Webster, Library Policies: Analysis, Formulation and Use in Academic Institutions, Assn. of Research Libraries, Washington, D.C., Nov. 1972. Occasional Paper No. 2.

with increasing work differentiation. For decision-making, elemental data must be aggregated. The art of automated management information system design is well advanced and can cope with large data files and complex computations, but actual information needs and not machine processing capabilities should control the extent of data collection. In practice, because current technology eliminates concern about the ability to manipulate data, the upper bound on data collection can be and should be determined by the utility of data elements as representatives of work performance and the feasibility of their collection. Collection for the sake of collection has no credence in the context of system analysis.

How is system analysis applied to libraries?

The quotations below are purpose-type statements:

> To work continuously toward excellence in providing students and teachers with the resources of teaching and learning that they need.[5]
>
> To contribute as an integral part of a school's instructional program to the development and implementation of the total curriculum and achievement of the educational objectives of the school.[6]
>
> To provide an educationally functional and effective library program which will meet adequately the developmental needs of the curriculum and the personal needs, interests, goals, abilities, and creative potential of the students.[7]

The first quotation appears in the ALA Standards for School Library Programs, but it is not identified as such; it was selected by the author as the most evident description of purpose in the Standards. The second quotation is also not specifically presented as such; it is a slight redescription of a prefatory introduction to specific criteria by which "superior building level" school libraries were chosen for an American Assn. of School Librarians (AASL) survey of work tasks. The third quotation is one of four "objectives" of the school libraries of the Exler School District in Harrisburg, Pa., that are described as "giving purpose and direction to the library program."

The first quotation has the indicia of a "God and motherhood" statement; it is too vague and unsubstantive to be convincing as a reason for

5. Standards for School Library Programs, American Library Assn., Chicago, 1960, pg. 7.

6. School Library Personnel Task Analysis Survey, American Assn. of School Librarians, Chicago, 1969. (National Education Assn. Research Division Special Report, School Library Manpower Project)

7. Ruth Ann Davies, The School Library, A Force for Educational Excellence, R. R. Bowker Co., N. Y., 1969, pg. 316.

existence. This author prefers the third to the second quotation in its more definitive exposition of the support the library intends to provide to the school's educational objectives. Both the AASL and Exler quotations are system-type statements in their recognition of the larger system, the school, of which the library is a part and interactive with other parts. A statement expressing the library's role in meeting the professional needs of teachers, administrators, and consultant staff, together with a statement similar to the third quotation, would suffice to represent a school library's purposes.

Statements such as the second and third above should not, however, be routinely copied by a school library without assessment. System analysis studies teach that each organization has a unique set of internal characteristics and external relationships, and each organization must weigh these for itself. For example, legislation in a particular state or school board prescriptions in a district may limit or enlarge the scope of a school library's role vis-a-vis, perhaps, that of a library center or a regional facility. A main consideration in drafting a statement of purpose is that the full direction a library can pursue be perceived and stated. The statement is fundamental to all of the more specific descriptions of the library's work. Therefore, the expressed purpose must contain enough information and breadth to anticipate the specifics that depend on it. A statement of purpose can always be modified, but a short-sighted statement may sometimes impose restrictions on a library while it exists that could have long-range detrimental effects.

The 1960 Standards repeat and endorse the following statements first published in a 1945 ALA document:

1. Participate effectively in the school program as it strives to meet the needs of pupils, teachers, parents, and other community members.

2. Provide boys and girls with the library materials and services most appropriate and most meaningful in their growth and development as individuals.

3. Stimulate and guide pupils in all phases of their reading so that they may find increasing enjoyment and satisfaction and may grow in critical judgment and appreciation.

4. Provide an opportunity through library experiences for boys and girls to develop helpful interests, to make satisfactory personal adjustments, and to acquire desirable social attitudes.

5. Help children and young people to become skillful and discriminating users of libraries and of printed and audio-visual materials.

6. Introduce pupils to community libraries as early as possible and co-operate with those libraries in their efforts to encourage continuing education and cultural growth.

7. Work with teachers in the selection and use of all types of library materials which contribute to the teaching program.

8. Participate with teachers and administrators in programs for continuing professional and cultural growth of the school staff.

9. Co-operate with other librarians and community leaders in planning and developing an over-all library program for the community or area.[8]

These statements, on a single page of the 1960 Standards, are variously described as "purposes of the school library," "general objectives of school libraries," and "basic guides in planning and implementing school library programs." These statements and descriptors clearly show overlaps and ambiguities in attempts to express purposes, goals, and performance objectives. The absence of an analytic model that is system and output performance oriented is evident in these inconsistencies. Work goals do not consistently disclose work targets or lay a foundation for performance objectives. Among the statements above, the first and ninth pertain more to purpose than to work goals. The third, fourth, and sixth express work goals but without reference to the resources to be used; they also contain output terms that are difficult to quantify, a problem common to both libraries and educational institutions.

The 1960 Standards give little coverage to library work that supports the professional needs of teachers, administrators, and other school personnel. Though the 1969 ALA/NEA Standards for School Media Programs state purposes, goals, etc., with even less structure than the 1960 Standards, they put more emphasis on this work.[9] For reasons given in Part 4 of this document, the author believes that school library services to school professionals should and will increase in quantity and importance in coming years. Therefore, this work is used to illustrate a work goal description for the definition given in the previous section:

> To make available and maintain a professional collection of printed and audiovisual materials for teachers, administrators, and other school staff, the collection encompassing areas of general and specialized education and related subjects, through continuous evaluation, consultation, selection, and processing activities.

This goal specifically addresses professional collection development and maintenance and means by which these will be accomplished. The goal specifically excludes services to the target clientele that should be recognized independently in one or more work goals since the activities to be performed and the outputs are distinct. Work goals are not necessarily completely mutually exclusive, as may be illustrated with the above goal. Collection development is a service and activities conducted for it such as consultation could occur during the performance of a service such as response to a teacher's request for curriculum materials on a particular topic. The formula-

8. Standards for School Library Programs, op. cit. (Ref. 5), pg. 9.

9. Standards for School Media Programs, American Library Assn., Chicago, and National Education Assn., Washington, D. C., 1969.

tion of work goals, and all other elements of the system analysis model, requires the exercise of judgment by the formulator. The above goal expresses this author's judgment that, though collection development is a service, it is a sufficiently discrete type of work to merit separate description and performance measurement.

Since productivity and output are measured, where possible, in numeric quantities whose parameters are stated in performance objectives, an assessment of current measures is necessary. Both the 1960 and 1969 Standards cited above provide quantitative parameters. What are they? They are principally descriptors of numeric counts for materials and equipment, for staff allocations, and for the space requirements of materials, equipment, and facilities. These are the typical quantitative data that libraries have limited themselves to. A recent report of a survey of audiovisual instruction in schools records this work in terms of total costs, proportional distributions of costs among materials and equipment, and cost per student.[10] Are quantities such as 10 books per student, $6.90 per student, or 150 sq.ft. per conference room output measures? They are not. They denote resources, resource allocations, and inputs to a system. These types of measures, while necessary to determine and to record, provide no indication of the education results realized from them, the functional service they are to teachers, etc. They provide no basis for decisions about reducing, increasing, or redistributing resource allocations. The purpose of performance objectives and output measures is to provide proofs or at least good indicators of returns on investments to justify further investment. This is not a new way of thinking either for the individual who makes purchases to satisfy personal needs or for the corporation that buys on a larger scale. This way of thinking has not been extensively employed in the public sector, but recent emphasis on accountability requires it. Newness in this sector merely means that work must now be done to discover, define, apply, and evaluate the effectiveness of parameters that reveal the payoffs, the values and benefits, of the inputs, the investments. This is difficult work, but its accomplishment in other sectors suggests that it can also be achieved in the public sector.

Contributions to a performance-measurement way of thinking that warrant study by libraries, particularly school libraries, are beginning to appear in the realm of education. Guidelines are being developed for describing and applying "behavioral objectives" and for representing the programs of schools in a "planning-programming-budgeting" (PPB) format. The quoted terms are expressions of output performance, in one instance the performance expected of students and in the other that expected of schools. In behavioral-objectives parlance, the orientation is toward specifying:

1. Who is to perform
2. The behavior to be demonstrated
3. Results of the behavior
4. The conditions under which the behavior is to be performed
5. The standard of performance or criterion for measuring and evaluating the results [11]

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10. Sheila K. Martin, "1971-72 Cost of Audiovisual Instruction Survey," School Management, vol. 15, no. 11 (Nov. 1971) 11-15.

11. Robert J. Kibler, Larry L. Barker, & David T. Miles, Behavioral Objectives and Instruction. Allyn and Bacon, Inc., Boston, 1970.

Translated to the performance-objectives context of system analysis, the foregoing suggests a description that explicates the work goals in terms of specific categories of work that reflect the activities to be performed, the results of these activities, and performance standards or criteria. For example, two of the performance objectives appropriate to the collection development goal presented earlier could be stated as follows:

> To acquire, through continuous assessment of new materials lists, reviews, and other selection tools, through continuous collaboration and consultation with teachers and other members of the school staff, and through continuous monitoring of course outlines and the school's program plans, those curriculum guides, teacher's manuals, and other printed and audiovisual materials in the fields of general and specialized education and related subjects needed by the professional staff for instructional, current awareness, and continuing education purposes.
>
> To provide ready, easy access by the professional staff to the professional collection through the maintenance of a separate catalog enabling entry by title, subject descriptors, ... (etc).., through maintenance of a shelf and file storage arrangement meeting staff consensus on access convenience, and through location of the catalog and collection in space affording the privacy and equipment needed for use.

The performers have been omitted from the foregoing adaptation. They could be included, particularly when staff size and organizational complexity warrant this identification. When such information is included, it will derive from the organization/program structure element of the system analysis model. For example, the first performance objective above could be modified to: "The acquisition librarian will acquire...." or "The acquisitions department will acquire...."

A more glaring omission in the above performance objectives is an absence of quantified performance standards or criteria. For material flows that are parts of technical processing operations, work studies can provide quantitative data on items that have been acquired and made accessible to the professional staff. The objectives above imply bases for measurement in such terms as "needed by ... for instructional ... purposes," "ready, easy access," and "meeting staff consensus on access convenience." Some of the parameters that could be devised to characterize these outputs could only be expressions of subjective judgment. A strong argument that opponents to performance measurement make is that qualitative or "intangible" factors cannot be measured. This argument is increasingly being countered in such public sectors as education and environmental control through the development of quantitative "indicators" or "indexes" of performance.[12] Figure 1 shows one approach to the translation of intangible phenomena to quantita-

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12. For education, see: Harry J. Hartley, Educational Planning-Programming-Budgeting, A Systems Approach, Prentice-Hall, Inc., N. J., 1968. For environmental control, see: Environmental Quality, The Fourth Annual Report of the Council on Environmental Quality, Council on Environmental Quality, Washington, D. C., Sept. 1973.

PROGRAM CATEGORIES	PROGRAM OBJECTIVES	PERFORMANCE MEASURES AND OPERATIONAL OBJECTIVES
Reading	Cultivate the ability to decode, comprehend, and evaluate printed materials (developmental), establish work-study skills (functional), and promote taste and appreciation for literature (recreational)	Achieve a mean rate of advancement equivalent to one full year on the reading subtests of the Iowa Tests of Basic Skills
Developmental Reading	Enhance the ability to decode, comprehend, and evaluate printed materials	Achieve a mean grade equivalent score of 3.9 on Metropolitan Reading Tests
Reading Comprehension	Develop the ability to detect the main ideas of a paragraph	Achieve a mean grade equivalent score of 3.9 on the paragraph meaning section of the Metropolitan Reading Tests
Critical Reading	Foster the ability to analyze and evaluate both the content and style of printed argumentative, informational, or literary materials	Achieve a mean grade equivalent score of 3.9 on the Ohio State University Critical Reading Test
Authenticity	Develop the ability to judge the relevancy and validity of information derived from printed materials	Achieve a mean grade equivalent score of 3.9 on the sub-test of the Ohio State University Critical Reading Test
An extensive statement of qualifications and limitations might accompany this example so that one would not misinterpret these operational definitions. It is recognized that achievement is multi-dimensional, and that test scores can be misleading. One might establish grade norms, percentile norms within grades, and individual pupil profile charts to plot the growth in skills for each child.		

Figure 1. Excerpt from Appendix L, "Taxonomy for a Third Grade Reading Program Illustrating the Sequence from Broad Language Arts Goals to Specific Reading Skills"

In Harry J. Hartley, Educational Planning-Programming-Budgeting, A Systems Approach, Prentice-Hall, Inc., N.J., 1968, pg. 279.

tive measures. The achievement of a score of 3.9 on the Ohio State University Critical Reading Test does not conclusively prove that a student has acquired the abilities described in Figure 1, but performance data on which this test and score are based provide a wealth of evidence to support the inference that is made. Sufficient study of variables that we imply in our use of such terms as "need," "easy access," and "convenience" can disclose the types of questions that can be asked and how to grade or rank order responses from which indexes for these qualitatively phrased outputs can be developed. An alternative to this approach in our nascent age of accountability is to avoid the difficult, to hold tenaciously to the numerics that constitute the bulk of current library statistics that bear little or no relationship to output, productivity, and accomplishment, and thereby continue to lose credibility among investors and the general public.

In summary, system analysis is frequently employed to assess a particular part of a system. Since parts derive their reasons for being from the whole, the system's purposes, work goals, and performance objectives must first be known or formulated. They, together with information about available resources and resource constraints, are the initial input data for an-

alysis of the part or subsystem. Acceptance of this essential information requirement means hard conceptual work, as indicated above. One might ask, can't a decision be reached on whether to extend school library service for two hours after school each day without reference to a blueprint concerning the entire library? Of course it can. However, what impact might the decision have? How might the decision affect the library's ability to accomplish its existing performance objectives? Will staff have to be deployed from present work, or the materials budget reduced, etc.? Is the decision to be made independent of the busing schedule and thus arouse the ire of parents? Although decisions can be made in isolation, they can have deleterious repercussions unless their effects are anticipated, assessed, and adjudicated.

System analysis beyond the initial formulation of statements of purpose, goals, and performance objectives requires the study of operating details. Preliminarily, resource possibilities must be known. What is the upper limit on funds that can be expended? What kinds of personnel are available? What space and equipment restrictions exist? And so forth. When analysis is applied to an existing system, an organization/program structure is in being. What this is and the characteristics of the work being performed must be determined first because system analysis results in change only when change is warranted. However, whether an analysis is to produce a new structure or to assess an existing one, it must employ principles and techniques of work study to provide data at the work-components level that can then be related to other elements of the system analysis model. Concepts and guidelines for performing work studies are considered in Parts 3 and 4 of this document.

PART THREE

WORK-STUDY PRINCIPLES AND TECHNIQUES

What is work study?

> Work study is a generic term for those techniques, particularly method study and work measurement, that are used in the examination of human work in all its contexts, and that lead systematically to the investigation of all the factors that affect the efficiency and economy of the situation being reviewed, in order to effect improvement.[13]

This is the definition of "work study" endorsed by the International Labour Office (ILO).

Work study as a systematic approach to investigating characteristics of human and machine performance began in the late 1800's. It was introduced primarily to increase and acquire data on production, management emphasis being on obtaining the greatest output of a particular type or quality for the least cost. Work study was applied to industrial operations, and most of the procedures that have been developed were designed for manufacturing environments.

As work-study techniques were being refined during the first half of the 1900's, behavioral scientists were investigating characteristics of human behavior and performance. They probed the nature of individual differences in areas for which we use such words as "personality," "intelligence," "attitude," and "motivation." Organization theorists examined problems of dividing and coordinating work activities, the consequences of authority structures and regulatory practices, and the influence of motivation on work performance. Organization theorists portray organizations as social systems that survive and grow only when the respective contributions of the participants, including employees, investors, and consumers, mutually satisfy each other.

In the last few decades, work study and behavioral science paths have been merging. Work study no longer concentrates solely on activities that are composed of sequences of body movements. "Human engineering" and "industrial engineering" are two comparatively recent names for efforts to combine work-study and behavioral-science concepts in the analysis of work involving thought and decision-making as well as physical movement. Attention is now given not only to where, when, and how people can be effectively employed in a production process, but also to the sequences of tasks and organization structures that are appropriate to satisfy intellectual and emotional needs and capabilities of individuals. Work study originated in man-machine environments in which most human work was itself mechanistic, that is, rou-

13. Introduction to Work Study, Revised Edition, International Labour Office, Geneva, 1969.

tine and procedural but devoid of the need to do complex thinking. Products of technology are now relieving people from many routine tasks. Human work in contemporary man-machine environments is increasingly composed of activities that involve thought, communication, and decision-making. Modern work study still seeks optimum mixes of resources and productivity, but "productivity" is undergoing redefinition to fit new types of work.

Libraries are good illustrations of organizations profoundly affected by a gamut of technologies from printing to computing. Directly or indirectly, technologies have increased the number, size, and scope of libraries and the volume and variety of demands on libraries. Work in libraries has become more complex and more interrelated with the work of other organizations. Size, complexity, and interdependency are the factors that initiated the need for work study, or, stated another way, the need for information that enables management to systematize work activities to attain particular performance objectives. These factors now pressure libraries to obtain similar information for similar purposes.

How is work analyzed?

The work-study definition above includes two distinct types of investigation, method study and work measurement. "Method study" refers to the development and refinement of procedures and techniques for studying work. "Work measurement" refers to use of the procedures and techniques in studying work and acquiring data about work performance. Part 3 of this document discusses method-study concepts. Part 4 provides work-measurement illustrations for libraries.

Work-study techniques have evolved from pragmatic analyses of work. These analyses have shown how the particular work being studied should be subdivided and the units in which the work should be measured. Over time, as knowledge and experience accumulated, generalizations were made about the techniques and they were classified into types. Generalizations were also made about how work should be subdivided for the different levels of data aggregation that are needed to assess work performance. Since knowledge of these subdivisions is basic to all of the techniques, definitions for them are given first in the discussion below. It should be noted here that neither the terminology nor the subdivisions are completely standardized. The terms and definitions employed in this document are those the author deems most appropriate for the analysis of library work.

The subdivision of work directly relates to the system analysis model given on page 4. The work-components structure is composed of work descriptions at the lowest levels of detail. These are the levels at which performance data are collected. The organization/program structure is determined by examining alternative ways of grouping work components to most effectively accomplish the performance objectives with the resources that are available. The work data for performance at the organization/program levels are derived

or aggregated from the so-called "raw data" obtained at the work-components levels. Thus work study is an essential element of system analysis and it needs input from the higher levels of system analysis to yield maximally useful information.

Some consensus exists on the name assigned to the most detailed level of subdivision for work measurement; this is called the "task":

> A task is a discrete and distinct component of work at the greatest level of detail deemed appropriate and convenient for observation, measurement, and analysis.[14]

The first level of aggregation of work components is called in this document the "activity" level:

> An activity consists of a sequence of two or more tasks that are required to perform a function or to yield a unit of production; the sequence may include repetitive and occasional tasks.[15]

The second level of aggregation of work components from an organization point of view is called the "operation" level:

> An operation consists of a set of two or more activities that are required to perform a process; the process is usually describable in units of production that are composites of units at the activity level.[16]

The second level of aggregation of work components from a human performance point of view is called a "job":

> A job is a set of one or more activities assigned to a person to perform; the set may include repetitive and occasional activities.[17]

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14. This definition of "task" is an elaboration of the definition in the ILO document cited in Ref. 13. However, the ILO uses the term "element" rather than "task." Many U.S. work-study texts use the term "task" and the author believes that "task" is a more definitive and better understood term.

15. This "activity" definition is an adaptation of ILO's definition for "work cycle." This document's use of the term "activity" is comparable to Aslib's use of the term "procedure" in a work study reported in: P. A. Thomas & H. East, The Use of Bibliographic Records in Libraries, Aslib, London, 1969, Aslib Occasional Publication No. 3.

16. The Aslib study cited above calls this level of aggregation the "operational sub-system" level.

17. ILO does not provide a definition for "job;" the definition here is believed to be within the spirit of ILO's use of the term "job."

The third level of aggregation of work components from an organization point of view is called the "subsystem" or "program" level:

> A subsystem or program consists of a set of one or more operations that are required to achieve one or more performance objectives of the system.

Some cautionary comment should accompany this use of the term "subsystem." The term is strictly applicable to the first level of subdivision of the organization determined in the process of "top-down" analysis. Size and complexity of an organization may result in several levels of major subdivision. The "bottom-up" construction of work components discussed above is not affected by "top-down" subdivisions necessitated by size and complexity. When several levels of "top-down" subdivision exist, they may, in system parlance, be called "subsystem," "sub-subsystem," etc., or they may be given other names for intelligibility. The author compressed all levels of "top-down" subdivision into the term "organization/program structure" to allow for size and complexity differences.

Several terms were used in the above definitions that were not defined. "Function" refers here to an output resulting from the performance of a group of related tasks. "Process" refers to a succession of activities interlinked in a chain of causation that starts with the beginning and ends with the completion of a production cycle. The terms "repetitive" and "occasional" anticipate different frequencies of occurrence of tasks and activities. A task may or may not have to be performed during each performance of an activity. In the activity of bibliographic verification, for example, policies may prescribe the order of performance of search tasks, and the location of particular items of information may terminate the activity before all of the possible tasks in the search sequence have been performed.

Applying the definition of "task" to work requires judgment. Use of the prescription, "greatest level of detail," in industry has resulted in task descriptions referring primarily to body movements, for example, "pick up a part," "put aside a workpiece." This author believes that such subdivision of work borders on meaningless fragmentation that is neither convenient nor appropriate to library work. ILO guidance for task description, though intended principally for manual industrial work, is useful when paraphrased as follows:

a. Task descriptions should represent naturally unified and recognizably distinct segments of work.

b. Tasks should have recognizably definite beginnings and endings.

c. Tasks should be easily identifiable from their descriptions so that they can be repeatedly and consistently performed, observed, and measured.

For both task description and decision-making in the larger context of determining the work to be studied in a work study, another ILO construct is also helpful. Adequacy of task, activity, and other descriptions, as well as the design of the work study, can be checked against the following questions:

	Information Collection	Analysis & Assessment	Evaluation
PURPOSE:	WHAT work is being done? WHY is it being done?	What ELSE might be done? What SHOULD be done?	Is UNNECESSARY work being done? Can it be ELIMINATED?
PLACE:	WHERE is the work being done? WHY is it being done in that place?	Where ELSE might it be done? Where SHOULD it be done?	Can the work be COMBINED or REARRANGED for more effective results?
SEQUENCE:	WHEN is the work being done? WHY is it being done at that time?	When MIGHT is be done? When SHOULD it be done?	
PERSON:	WHO does the work? WHY is it being done by that particular person?	Who ELSE might do it? Who SHOULD do it?	
MEANS:	HOW is the work being done? WHY is it being done in that particular way?	How ELSE might it be done? How SHOULD it be done?	Can work procedures be SIMPLIFIED?

The above is an amplification of the WHAT, WHERE, WHEN, WHO, HOW series of questions that is often suggested as a checklist to ensure completeness of the work descriptions and the scope of a work study. The topics of the questions, namely PURPOSE, PLACE, SEQUENCE, PERSON, AND MEANS, also disclose the reasons for asking them. Work studies are made not only

a. To ascertain the characteristics of and performance measures for work in an existing system

but also

b. To pinpoint work situations needing modification or change, and

c. To determine the types of changes that must or could be made.

What procedures are used to study work?

Work-study techniques are often classified by the mode of data collection they employ. On this basis, the principal techniques are:

1. Time study
2. Work sampling
3. Predetermined motion-time study
4. Records analysis
5. Estimation

Time study and work sampling both acquire data by direct observation and measurement of the performance of tasks. Predetermined motion-time study combines direct observation of motions required to do work with synthesis of performance times from previously acquired data on expected performance times for each of the motions. Records analysis employs historic data, work records, or previously obtained work-study data. Estimation relies on the knowledge, practical experience, and judgment of the data source rather than on actual measurement. Time study is the most frequently used technique.[18]

Time study is defined as:

> the analysis of work for the purpose of determining the time that it should take a qualified person, working at a normal pace, to do the work, using a definite and prescribed method.[19]

Time study is often employed in industry to obtain data for wage incentive plans, but its results are equally needed in the planning and scheduling of work, in estimating costs and preparing budgets, and in assessing both the efficiency and the effectiveness of work.

A time study consists of the following procedural steps:

(listed on the following page for enumeration in their entirety)

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18. The discussion of work-study techniques in this document is intended to provide only a general familiarization with terms and basic procedures. Two recommended sources of detailed information on work study, in addition to the ILO document cited in Ref. 13, are: Ralph M. Barnes, Motion and Time Study, Design and Management of Work, Sixth Edition, John Wiley & Sons, Inc., N. Y., 1968, and Edward V. Krick, Methods Engineering, Design and Measurement of Work Methods, John Wiley & Sons, Inc., N. Y., 1962.

19. Motion and Time Study, ibid., pg. 715. Several words in Barnes' definition have been changed to terminology used in this document.

A time study consists of the following procedural steps:

1. Establishing the purpose of the study
2. Securing performance information about the work to be studied
3. Preparing a task and activity analysis of the work
4. Determining the data elements by which the work will be measured
5. Designing the data collection procedure
6. Obtaining the performance data
7. Analyzing and assessing the performance data
8. Implementing the results and conclusions

The discussion of purpose in relation to the system analysis model indicates that a statement of purpose serves as an overall directional device for an undertaking. "Purpose" for work study specifies the reasons for examining particular categories of work. The purpose of a given study is usually to meet one or more of the needs associated with the time study definition above. The scope of a need can range from concern about the details of an activity to the performance of an entire subsystem. The name, "time study," derives from its focus on time as the principal data element that is measured. Since time is convertible to cost, time studies frequently furnish the raw data for cost analyses.

A preliminary understanding of details of the work to be studied is best obtained from discussions with supervisors of the work and with individuals who do the work. Job descriptions, procedure manuals, and other written documentation of the work must be examined, but these are not substitutes for information from people immediately responsible for the work. People gain perspectives about the work they do and they develop work procedures that may differ from the organization's specifications and expectations. Often, a worker makes modifications through the application of his intelligence and experience that are more efficient or more realistic to the work environment. Even a person who is going to study his own work is likely to see aspects of the work in a different light when he looks at them analytically.

Preparing task and activity descriptions is an iterative process. First drafts are not likely to be final drafts. First drafts should be verified with the persons who perform the work and with supervisors. The descriptions should accord with the definitions for "task" and "activity"; thereby, they are immediately related to decisions on data elements by which the work will be measured. Two units of measure are the most common: time of performance and quantity of product output. Although many library tasks and activities are not conventionally thought of as yielding products, such outputs as people served, items loaned, requests processed, items cataloged, and serials acquired describe products. Each of the cited outputs is amenable to further subdivision. The "people served" product of a school library, for example, can include students of different classes or grades, teachers

of different subjects or grades, the principal, counselors, other school staff, parents, and individuals employed in other schools who use the library. It should be noted that these products, not the time to perform various tasks, are the meaningful measures of work done by a library. These products reflect the purpose of the library's existence and constitute the accountability data for the library. It is therefore important, in determining the data elements for tasks and activities, to enumerate the types and categories of product to which the tasks and activities directly and indirectly contribute and to collect data on these contributions.

Most industrial time studies are done by work-study specialists. Work data are collected by trained work-study staffs. Several instruments may be used for recording data, including forms, motion pictures, stopwatches, and automatic recording devices. The nature of many library tasks suggests a modification of industrial practice. Many library tasks involve mental work ---- making decisions, reasoning, directing, planning. Many motions that are executed in the performance of these tasks are subsidiary to the purposes of the tasks and are not meaningful in themselves. Library personnel who perform mental tasks are in the best position to know when they perform them and the duration of this performance. Thus, while personnel skilled in work-study design and data analysis may be needed, library personnel are likely to be the most suitable data collectors and recorders. Supplied with well-designed forms, librarians, rather than alien observers, could administer work-study techniques to themselves. The work-measurement illustrations presented in Part 4 are designed for self-administration. Training is necessary for whoever collects data; library personnel are likely to be more readily trainable on tasks they are familiar with than observers.

The data collection procedure must specify the working conditions during which the data are to be collected and the period of data collection, in addition to the data collection instruments to be employed and their mode of administration. Time studies are usually conducted over a continuous time period; the collection of data intermittently is a characteristic of work sampling techniques . The time period depends on the quantity of data deemed adequate for decision-making. Adequacy, in turn, depends on the purpose of the decision-making and the duration of the tasks. The need for a rough estimate of duration and quantity of output or the need for reliable, repeatable measures for budget forecasting suggest, in one instance, perhaps 10 to 20 sets of data, and in the other, probably several hundred. Extensive consideration of the size of the data sample appears in the Barnes and Krick texts cited earlier. Since the limited number of library work studies that have been reported often evidence insufficient data collection for their stated purposes, it seems advisable to make the general statement that the confidence that can be placed in quantitative results, both statistically and managerially, depends on adequacy of the data. Work study costs money, mostly because of the labor it consumes. To invest sufficiently in other steps of a work study but not in data collection is exceedingly cost-ineffective.

Time-study data are often used to determine standard performance times. ILO's definition of "standard performance time" is:

> the total time in which work should be completed at standard performance, i.e., work content, contingency allowance for delay, unoccupied time and interference allowance, where applicable.[20]

"Standard performance," used in the definition, is defined as:

> the rate of output which qualified workers will naturally achieve without overexertion as an average over the working day or shift provided they know and adhere to the specified method and provided they are motivated to apply themselves to their work.[21]

ILO's definition for "work content" includes a "relaxation allowance." Contingency and relaxation allowances recognize the presence of irregularly occur--ring delays that are part of the work and an individual's need for some personal time during a work day. Discussions with personnel and training of personnel were mentioned above as essential parts of work study. Training includes an explanation of study purposes and of definitions of terms. Initial hostility to the concept of setting performance times for work frequently disappears when the above definition is communicated. A work time must and does take into account delay time, personal time, and time for human mental and physical recovery from one task before beginning another. It should be noted that all of these types of time must be measured in data collection.

The adage that a picture is worth a thousand words finds application in the reporting of work-study data. One of the work-measurement illustrations in Part 4 pertains to library instruction activities. If a librarian develops instruction sequences integrated with several school programs, times expended in preparing the instruction (Task 7, page 33) could be displayed on a line graph or a bar chart as shown in Figures 2 and 3. Alterna-

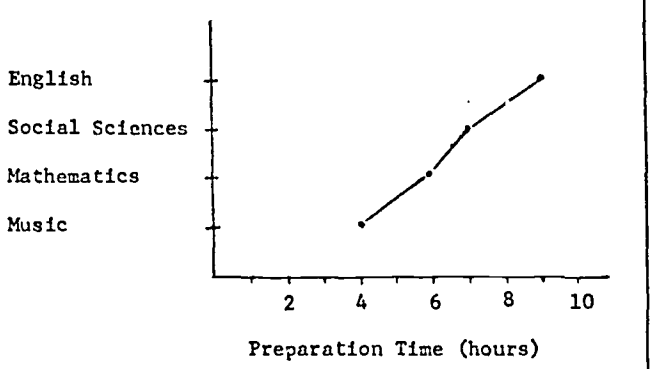

Figure 2. Line Graph

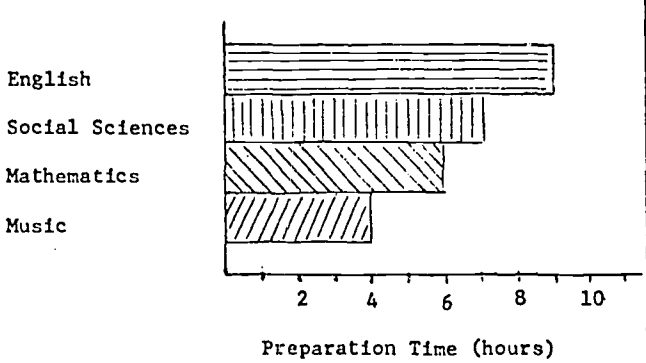

Figure 3. Bar Chart

20. Introduction to Work Study, op. cit. (Ref. 13). ILO's definition has been modified by substitution of the word "work" for "a job" as the sixth word.

21. Ibid. This is ILO's definition unchanged.

tively, total time for the activity for each school program, or a summary of times for several of the tasks for each of the school programs, could be similarly graphed. As employed in the above Figures, the line graph and bar chart not only display times but also permit a comparison of work on different programs. Flow diagrams, layouts, and control charts are devices for portraying sequences of work tasks, physical arrangements of work environments, and performance outputs, respectively. Flow diagrams and layouts are usually prepared in conjunction with task analyses. A typical control chart is shown in Figure 4. The heavy center line represents an average or standard perfor-

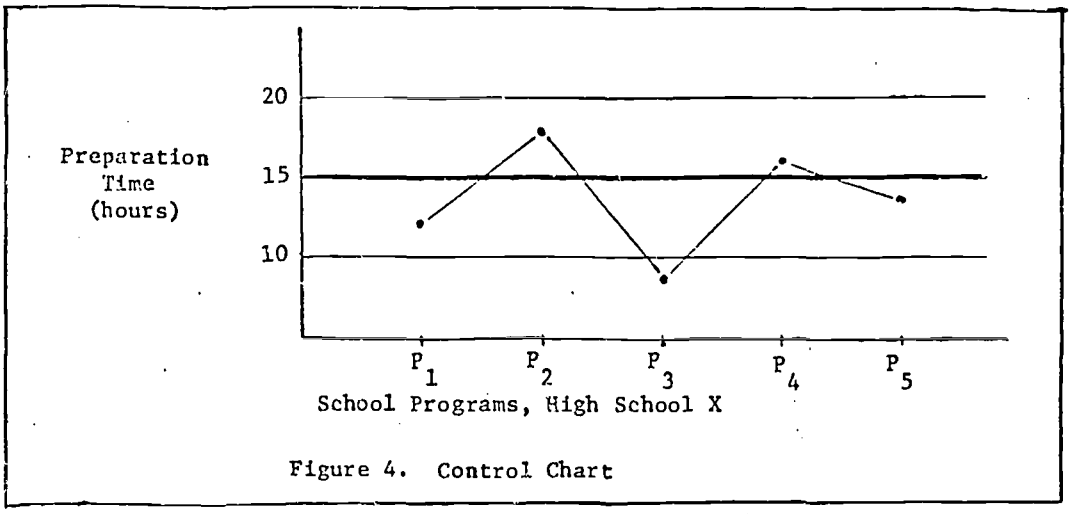

Figure 4. Control Chart

mance time or other work measure computed from study data. The parallel lines above and below the center line depict the performance boundaries that the librarian or work-study specialist has determined to be permissible or allowable. If, for example, work-study data collected for the high-school libraries in a district yield an average instruction preparation time of 15 hours, high-school librarians can monitor their subsequent preparation work with the illustrated control chart. Points have been plotted on the chart for five programs. The points can be interpreted as indicating that all but the work time for Program P_3 were within expected performance bounds. Points outside the boundaries are signals for inquiry. This elaboration of the control chart is provided because it has proved a useful "management by exception" tool in industry and it is likely to be appropriate for some library tasks. "Management by exception" refers to the practice of managerial intervention in the performance of work only when the work output differs from prescribed limits. Parenthetically, flow diagrams, layouts, and control charts should not be overlooked as employee training devices, since they are all descriptive documents about the work being performed.

Implementing work-study results refers to using the study data to complete the study purpose, and also to exploiting the data for improvement and change that the data show to be needed. Any study of a system, regardless of its initial purpose, should "feed back" to the system, that is, its findings should be compared with performance in the system as a check on the system design and to identify actual or potential trouble spots. However, the presence of data showing departures from desired performance is not necessarily a signal for immediate change. These data only advise either that the

particular tasks and activities be restudied or that alternative configurations be studied before substitutions are made. This strategy does not apply to minor changes for which benefit or payoff is obvious, but it does apply to changes that could affect the performance and sequencing of other work in the system. A change can not only reverberate elsewhere in the system but it can also require personnel training or equipment that the system budget cannot afford. The significant point is that results should not be ignored. The implementation of alternatives the data suggest may have to be deferred, but the ability to prove the existence and magnitude of a problem is an advanced step toward its solution.

Work sampling employs the same procedural steps as time study. The principal distinction between the two techniques lies in the type of information that is sought with each. Time study provides performance data for particular types of work. Work sampling obtains performance data, but principally from the perspective of the proportions of time spent in performing different types of work. In work sampling, data are recorded at intermittent (usually random) intervals over a time period, whereas time-study data are usually recorded over a continuous time period. Work-sampling results give a picture of how time is distributed during a work day or work week on different tasks.

The term, "sampling," refers to an important aspect of the design of the data collection procedure. In conjunction with determining the number of observations to be made (often called the "sample size"), the total time period for data collection and the intervals during which data are to be recorded must be ascertained in accordance with rules for sampling. Because sampling provides data for parts of a work pattern but not for the entire continuous pattern, the data collection procedure must ensure that the intervals are representative of the entire period and that errors arising from the interval selection process do not exceed prescribed limits. The rationale for sampling rather than continuous data collection is that sampling is less time consuming, creates less interference with normal work progress, and is a more realistic measurement procedure when many tasks are performed irregularly over a time period.

Time study and work sampling are both valuable for obtaining library work data. After a preliminary system analysis of a library is made, the task, activity, and operation descriptions determine initial directions for work study. Knowledge and experience provide approximate information about times and distributions of tasks and activities. In small-staffed school libraries, for example, many tasks are performed by a single individual throughout a work day; some tasks are performed infrequently during a work week, a work month, or a school period. This pattern suggests the use of work sampling to acquire data on proportionate distributions of time. The pattern also suggests an adaptation of the work-sampling technique. Data collection at intervals during a work day or work week is less likely to show the true task distribution than a continuous record. A work day or no less than a three- or four-hour period in a school library is a more accurate reflection of a work cycle for many librarians, paraprofessionals, and aides than a shorter time interval. Accuracy and adequacy criteria thus suggest the work cycle as the basis for selecting the time period for data collection rather than the performance time of particular tasks or activities. Sampling may be applied to

the entire period of data collection; for example, work-days for continuous data collection may be selected randomly over a month or school period to achieve the criterion of representativeness. Intermittently scheduled activities such as visits to a public library or meetings with teacher committees may call for "systematic" sampling, that is, data collection for all or selected occasions of their occurrence. Time study, that is usually employed to give more detailed performance data on specific tasks and activities than work sampling provides, can then be applied to particular work for which such performance data are desired.

Several predetermined motion-time study schema have been developed for industrial applications. Work is observed and subdivided into the elemental body movements involved in performing it. Standard performance times are determined for these movements. The performance time for a given type of work is then computed from a knowledge of the movements required to do the work by appropriately combining performance times for the elements. Shorter work-study periods and greater accuracy and consistency of results are claimed for this technique.

The principle on which the predetermined motion-time study approach is based, that total performance can be determined as a sum of parts, has applicability to some library work. It seems likely that some library tasks are discrete work segments that can be performed in a uniform way within a given period of time to yield a prescribed output. The performance time of an activity composed of a sequence of such tasks could be obtained from a knowledge of the tasks to be performed. Librarians have resisted implications that library work can be standardized to this degree because of uniquenesses that exist from library to library and in the performance of technical and patron services. Other worker groups have similarly resisted performance measurement and standardization. The intent of work study, however, is not to impose artificial strictures on work but to reveal the anatomy of types of work sufficiently so that an organization and its employees can both have a realistic appraisal of performance expectations. Human beings exhibit frustration and lose motivation in environments that are disorganized or when they are assigned work they consider unproductive, redundant, or futile. Work study is not only a tool of management but also a vehicle by which individuals can express their perspectives and experience regarding their work. Standards are an ultimate result of work study, but they are only one of many results and they are introduced only where they are applicable. Work study in libraries may now be far from standards development, but predetermined performance specifications can be anticipated.

The extent to which records analysis can suffice for a work study depends on the work-study purpose and on the information content of the records. Typical logs designed for purposes other than work study may show only total volumes processed or merely that certain tasks were or were not performed. Equipment logs may show hours of operation or quantities of output. Summary reports usually provide aggregate data on material flows (input, output, and in-process quantities) through a work unit and an enumeration of personnel types and hours worked on various tasks. Records containing the foregoing categories of information may permit a determination of the activities that are performed, approximate expected outputs, frequencies of performance, and possibly some relationships among activities. Such records may be adequate

to supply data estimates, but the nature of the data-collection circumstances may have to be taken into consideration in assessing the accuracy and reliability of the estimates. They should not, however, be used by themselves to establish performance times or production requirements.

Work study can have a beneficial influence on a system's records structure. Work study can disclose the categories of data a system should report to reflect the system's products and performance for accountability and other managerial purposes. This information can feed back into the design of routine reporting forms that can yield data amenable to cumulation in output categories. After performance characteristics and output measures are ascertained for the services provided by a school library, for example, one or more reporting logs and reporting procedures for rapidly noting the occurrence of these services could be designed (see Part 4). Thereafter, the logs can be monitored for conformance with work-study results and can suffice as the principal data source for retrospective documents, budgets, and forecasts. This reflects an intended benefit of system analysis and work study. The initial application of both to a system is arduous and brings little joy to participating personnel. If a grin-and-bear-it attitude can be maintained during the process, a tool should result that personnel can use to show the magnitude and significance of their work to themselves and others. The author knows that these words are not likely to convince, but experience does.[22]

The last of the work-study techniques listed above, estimation, employs the knowledge and experience of personnel for work descriptions. This source of data is essential to acquire background information about work, an understanding of activity interrelationships, and factors that are often called "intangibles." Intangibles may refer to preferences and reasons for preferences among alternative ways of doing work, to relationships among individuals that may be productive or unproductive with respect to work, or to constraints and uncertainties in the environment external to the system that are perceived as affecting work in the system. Estimates and subjective data cannot be ignored as inputs, but they cannot be employed by themselves to formulate work specifications. Decision-making is a mental activity mainly because it involves the weighing of subjective factors that cannot be totally quantified. Nevertheless, work that is not described, measured, and made as explicit as it can be results in confusion, inequities, and employee dissatisfaction if not chaos. A charge of use of subjective rather than objective measures or standards usually accompanies a complaint of "unfairness" in a work situation. Additionally, behavioral science data show that, although human beings can cope with complexity and uncertainty, the high degree to which people are exposed to these factors in modern environments necessitates a reduction to specifics of those activities than can be so reduced. Thus, estimation should be used for the information it provides about work and work relationships but it must be cojoined with a more definitive work-study technique to meet human and system needs for specificity.

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22. The following quotation appears in the report of a library work study made over thirty years ago: "Of the many small duties that are mine, I found that each was of significant importance to some major branch of the library's efficient service to the public.... My status as a worker in the library is that of page. I do not want to sound conceited or swell-headed, but I am proud to say that I found myself a more important cog in the function of more than one department, after keeping a record of my daily activities than I had realized." Emma V. Baldwin & William E. Marcus, Library Costs and Budgets, A Study of Cost Accounting in Public Libraries, R. R. Bowker Co., N. Y., 1941, pg. 152.

PART FOUR

WORK-STUDY APPLICATIONS TO SCHOOL LIBRARIES

How is library work described?

A discussion of work-study applications is most realistic when it pertains to specific work in actual work environments. The mere selection of a particular type of environment, in this document the school library, is not sufficiently concrete for the consideration of work in a particular school library. The dilemma faced by the author in writing this section, and that may be encountered by readers, is immediately apparent. To focus on the subdivision and performance of work in one school library would necessitate introducing the characteristics and constraints pertinent to that library that affect the decisions that library must make in regard to its services, its collections, etc. This specificity would limit the scope of general applicability this document hopes to achieve.[23] On the other hand, to discuss work as it might be conducted in a hypothetical library may result in illustrations having no real-world counterparts. Part 4 attempts to tread a middle ground with illustrations adaptable to real environments.

Guidance for the analysis of library work at the higher levels of system purpose, goals, and performance objectives and at the levels of operations, activities, and tasks can be found in many professional society publications as well as in an increasing number of other monographs, reports, and journal papers. Most of the sources, however, are not concerned with work study per se, and their guidance does not permit immediate translation into performance measures that a particular library could employ or into formats useful for data collection. Work in school libraries has had the good fortune of being recognized for attention by the Knapp Foundation of North Carolina, Inc. The first phase of a Knapp-sponsored School Library Manpower Project begun in 1968 involved the formulation of descriptions of tasks performed in school libraries. An extensive survey of literature and expert opinion in school librarianship resulted in the enumeration of 300 tasks in 12 "functional categories." Elementary and secondary school libraries meeting specified "superior building level" criteria were asked to designate those tasks among the 300 that they performed and the library personnel who performed the tasks. The 300 tasks are listed in Figure 5 (pages 38-44); the first page of the Survey Instrument mailed to the libraries is

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23. It should be noted that case studies, reports of work study applied to particular libraries, are an extremely important source of guidance. When an extensive record of case studies exists, it will be possible to develop better generalizations than can now be done. Case studies may exist that are unknown outside the environments in which they were done because of a hesitancy against publishing studies deemed partial or inadequate by scientific standards. This author sees no merit in burdening the literature with reports that have no value, but case studies that can help others to anticipate and overcome procedural difficulties as well as those that provide performance yardsticks for comparisons warrant publication.

reproduced in Figure 6 (page 45).[24] Survey responses were assessed by a committee that subsequently produced job descriptions for one paraprofessional and three professional types of school library work.[25] The position entitled School Library Media Specialist is intended to be basic to the other professional positions; it is reproduced in Figure 7 (pages 46-47).

A comparison of the tasks in Figure 5 with the job description in Figure 7 indicates a major difference between these two modes of representing work. The job description can span task and activity levels of work and it reflects the purpose and work goals of the system or subsystem as well as some of the organization structure of the system or subsystem. Task descriptions are discrete specifications of components of work anticipated in the job description but at levels of detail amenable to performance measurement. A schematic depicting the relationships among subsystem descriptions is given in Figure 8. Job descriptions furnish only general

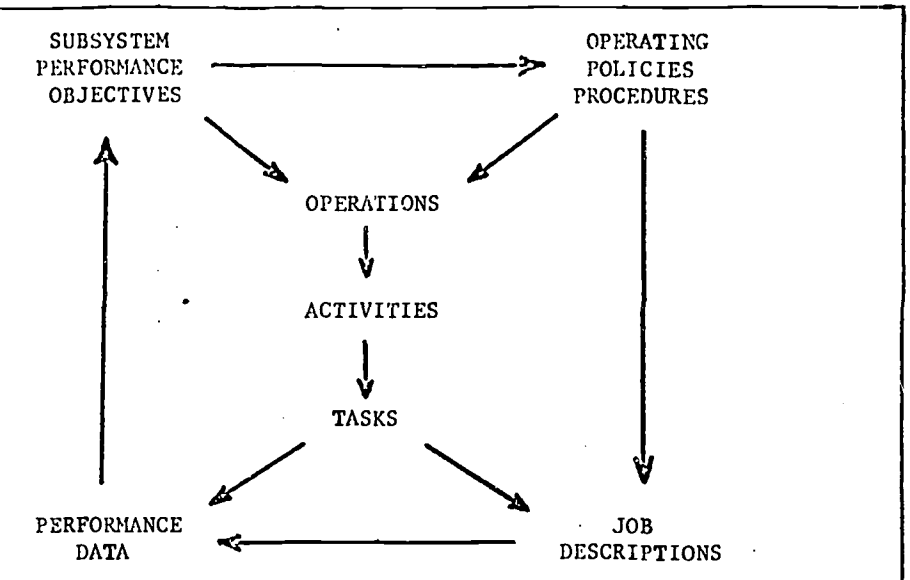

Figure 8. Oversimplified Schematic of Work and Performance Relationships

clues to the detail necessary for work study. For example, the ALA job description states that the school library media specialist

24. The Survey Instrument is: Task Analysis Survey Instrument: Definitions of Terms, Checklist of Duties, Status Profile Sheet, American Assn. of School Librarians, 1969. Data from the survey are analyzed in School Library Personnel Task Analysis Survey, op. cit. (Ref. 6). Responses were obtained from 239 elementary and 455 secondary public and private school libraries located throughout the United States.

25. Occupational Definitions for School Library Media Personnel, American Library Assn., Chicago, 1971. (School Library Manpower Project, Phase I)

> instructs and encourages students and teachers, both individually and in groups, to use materials, equipment, and production techniques effectively and contributes to the in-service education programs for teachers.

How is this implemented? Twenty-six tasks pertaining solely to aspects of instruction in the use of materials and equipment appear in Figure 5. Moreover, other aspects of instruction and encouragement are tasks in other groupings. The following job-description duty is even more vague:

> The school library media specialist informs the faculty and administration of materials, equipment, innovations, research, and current developments in the field of instructional technology.

How does the specialist inform, or how should he inform? Should the specialist utilize one or more of the Listing and Review Services tasks? Are Publicity tasks sufficient? Is Special Work with Faculty Members intended? If the specialist is the only professional member of the library staff, to which tasks should he give preference? Indeed, in this situation, which duties should he sacrifice and how should he priority rank those he has time to perform? Similar work study-type questions are not answered by work descriptions that appear in the 1960 and 1969 Standards cited in Part 2 and in other documents.

Unfortunately, the AASL task descriptions in Figure 5 only provide a direction for elaborating work to performance specificity. Though called "tasks," they are intermediate between duties in job descriptions and tasks amenable to measurement. They are not faulted here; they admirably served the purpose for which they were developed. It must be recognized, however, that in many instances, they fall short of the need to know, for work study, the units in which they can be measured and the way they can be combined or proportionately allocated in a work day or a work week. Additionally, the "functional category" groupings display the usual result of classification. For example, which tasks should be called "instruction" tasks and which "service" tasks? Is not "circulation" a "service?" The rule employed in assigning tasks to categories for the Knapp survey was to place a task in the one group deemed most appropriate by the designers. This pragmatic approach is sensible and is used, for example, in such practical applications as arise in business when decisions must be made on allocating difficult-to-separate labor time expended on two or more products to arrive at the labor cost for each product. Some tasks will never contribute exclusively to one activity nor one activity exclusively to one operation. The overlap problems inherent in classification and in determining allocation formulas, however, suggest, for work study, the importance of identifying outputs and their inputs as clearly and discretely as possible.

To do a work study, the procedural rules discussed in Part 3 specify that, after the study purpose is determined, sufficient information be obtained about the work and how it is performed to permit task descriptions and sequences to be prepared. Since instruction and service tasks yield major outputs of a school library, several of these have been chosen for hypothetical illustrations in this document.

In aiming at realism, the author has relied on results of the AASL Task Analysis Survey. The largest numbers of responses in the Survey were from schools and libraries with the following characteristics:[26]

Enrollment	301-600	601-1000	1001-1500	1500 or more
Number of schools (elementary & secondary)	140	192	145	177
2-3 Paid library staff	123	151	88	67
4-5 Paid library staff	13	26	38	65

The author assumes that a limitation in number of paid professional staff is one of the factors that distinguish "superior building level" libraries from other libraries; it should be noted that "paid staff" in the table above is not synonymous with paid professional staff. Over 90% of elementary and 80% of secondary school library heads reported that they are the personnel who provide instruction in the use of materials (#257) and in basic reference techniques (#266) and who guide the reference and research work of small and large groups (#272). Since 357 (51%) of the heads of libraries hold master's degrees and 267 (39%) hold bachelor's degrees, these individuals seem to fit ALA's occupational definition for personnel who perform "an active teaching role in the instructional program of the school."

Today's education programs emphasize directed instruction to small groups, individualized learning, and independent study. Library instruction that conveys knowledge of how to use library materials and equipment and that supports education programs is similarly shifting from rote training in skills to sequences integrated with grade-level needs and adapted to students' individual learning abilities. It is assumed, for example, that such library instruction program guides as the history guide presented in Figure 9 (page 48) integrates learning about the card catalog, the library arrangement of materials, the use of reference sources, etc., appropriate to the grade level. The following hypothetical illustration of a task sequence for a library instruction program supporting a sixth-grade history program includes the additional assumptions of teacher-librarian cooperation and librarian preparation of a planned sequence of instruction:

1. Discuss sixth-grade history program objectives with the teacher or teaching team.
2. Become familiar with the subject content of the history program.
3. Study the library-related assignments of the history program.
4. Examine and assess the library collection relevant to history program needs.
5. Compose a schedule for the availability of materials and equipment appropriate to history program needs.

26. Data are from Table 4 in the Task Analysis Survey, Ref. 6.

6. Locate and arrange for the borrowing of such supplementary materials and equipment as needed in conformance with the schedule.

7. Prepare verbal and written guidance for students on core information about the catalog, collection, and materials needed for the library-related assignments.

8. Group the guidance information into sequences appropriate to the assignments schedule.

9. Prepare learning packages for individual study, exploratory experiences, and students who need special attention.

10. Group the packages in a sequence appropriate to the library-related assignments schedule.

11. Prepare tests and reporting forms for measuring the learning and use of library materials and equipment stimulated by the library instruction program.

12. Discuss and verify the library instruction program and tests with the teacher or teaching team.

13. Modify the library instruction program and tests in accordance with discussions with teachers.

14. Record the library instruction program requirements in the library's or librarian's time schedule.

15. Deliver the instruction program to students.

16. Administer achievement tests to students.

17. Assess test results in accordance with library goal expectations.

18. Discuss test results with history teachers.

19. Estimate the use of library-provided materials and equipment in the history program.

20. Modify library instruction program in accordance with librarian's, teachers', and students' experiences and judgments on effectiveness of the program.

Each of the tasks except (14) and (19) consumes a discrete, measurable amount of time directly traceable to the activity of library instruction program support of a school program. Task 14 may be performed as part of an overall library schedule development task. An estimate of the time consumed in performing Task 17 may suffice; the significant data of this task are the quantities of use recorded. Other tasks indicate additional units of measurement. For example, Tasks 1, 12, and 18 can be accounted for in terms of numbers of conferences with teachers and Task 15 in terms of the number of units of instruction of different types delivered to counted numbers of students.

It may be contended that the above illustration is excessively detailed. Since the foregoing description represents a single activity or a single type of activity, doesn't it imply a similar analysis for each type of activity, a large undertaking? This question must be answered affirmatively. The expository value of the detail must be appreciated, in addition to its accountability value. The foregoing tasks, or many of them, are in fact per-

formed by librarians who provide instruction programs that support and are integrated with education programs. The extent of this work is seldom credited to librarians because it is unknown to those who benefit from it or pay for it. Also, failure to make components of work explicit often results in their being done unsystematically and less effectively. Performance data are needed for plans and projections, for decision-making on programs that can and cannot be performed. Can school librarians with little staff support convincingly explain their inability to provide a full complement of instruction programs to school boards and taxpayers without performance data? The obvious answer to similar questions is the principal reason for introducing detailed specifications of work in industry; the same rationale applies to libraries.

Some librarians and teachers believe that services to faculty constitute one of the most important outputs of school libraries because teachers are the principal intermediaries between students and library materials and because librarians are better equipped to monitor the proliferation of materials and equipment for educational needs. Through a systematic activity of notifying teachers and other school personnel about new materials and techniques and news in the education community, librarians could increase the number of beneficiaries of their customary review of selection aids and other literature. This is, in effect, enhanced exploitation of an existing activity, a good business practice. A hypothetical illustration is given below of a task sequence for this activity:

1. Become familiar with school's education program objectives.
2. Discuss program objectives and content with teachers and teacher committees.
3. Read resource materials to the degree necessary to gain a content knowledge of the programs.
4. Review and assess current media selection aids, education periodicals, and related literature.[27]
5. Discuss with teachers their preferences for media forms and media information content for their students and for themselves, and interview them on their interests in particular areas of education research and practice.
6. Establish a policy and procedures for routing to teachers notifications about media, current education news, research, etc.
7. Establish procedures and mechanisms for preparing and cumulating notifications for teachers in the library prior to routing.
8. Compile or update list of media selection aids and other literature that are to be scanned and priority rank the listed items in the order in which examination (regular and occasional) is anticipated.
9. Review the listed items, maintaining a log for this task.
10. Prepare notifications for teachers in accordance with their preferences and interests (Task 5), maintaining a log for this task.
11. Route notifications to teachers.

12. Record and analyze responses to notifications, maintaining a log for this task.

13. Act on responses as appropriate, maintaining a log of actions.

14. Compare periodically the notifications routing log with the response log to assess the degree (percentage) of responses.

15. Discuss periodically with teachers the notification procedure and their response patterns to determine the need for modifications.

16. Modify selection and notification procedures as necessary in accordance with feedback, maintaining a record of these modifications.

Each of the above tasks is a discrete work component and is measurable in performance time. Frequency counts are appropriate for Tasks 2, 3, 5, 14, 15, and 16. Records or logs for quantity counts are incorporated in the descriptions of Tasks 9, 10, 11, 12, 13, and 15. Task 10 derives from Tasks 5, 6, and 7. The AASL task listing (Figure 5) refers to such tasks as informing teachers of current educational developments (#293), of new materials (#295), and introducing teachers to new bibliographic tools (#298). These tasks don't indicate the work components by which they are to be accomplished, and their outputs may not be wanted by certain people or in particular environments. Task 5 should result in statements from teachers on their individual information needs and preferences based on the guidance they receive from the librarian on the availability of information that the librarian ascertained during the review performed as Task 4. The teachers' input then enables the librarian to determine the form, content, and frequency of the notifications that will or can be provided. Task 10 can be made more specific when the characteristics of the notifications are known.

The hypothetical illustration above is intended to exclude such reference and information services as bibliography compilations and the preparation of abstracts and reviews. These involve different tasks and, moreover, this author suspects that school librarians don't have the time to perform the in-depth, critical analyses of the literature that these activities require. The AASL Task Survey reports that over 60% of elementary and secondary school librarians do not prepare abstracts of materials (#218).[28] This raises the inference that the writing of reviews and annotations (#219) checked by approximately 50% of the librarians refers principally to brief

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27. See: Flossie L. Perkins, Book and Non-Book Media, Annotated Guide to Selection Aids for Educational Materials, Revision of Book Selection Media, National Council of Teachers of English, Urbana, 1972. The annotations furnish the name and address of the publisher, the cost, the frequency of publication, the purpose, special features, and an assessment of the usefulness for each selection tool. A separate index assembles titles of selection aids of interest to school librarians. See also: Sharper Tools for Better Learning, National Assn. of Secondary School Principals, Reston, Va., 1973. This document presents criteria for selecting education materials and describes procedures for collecting data on them. In Colorado, school libraries served by SEMBCS have available to them the advisory assistance and resources of the Professional Information Center; for periodicals that can be borrowed, see: Classified Magazine List 1973, Southeast Metropolitan Board of Cooperative Services, Denver, 1973.

28. School Library Personnel Task Analysis Survey, op. cit. (Ref. 6), pg. 82.

29. The 1960 and the 1969 Standards cited in Refs. 5 and 9 both have chapters on centralized technical services operations. Commercial products are described in Barbara M. Westby, "Commercial Processing Firms: A Directory," Library Resources & Technical Services, vol. 13, no. 3 (Spring 1969) 209-286. Although somewhat dated, the following paper discusses the advantages to school libraries of media centers: Viola James, "Patterns for Administering the Processing of Resources for the School Library Materials Center (With Affixed Appendices)," in Alice Lohrer, The School Library Materials Center: Its Resources and Their Utilization, University of Illinois, Urbana, 1964, pgs. 33-58. A detailed work study of technical processing is reported in: Lawrence E. Leonard, Joan M. Maier, & Richard M. Dougherty, Centralized Book Processing, A Feasibility Study Based on Colorado Academic Libraries, Scarecrow Press, Inc., Metuchen, N. J., 1969. This study resulted in the specification of standardized technical processing activities (see pgs. 60-62) that are amplified in an appendix (pgs. 262-271). This book is strongly recommended for individuals who plan to conduct library work studies.

30. For example, the preparation of a complete set of library instruction sequences that supports all of the education programs of a school is a major enterprise. Could this work be shared among the school librarians in a school district or, perhaps, among librarians in several school districts that have similar education purposes and work goals? Collaboration could produce outlines that state the performance objectives of the education programs, performance objectives of the related library programs, and tasks for librarians and students together with suggested or illustrative materials and equipment by which the library's objectives could be attained. Librarians could adapt these instruction plans to their particular school situations. If collaboration were a continuing activity, experience could enrich initial drafts and the result could be an instruction manual of considerable value to librarians, and to teachers as well. Two notable efforts of cooperation of librarians, teachers, and administrators are reported in: A Curriculum Guide for the School Librarian in the Elementary School, Board of Education of the City of Detroit, 1961, Publication 4-708 TCH, and A Curriculum Guide for the School Librarian in the High School, Board of Education of the City of Detroit, 1962, Publication 4-711 TCH.

31. A wealth of interactive library program possibilities is presented in The School Library, A Force for Educational Excellence, op. cit. (Ref. 7).

annotations, possibly done aperiodically. The hypothetical illustration above is presented in the belief that it describes an important activity that can be performed in school libraries within prevailing staff and financial constraints. Other information service activities are not elaborated in the belief that they are unrealistic in most school libraries at this time. The current availability of many commercial abstract and review services suggests that school librarians could profitably spend some time in assessing their applicability to school needs (see Task 4 above) and selecting those found relevant.

No hypothetical illustrations are given for the major technical services of acquisition and cataloging because of the trend toward their performance outside the school library by school media centers and commercial organizations.[29] The same reasoning that validates the monitoring of literature by one or two librarians for a staff of teachers applies to centralized processing by one center for many schools. Cost reductions can result when precisely the same operation must be done many times by assigning the multiple instances of performance to one organizational unit. The principal library activities that differ in form and content from library to library are those that provide services to patrons in accordance with patron needs. Though some of these activities can also be centralized, many depend on continuous one-to-one human interaction.[30] Thus, the illustrations in this document focus on activities that should be receiving increased emphasis in individual libraries since justification for the existence and strengthening of individual libraries will increasingly rest on their performance.[31]

Figure 5. School Library Media Center Tasks

The 300 tasks presented below in 12 functional categories were compiled by the Research Division of the National Education Assn. for a survey. The numbers are those that appeared with the tasks in the survey instrument that intentionally scrambled the items. The survey instrument and the document reporting an analysis of the survey results are:

Task Analysis Survey Instrument: Definitions of Terms, Checklist of Duties, Status Profile Sheet. American Assn. of School Librarians, 1969.

School Library Personnel Task Analysis Survey. American Assn. of School Librarians, 1969. (National Education Assn. Research Division Special Report, School Library Manpower Project)

TASKS RELATED TO SUPPORT OF THE SCHOOL'S EDUCATION PROGRAM

56. Participates in curriculum development and revision

57. Assists curriculum committees in selection of appropriate materials for resource units and curriculum guides

58. Assists individual teachers in curriculum planning

59. Conducts evaluation of adequacy and suitability of facilities, equipment, materials, and services with regard to learning outcomes

60. Provides leadership in determining educational objectives of library services

61. Develops long-range plan cooperatively with faculty and administration

62. Plans cooperatively with faculty members to coordinate materials and library activities with curriculum programs, units, and textbooks.

63. Observes classroom work to coordinate library activities with school instructional programs

64. Participates in team-teaching activities

65. Plans and discusses library-involved topics, units, and activities with teachers

67. Develops new uses for materials and equipment

68. Engages in research activities relative to educational media and media center programs

69. Works with teachers to design innovations in instruction

TASKS RELATED TO INSTRUCTION IN THE USE OF LIBRARY MATERIALS AND EQUIPMENT

252. Orients students to library

253. Reviews library rules and procedures

254. Plans sequential program of library instruction

255. Gives incidental instruction in note-taking and outlining in connection with library work

256. Gives incidental instruction in library skills

257. Gives instruction in the use of materials

258. Gives instruction in the use of audio-visual equipment

259. Conducts workshops for teachers in use of materials

260. Conducts and participates in workshops for teachers on production techniques

266. Gives instruction in basic reference techniques

267. Gives instruction in specialized reference books and other materials before class research project is begun

268. Prepares exams in library skills

269. Scores exams in library skills

270. Evaluates students' library skills and performance and informs teachers of results

271. Assists with independent study

272. Guides reference and research work of small and large groups

273. Assists with assignments done in the library

274. Guides in organizing and presenting written and oral book reports

Figure 5. (cont)

275. Listens to oral book reports

276. Evaluates students' special library projects

277. Helps students learn to interpret figures and numerical relationships

278. Helps students learn to read maps and understand the language of geography

279. Assists students to develop competency in listening and viewing skills

281. Develops and directs individual reading guidance programs

282. Guides and directs small reading groups

283. Conducts activities for sharing reading

SPECIAL SERVICES TASKS

(a) Special Audiovisual Services

198. Sets up audiovisual equipment such as projectors and tape recorders

199. Operates audiovisual equipment such as projectors and tape recorders

200. Gives assistance when equipment emergencies occur

261. Assists teachers and students in the use of production techniques

262. Assists students and teachers with taping sessions

263. Monitors use of electronic teaching equipment

264. Assists teachers and students in locating and selecting materials

265. Assists teachers and students in using teaching equipment and materials

(b) Listing and Review Services

217. Compiles materials lists

218. Abstracts printed materials

219. Writes reviews and annotations

220. Maintains file of teacher and student evaluations of films and other audiovisual materials previously used

221. Compiles review files for books and other materials

(c) Reference and Reader Services

222. Administers inter-library loan services

223. Answers ready-reference questions

224. Performs general reference services

(d) Publicity and Information Services

225. Develops media center handbook for teachers and students

226. Prepares and distributes notices, bulletins, and other publicity materials

227. Plans, prepares, and arranges bulletin boards, displays and exhibits

228. Plans, organizes, and supervises book fairs

229. Participates in book fair activities

230. Initiates projects and activities relating to the library and its resources

231. Plans and presents assembly programs

(e) Service for Special Interests & Activities

232. Visits classrooms to give book talks

233. Introduces materials of special interest to class groups

234. Suggests related materials, ideas, and resource people for classroom units

235. Informs teachers and students of radio broadcasts and TV programs

236. Organizes and conducts special activities for interest groups

237. Organizes and advises library or book club

238. Organizes and leads literary and book discussions

239. Plans and conducts picture book hours

240. Plans and conducts story hours

241. Plans and directs special observances of book and library weeks, holidays, etc.

242. Supervises noon leisure-time activities

243. Reads aloud to children

244. Assists in and provides materials for extra-curricular activities

Figure 5. (cont)

(f) Library Media Center Visits

245. Arranges for and conducts class visits to public and other libraries

246. Prepares class for visit to school library

247. Develops with teachers a plan for students to follow in completing assignments

248. Prepares forms or cards for teachers to give advance notice on library assignments

249. Establishes with teachers procedures for mass assignments involving the use of the library

250. Conducts class visits to the library

251. Maintains schedules of class activities in library

(g) Reading Services

280. Compiles individual reading guidance lists

284. Identifies students with reading and study problems and seeks ways to help them

285. Makes studies of students' reading habits and interests

286. Assists with vacation reading program

(h) Guidance & Counseling Services

287. Observes students in need of counseling and informs counselors

288. Keeps a record of each student, including such information as progress, reading record, interests, needs, and abilities

289. Identifies exceptional students (slow learners, advanced learners, etc.) and provides worthwhile experiences and materials for them

290. Participates in or conducts guidance conferences with teachers and/or parents regarding individual students

(i) Special Work With Faculty Members

291. Orients faculty to library program, materials, and services

292. Gives book talks and reviews at faculty meetings

293. Informs faculty of innovations, research, and current developments in education

294. Informs faculty of available in-service workshops and courses, professional meetings, and educational resources of the community

295. Informs teachers of new library services, materials, and equipment

296. Promotes use of professional library

297. Posts and reviews professional materials

298. Introduces teachers to bibliographic tools in subject disciplines

299. Assists teachers in locating bibliographic data

300. Maintains cumulative records of work with teachers, including individual conferences, class visits to the library, and visits by the librarian to the classroom

CIRCULATION OF MATERIALS & EQUIPMENT TASKS

180. Establishes policies and procedures for circulation of materials

181. Sets up and organizes circulation desk daily

182. Pre-stamps date-due cards

183. Charges, discharges, and renews materials and equipment

184. Files charging cards

185. Cards or slips books and other materials

186. Maintains circulation files and records

187. Reviews circulation records to write and send overdue notices

188. Maintains lists of overdue and missing materials

189. Computes, collects, and records payments for overdue, damaged, or lost materials

190. Reserves materials and equipment

191. Locates requested materials and informs user of availability

192. Informs teachers and students of inability to fill requests

193. Calls in materials on loan when required elsewhere

194. Checks lists and bibliographies to determine whether materials listed are available in the collection

195. Plans systems of scheduling and delivery of materials and equipment

196. Schedules use of materials and equipment

197. Delivers and collects materials & equipment

201. Orders and returns materials and equipment from district and/or other material centers

202. Develops routing lists for distribution of materials

Figure 5. (cont)

203. Routes materials according to pre-established lists or records

ADMINISTRATIVE TASKS

1. Helps to determine over-all library policies
2. Plans library or media center operations and maintenance
3. Confers with administrators and school board concerning library operations, programs, and budgets
4. Plans for expanding program of media services
5. Plans arrangement of library space and furniture
6. Schedules use of facilities
7. Participates in planning and developing satellite centers within the school building
8. Serves in satellite centers within the school building
9. Serves on committees to study and design new media centers
10. Maintains lines of communication with the district administrative offices
11. Recommends criteria for the selection of library personnel
12. Assists in selection of personnel
13. Interprets district administrative regulations and directives to library staff
14. Conducts in-service, or on-the-job training program for library staff
15. Develops procedural manual for library staff
16. Prepares library staff work schedules
17. Assigns duties to library staff
18. Develops job descriptions for library staff
19. Trains student audiovisual aides
20. Trains student library aides
21. Supervises work of the professional library staff
22. Supervises work of the nonprofessional library staff
23. Evaluates work of library staff
24. Makes recommendations relative to appointments, promotions, and transfers of library staff
25. Administers the library program and staff during summer and/or extended hours
26. Arranges for substitutes when library personnel are absent
27. Conducts library staff meetings
28. Supervises practicing librarians from teacher education and graduate library schools
29. Develops necessary forms for operation of the library
30. Determines records and statistics needed
31. Compiles and tabulates data for statistical reports
32. Submits reports to administration
33. Analyzes statistical reports and data
34. Determines, controls, orders, inventories, and maintains supplies
35. Schedules inventory of materials
36. Schedules inventory of equipment
43. Confers with visiting librarians and other guests
44. Writes and edits news articles, promotional materials, and notices for school and local papers
46. Plans and participates in meetings to present the functions and services of the library to parent groups and community organizations
47. Serves as community resource liaison person
48. Plans and implements community relations activities
49. Informs public librarian about school programs, curriculum, assignments, and activities
50. Plans cooperatively with public librarian for joint library activities
53. Determines rules for the conduct of students in library
54. Disciplines students in library
55. Assumes responsibility for decisions concerning disciplinary actions
66. Informs library staff of planned activities and requests
70. Visits other libraries to observe their programs

Figure 5. (cont)

71. Attends and participates in meetings of professional organizations

72. Helps to develop and implement proposals for federal projects and programs

73. Works cooperatively with regional education and library service units

79. Handles complaints and objections to particular materials and services

80. Determines policy for the acceptance of gifts

SELECTION OF MATERIALS & EQUIPMENT TASKS

74. Evaluates existing collections to determine needs

75. Enlists faculty participation and recommendations in evaluating and selecting materials

76. Conducts in-service workshops and training for teachers in evaluation and selection of materials

77. Enlists faculty in formulating a written selection policy for materials

78. Justifies materials selection policy

81. Helps to determine specifications for purchase of audiovisual equipment

82. Helps to determine specifications for the purchase of library furnishings

83. Develops evaluation forms

84. Maintains materials and equipment evaluation file

85. Maintains selection aids for finding new materials

86. Reads books, magazines, professional journals, catalogs, and review sources for background information in selection of materials and equipment

87. Confers with sales representatives to learn of new materials and equipment

88. Arranges for and conducts preview and evaluation sessions of materials

89. Confers with faculty and administration regarding selection of audiovisual equipment

90. Evaluates and selects audiovisual equipment such as projectors, phonographs, and tape recorders

91. Evaluates and selects print materials

92. Evaluates and selects nonprint materials

106. Scans local publications and periodicals for resource materials and information

ACQUISITION OF MATERIALS & EQUIPMENT TASKS

99. Follows up outstanding orders

100. Unpacks and checks new materials and equipment received, and verifies invoices with shipment and order

101. Opens new books and collates pages

102. Assigns accession or copy numbers

103. Posts receipt of periodical issues and determines whether issues are missing

104. Returns materials sent in error

105. Acknowledges gifts and exchanges

ORGANIZATION OF MATERIALS & EQUIPMENT TASKS

144. Establishes cataloging and classification policies.

145. Reads and reviews new materials for the purpose of classification

146. Verifies bibliographic data for cataloging purposes

147. Classifies and catalogs all types of print materials

148. Classifies and catalogs all types of nonprint materials

149. Makes final check on accuracy of cataloging and classification

156. Adapts commercially printed catalog cards for local use

157. Prepares main entry cards

158. Prepares sets of catalog cards from main entry cards

159. Processes added copies, new editions, and recataloged and reclassified materials

160. Determines added entries needed

161. Enters new information on existing catalog cards

162. Prepares shelf list cards for all materials

163. Arranges shelf list cards in correct order for filing

164. Alphabetizes catalog cards for filing

165. Files catalog cards and shelf list cards above the rod

166. Verifies preliminary filing of catalog and shelf list cards to complete filing

Figure 5. (cont)

167. Sorts and shelves books and other materials

168. Files pamphlets, clippings, pictures, and other vertical file materials

169. Reads shelves and information files and maintains them in proper order

170. Plans for reorganization and relocation of materials collections

171. Shifts materials, and adjusts location labels as required

172. Removes from card catalog cards for items withdrawn from collection

173. Processes records for materials withdrawn from collection

174. Compiles and revises book catalogs of print and nonprint materials

175. Maintains accession and inventory records of materials

176. Maintains equipment inventories

177. Maintains reserve collection, assembling and clearing as required

178. Organizes and maintains special collections of print materials

179. Organizes and maintains special collections of nonprint materials

PREPARATION OF MATERIALS TASKS

107. Clips designated items from newspapers and magazines

108. Labels library materials such as pamphlets, pictures, and clippings

133. Determines methods and procedures for preparation of materials

134. Mounts or laminates pictures, clippings, slides, etc.

135. Mounts transparencies and slides

136. Reinforces books, magazines, and other paperbound materials

137. Shellacs or lacquers book spines and covers

138. Sprays maps and pictures with plastic fixative for preservation

139. Makes covers and containers for books and materials

140. Covers books with plastic jackets

141. Inserts current issues of periodicals in plastic covers

142. Puts current newspaper on rods

143. Pastes pockets and date-due slips in materials

150. Places call numbers, classification numbers, copy numbers, etc. in/on books and other materials

151. Stamps ownership mark on all materials

152. Places subject headings on vertical file folders

153. Types cards, pockets, and labels for materials

PRODUCTION OF MATERIALS TASKS

109. Develops and assembles kits of materials

110. Adapts commercial materials and equipment to meet special needs

111. Designs new audiovisual materials for instructional use (i.e., slides, filmstrips, charts, graphs)

112. Designs printed publicity materials, posters, bookmarks, and other graphic displays

113. Operates lettering and drawing devices

114. Hand letters materials

115. Performs routine print shop activities

116. Duplicates or copies print materials for instructional use

117. Microfilms materials

118. Reproduces teacher-made and student-made materials

119. Makes simple display devices for use in instruction (i.e., felt boards, bulletin boards, etc.)

120. Handcrafts dolls, puppets, dioramas, and instructional models

121. Produces specialized materials for curricular or other needs

122. Duplicates tape recordings

123. Develops special tapes for school needs

124. Records meetings, speeches, programs, and performances

125. Directs school-operated radio station

126. Directs school-operated TV station

127. Assists in production of radio programs

Figure 5. (cont)

128. Assists in production of TV programs

129. Photographs school activities and groups

130. Processes and prints photographs

131. Supervises school film production

132. Prepares materials for dial-access and computer equipment

MAINTENANCE OF MATERIALS & EQUIPMENT TASKS

204. Inspects print materials for damage

205. Inspects nonprint materials for damage

206. Establishes policies concerning maintenance of materials

207. Removes from shelves and files books and other materials which need to be repaired, re-marked, rebound, or discarded

208. Repairs books and other printed materials

209. Binds copies of old periodicals

210. Prepares materials for bindery

211. Maintains bindery records

212. Inspects materials returned from bindery, checks bindery invoices, and returns materials to proper location

213. Repairs nonprint materials

214. Makes major repair and adjustment of audiovisual equipment

215. Maintains, repairs, and makes minor adjustments to audiovisual equipment

216. Maintains cumulative records of condition of and maintainence work on equipment

CLERICAL & SECRETARIAL TASKS

37. Assists in inventorying audiovisual and other equipment

38. Assists in inventorying all materials

39. Handles clerical and secretarial aspects of correspondence (i.e., sorting, filing, typing, mailing, etc.)

40. Types notices, requisitions, bulletins, bibliographies, letters, stencils, orders, etc.

41. Assists in sale of paperback books

42. Performs messenger service

45. Maintains publicity records

51. Issues student library cards

52. Takes attendance in library

93. Checks card catalog and shelf list for ordering and duplication of materials

94. Searches for and verifies bibliographic data in trade catalogs

95. Prepares and assembles bibliographic data for ordering

96. Files orders and invoices

97. Receives credit memorandum and invoices and transmits them to appropriate offices

98. Prepares adding machine tape to verify total costs of purchases

154. Duplicates or prints cards for materials

155. Prepares orders for printed catalog cards

RESEARCH DIVISION--NATIONAL EDUCATION ASSOCIATION
SCHOOL LIBRARY MANPOWER PROJECT--PHASE I - Checklist of Duties

February 1969

School _____ Address _____
City State Zip

Person responding _____
Name Title

Listed below are duties performed by personnel in school libraries. Please circle the appropriate number, indicating the position(s) of the person or persons in your building who usually perform each duty. If two or more persons perform the same duty, please circle all numbers that apply. If the duty is not performed, circle the appropriate zero. If the duty is performed by a person or persons other than those indicated below, please specify the position(s) according to the definition of "other" given on the attached sheet of definitions.

Duties	Staff positions									
	Not performed	Head of media center	Librarians	Audio-visual specialists	Technicians	Paid adult clerks or aides	District or contracted services	Adult volunteers	Student aides	Other (please specify)
1. Helps to determine over-all library policies ..	0	1	2	3	4	5	6	7	8	9 _____
2. Plans library or media center operations and maintenance	0	1	2	3	4	5	6	7	8	9 _____
3. Confers with administrators and school board concerning library operations, programs, and budgets	0	1	2	3	4	5	6	7	8	9 _____
4. Plans for expanding program of media services.	0	1	2	3	4	5	6	7	8	9 _____
5. Plans arrangement of library space and furniture	0	1	2	3	4	5	6	7	8	9 _____
6. Schedules use of facilities	0	1	2	3	4	5	6	7	8	9 _____
7. Participates in planning and developing satellite centers within the school building .	0	1	2	3	4	5	6	7	8	9 _____
8. Serves in satellite centers within the school building	0	1	2	3	4	5	6	7	8	9 _____
9. Serves on committees to study and design new media centers	0	1	2	3	4	5	6	7	8	9 _____
10. Maintains lines of communication with the district administrative offices	0	1	2	3	4	5	6	7	8	9 _____
11. Recommends criteria for the selection of library personnel	0	1	2	3	4	5	6	7	8	9 _____
12. Assists in selection of personnel	0	1	2	3	4	5	6	7	8	9 _____
13. Interprets district administrative regulations and directives to library staff	0	1	2	3	4	5	6	7	8	9 _____

Figure 6. First Page of AASL Task Analysis Survey Instrument

Task Analysis Survey Instrument: Definitions of Terms, Checklist of Duties, Status Profile Sheet. American Assn. of School Librarians, 1969.

Figure 7. ALA Occupational Definition for School Library Media Specialist

In: Occupational Definitions for School Library Media Personnel, American Library Assn., Chicago, 1971. (School Library Manpower Project, Phase I)

Note: A section on "Knowledges" is not reproduced in this Figure. The section on "Abilities" appears in the ALA document after the section on "Major Duties."

POSITION TITLE	**School Library Media Specialist**
REPORTS TO	**Head of the School Library Media Center**
SUPERVISES (may include)	**Clerk** **Technician** **Student Assistant** **School Library Media Aide**

The occupational definition for the school library media specialist appears as the first professional level position since it spells out those basic duties, responsibilities, knowledges, and abilities basic to all other professional positions within a fully staffed school library media center.

The occupational definition as stated should be carefully related to each situation, and its application should be judged on what has to be done in any given program. For instance, it is quite possible that a program may require two media specialists, whose joint talents will meet the prescribed definition.

It is recognized that there may be a need for positions requiring additional knowledge and/or experience in a particular area of specialization such as those identified on page 10.

The recommendations adopted by the Advisory Committee of the School Library Manpower Project state that completion of a five-year program will be necessary to meet the qualifications of a fully prepared school library media specialist as set forth in this occupational definition.

ABILITIES The school library media specialist must have the ability to:

interpret content of print and nonprint materials
determine and apply suitable criteria for the evaluation and selection of materials and equipment
involve faculty and students in the evaluation of materials
organize materials and equipment
communicate knowledge of materials and equipment and their appropriate use
apply administrative principles within a structural framework
implement established policy
apply the results of institutional experience to the future development of educational goals
contribute effectively to curriculum development
analyze, evaluate, and apply basic research data
establish rapport with students and faculty
plan cooperatively programs involving many variables
work cooperatively and effectively with the head of the school library media center, other school library media center staff, and teachers
teach students how to use materials and equipment critically and independently
assume a leadership role.

Figure 7. (cont)

NATURE AND SCOPE OF POSITION

The school library media specialist represents the first level of professional responsibility on the school library media center staff. This role includes expertise in the broad range of both print and nonprint materials and related equipment. It incorporates the evaluation, selection, classification, scheduling, and utilization of print and nonprint materials; the evaluation, selection, scheduling, and utilization of related equipment to provide the basis for long-range program change and development.

The incumbent participates as a specialist in instructional media, applying the knowledge of media categories to the development and implementation of curriculum. In addition, the school library media specialist fills an active teaching role in the instructional program of the school through instruction in the effective use of media and equipment.

MAJOR DUTIES

The school library media specialist applies expertise in selection of all materials, both print and nonprint. This includes the evaluation, selection, and acquisition of materials in terms of the criteria established to meet the needs of the instructional program and the variation of pupil, faculty, and community characteristics and interests. The incumbent relates the utilization of materials and equipment to learning situations to serve effectively various instructional and organizational patterns encompassing subject area and grade level instructional needs. The incumbent provides supplementary resources through local production of materials and use of community resources.

The school library media specialist participates in the development and implementation of policies and procedures for the organization of the physical facilities, materials, and equipment to assure optimum accessibility. This includes the organization of circulation procedures and schedules. The incumbent may be responsible for the organization of materials when this service is not performed at the district level.

The school library media specialist serves as a full participating member of curriculum committees and study groups at grade, subject, or department levels. As such, he applies knowledge of both educational principles and media technology to enrich the instructional program. One of the primary responsibilities of the school library media specialist is to know and support the educational goals of the school and community. The incumbent has the awareness of teacher goals and classroom activities necessary to expedite services in the school library media center. Since this liaison function provides the incumbent with information for long-range planning and program proposals to meet the needs of the school, the school library media specialist analyzes and evaluates the present program and makes recommendations to substantiate projected programs.

The school library media specialist provides reading, listening, and viewing guidance for students and teachers and instills an appreciation for the knowledge acquired through the utilization of a variety of media. He instructs and encourages students and teachers, both individually and in groups, to use materials, equipment, and production techniques effectively and contributes to the in-service education programs for teachers. The incumbent answers inquiries and assists students and teachers to locate resources valuable to their educational needs and to the growth of their personal interests and abilities.

The school library media specialist supervises supporting staff as assigned. The incumbent designates duties and trains subordinate staff members, following the established criteria for instructional, technical, and clerical positions. This supervision includes the diagnosis of the strengths and weaknesses of the staff and the assignment of tasks according to the strengths, while providing opportunities to improve the weaknesses.

Using the knowledge of instructional goals requirements, the incumbent participates in the development of procedures and the recommendation of policies. These procedures and policies must provide an acceptable program for evaluation, correction, and improvement which permits the flexibility necessary to meet the objectives and instructional methods of the school.

The school library media specialist informs the faculty and administration of materials, equipment, innovations, research, and current developments in the field of instructional technology. The incumbent participates in implementing an appropriate public relations program designed to communicate the philosophy and goals of the school library media center to the students, faculty, administration, and community.

The school library media specialist has the expertise as stated above. Through the attainment of additional knowledge and/or experience, he may elect to pursue a particular field of specialization, such as:

Subject area and/or grade level: an expertise in a particular subject discipline and/or grade level and a depth of knowledge in materials appropriate to the educational objectives of the subject discipline and/or grade level.

Organization of materials: an additional expertise in the organization of media, including the classification of print and nonprint materials

Media production and design: additional expertise in such areas as message design, production, photography, and graphic arts.

Media technology: additional expertise in such areas as reading and language laboratories, programmed instruction, dial access, computer technology, random access, electronics, radio and educational television, and communication systems

Figure 9. Library Instruction Program Guide

This is one of the program guides developed by Shirley A. Pittman, McIntyre Elementary School, North Hills School District, Pittsburgh, Pa., and reproduced in: Ruth A. Davies, The School Library, A Force for Educational Excellence, R.R. Bowker Co., N.Y., 1967, pgs. 90-91.

PITTMAN LEARNING GUIDE—HISTORY

Card 1

The History of Our America
Unit: America Moves West
Topic: What was the Pony Express?

Sub-topic 1: When did the Pony Express begin and what were the qualifications required of the riders?

SOURCE A—
Miers, Earl S. *Wild and Woolly West.* Rand-McNally. 1964. pp. 143-147.

and/or

SOURCE B—
Adams, Samuel. *The Pony Express.* (Landmark Series) Random House. 1950. pp. 3-53.

Sub-topic 2: What route did the Pony Express follow? How long did it take the mail to go from St. Joseph, Missouri, to San Francisco? How much did it cost to send a letter in 1860 and in 1861?

SOURCE A—
Buehr, Walter. *Sending the Word.* Putnam. 1959. pp. 68-72.

AND

SOURCE B—
Miers, Earl S. *Wild and Woolly West.* Rand McNally. 1964. Map. pp. 150-151.

Card 2

Sub-topic 3: Who were some of the Pony Express riders and what adventures did they have?

SOURCE A—
Collier, Edmund. *The Story of Buffalo Bill.* Grosset & Dunlap. 1952. Chapter 12 "Riding the Pony Express."

and/or

SOURCE B—
Larom, Henry V. *Bronco Charlie, Rider of the Pony Express.* Scholastic Book Services. 1951.

and/or

SOURCE C—
McCall, Edith. *Mail Riders: Paul Revere to Pony Express.* Children's Press. 1961.

(1) Bill Hamilton pp. 85-98.
(2) Billy Campbell pp. 99-109.
(3) Bob Haslam pp. 110-127.

Optional Topic 1: What kind of horses were used for the Pony Express?

SOURCE —
Mellin, Jeanne. *Horses Across the Ages.* Dutton. 1954. pp. 68-72. (Notice pictures on pp. 69, 71)

Figure 9. (cont)

Card 3

Optional Topic 2: Would you like to visit the Pony Express Stables Museum?

SOURCE —
Tour Book: South Central States. American Automobile Association. 1968-1969. p. 73.

Would you enjoy telling about the pony express by:

Preparing a poster advertising for Pony Express riders?

Writing a newspaper account of the opening of the Pony Express service?

Writing a newspaper account of a thrilling event experienced by a Pony Express rider?

Writing a letter describing your job as a Pony Express rider?

Making a map or a transparency showing the route of the Pony Express?

Review what you have learned about the Pony Express by:

Listening to the Enrichment record, *The Pony Express*
Viewing the Enrichment filmstrip, *The Pony Express*

WEEKLY CIRCULATION LOG

Week of:

	K	1	2	3	4	5	6	C	T			
BOOKS												
Mon												
Tues												
Wed												
Thurs												
Fri												
MAGAZINES												
Mon												
Tues												
Wed												
Thurs												
Fri												
NEWSPAPERS												
Mon												
Tues												
Wed												
Thurs												
Fri												
FILMS												
Mon												
Tues												
Wed												
Thurs												
Fri												
SLIDES												
Mon												
Tues												
Wed												
Thurs												
Fri												
RECORDINGS												
Mon												
Tues												
Wed												
Thurs												
Fri												
EQUIPMENT												
PROF. MAT'LS												
PREVIEW ITEMS												

Recorded by: _____ M _____ T _____ W _____ Th _____ F

C = loan to classroom collection
T = loan for teacher use

Figure 10. Weekly Circulation Log

How is library work measured?

To collect data on the tasks that are performed, reporting forms or logs and recording procedures must be designed for the tasks. A guiding principle for work-study data collection is: keep it simple. A reporting form should be easy to understand and sufficiently uncluttered so that data entry on it can be rapid and convenient. If it is to be used for retrospective as well as projective analysis, the form must also have some permanence and be intelligible to persons other than those who use it for recording. The procedure should similarly be understandable and able to be consistently and uniformly applied with little consumption of time and little or no computational complexity. Work study is intended as an aid in accounting for work, not a hindrance to the performance of work. To ensure forms and a procedure that comply with desiderata, effort must usually be expended in designing and testing forms until a layout satisfactory to the individuals using them is found. Preliminary work must often be done as well in training personnel to use the forms and procedures and in testing their use under actual work conditions.

Figures 10 through 14 presented in this section have been designed for the Library Instruction and the Selection and Notification activities outlined above. Aspects of their design and procedures for using them are discussed below to illustrate some of the thought and effort that must be devoted to this phase of work study.

One of the most difficult to acquire, but important, types of data that indicate library value to patrons is circulation data. Task 19 of the Library Instruction activity specifies the collection of use data. However, for reasons that become apparent in the discussion below, Task 19 employs the term "estimate" rather than "measure." Figure 10 (page 50) presents one possible set of data categories in which the use of library materials and equipment can be monitored. Although the form is more detailed than circulation logs that are usually maintained, it nevertheless will not permit a precise determination of the materials used in the history program or in any other particular program. Furthermore, Figure 10 may or may not yield a good estimate for Task 19. Yet it is likely that Figure 10 reflects the greatest amount of detail that can be realistically obtained. Why?

As indicated above, forms reflect operating practices and procedures. To obtain data in the categories shown in Figure 10, a means must exist for readily distinguishing the charge-out cards for different types of materials, and a means must exist for readily separating patrons into different borrower groups. To sort cards into materials categories by reading bibliographic information on them at the end of each day is too time consuming to be acceptable. To read each borrower's name and expect to be able to recognize his or her grade level is not only too time consuming but also pragmatically impossible. When one analyzes work for measurement and accountability, he asks himself: What data elements do I need or want to record? Then one asks: Can I acquire them with little time and effort? If one perceives a route by which this can be done, one may then have to ask: What procedures must I modify to accomplish this data collection? One route to the level of detail of Figure 10 is to color-code the charge-out cards for rapid visual identification, to have separate collection trays or boxes for different borrower

LIBRARY INSTRUCTION PROGRAM RECORD

SUMMARY LOG

TASKS	Period:							TOTAL TIME
1. Discuss ed. program with teacher	Group Time							
2. Study program content	Program Time							
3. Study program assignments	Program Time							
4. Examine collection	Program Time							
5. Prepare collection schedule	Program Time							
6. Locate other materials	Program Time							
7. Prepare core instruction materials	Program Time							
8. Establish instruction sequence	Program Time							
9. Prepare individual study packages	Program Time							
10. Establish sequence for packages	Program Time							
11. Prepare tests	Program Time							
12. Discuss library program with teachers	Program Time							
13. Modify	Program Time							
14. Prepare library instruction schedule	Program Time							
15. Instruct	See Library Calendar							
16. Test	See Library Calendar							
17. Examine test results	Program Time							
18. Discuss test results with teachers	Program Time							
19. Estimate library use	See Circulation Logs							
20. Modify	Program Time							

Total no. library programs _____ Av. time/program _____

Total times: P-1_____ P-2_____ P-3_____ P-4_____ P-5_____

Figure 11. Library Instruction Program Record, Summary Log

groups, and to inform or train the groups to use their proper trays. This route might necessitate considerable preparatory color-coding work and instruction before it could be expected to function smoothly. Figure 10 also presupposes that the library closes out one day's work before the next day begins.

The foregoing techniques for categorizing materials and borrowers provide the finest degree of distinguishability that can be expected to work reasonably automatically after the preliminary groundwork has been done. The librarian's main job is rendering service in one or another activity, not monitoring the borrowing of materials. In open schools and in schools with flexible scheduling and decentralized collections, even a large library staff could not cope with data collection on the reasons why patrons borrow materials. When data cannot be obtained with accuracy, reliability, and precision, it is wasteful to try to obtain them except during brief periods under controlled conditions. Thus, except for an occasional case study of a particular education program, the expectation of precise data for Task 19 is unrealistic. A comparison of the librarian's instruction schedule with the borrowing pattern shown on Figure 10 forms may, however, yield an estimate of the impact of the instruction program and the library on the history program. Moreover, precise data should exist for the library's borrowing of materials and equipment from school media centers and other sources for particular education programs and from the listings the library maintains of library materials loaned to teachers for classroom collections and professional use. Taken together, these data enable respectable estimation for Task 19.

Figure 11 (page 52) depicts a single, composite log for all of the librarian's instruction activities during a time period that could encompass half of the school year. This degree of compression reflects design desiderata of convenience, rapid data entry, and the limitation of forms to the minimum number that is necessary. The librarian's tasks for this activity are principally measured by the time devoted to them. The data element that distinguishes work for a sixth-grade history program from a fifth-grade social studies program is the program itself. The form identifies the essential work elements: the tasks, the programs for which they are being performed, and the time their performance consumes. The provision for totals in the right column and at the bottom of Figure 11 anticipate a need for total amounts of time expended on particular tasks and total amounts of time allocated to particular educational programs. The form assumes the existence of back-up documentation on tasks and educational programs to make it understandable. The wording of task descriptions on a data collection form is usually compact. It relies on a more elaborate description of the tasks in another document, often a work-study manual. Similarly, Figure 11 does not provide space for entering educational program names; the symbols and program name equivalents can be attached to the form or included in the work-study manual. Usually, people who work with several programs invent shorthand ways of designating them; form design takes advantage of this ability of people to invent and remember, but the intelligibility requirement necessitates the table so that people not directly concerned with data entry will be able to use the record.

Figure 11 contains references to other records, the library calendar and the circulation log. Figure 11 intentionally displays all of the tasks

Figure 12. LITERATURE SELECTION & NOTIFICATIONS RECORD

Reviewer: Month:

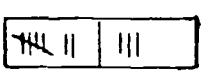
LITERATURE TITLE	Date Rev'd	Rev. Time	Teacher 1 R	Teacher 1 A	Teacher 1 Cite	Teacher 2 R	Teacher 2 A	Teacher 2 Cite	Teacher 3 R	Teacher 3 A	Teacher 3 Cite	Teacher 4 R	Teacher 4 A	Teacher 4 Cite	Teacher 5 R	Teacher 5 A	Teacher 5 Cite	Teacher 6 R	Teacher 6 A	Teacher 6 Cite	M	E
Audiovisual Instruction																						
Booklist																						
Childhood Education																						
Children Today																						
Clearing House																						
Educational Forum																						
Education																						
Instructor																						
Chalk Marks																						
TOTALS																						

R = Title marked for routing
A = Pages or article marked for photocopying
Cite = Citation marked for notification
M = Material identified for library collection

(a) Total no. R's
(b) Total no. A's

of the activity to convey, in one record, the entire picture. Separate types of data collection and forms needed for particular tasks can be indicated in the summary record by such a reference device. No calendar is illustrated here. People use various devices, for example, a desk calendar having pages for individual days on which work schedules are recorded or a calendar with the days of a month or two-week period in separate boxes and the schedule similarly entered.

Three forms are presented for the Selection and Notification activity. Figure 12 (page 54) provides for recording of the librarian's examination of literature sources and the categorization of selections that are made. The form prescribes that titles be identified, the date of review and the time used be entered, and the types of notification for individual patrons be designated. The patron categories shown on the form are individual teachers; this could be modified to show teacher teams, grade-level groups, etc., depending on the patron preferences and practices in a given school. The library or librarian should not be overlooked as a patron (see the M and E columns). Titles regularly examined could be permanently recorded on the form, and others reviewed during the period of the form could be written in. If only one copy of the form were needed per month, the date of weekly or biweekly titles could be recorded with the title. Designating separate columns for different types of notification on the form reduces the time for data entry to a minimum. A check or absence of a check in the routing column, for example, identifies that notification. The familiar scheme for counting,



yields the numbers for the other categories. For compactness, codes are used in the form but, as is shown at the bottom of Figure 12, explanations are given for them on the form when space permits. It should be emphasized that the types of notification used in Figure 12 are illustrative of a technique for representing them in the design of a form; the particular services a library might provide must be determined by the librarian and the patrons in a given school. The summary statistics shown at the bottom of Figure 12 are also indicative. When a single form will suffice for both individual items of data collection and the summary statistics to be obtained from them, form design provides for both types of data.

Figure 13 (page 56) is a form for recording patron responses to notifications. It could also be used for recording patron requests. The design again employs specific column headings for frequently occurring types of responses to minimize data entry time. The design also includes a column for write-ins ("other response"); when a phenomenon is not describable by a simple tally or may require amplifying comments, a form should anticipate this either with write-in space on the form itself or by means of a reference to attachments. Several modifications could be made of Figure 13. If a count is wanted on total time devoted to individual patrons or their total number of responses, a column or columns could be added for these quantities. Similarly, if totals are wanted for particular response categories, a row for totals could be added. Entries for "respondent" can be individuals, teacher teams, other combinations, or all of these dependent on the practices of patrons in a given school.

Figure 13. NOTIFICATIONS RESPONSE LOG

Processed by: Time period:

RESPONDENT	Date Rec'd	Date Proc'd	A	C	Other Response	Time	Date Rec'd	Date Proc'd	A	C	Other Response	Time	Date Rec'd	Date Proc'd	A	C	Other Response	Time

A = acquisition of item requested
C = copy of page or article requested
Date rec'd = date response received
Date proc'd = date response acted on
Time = time used in acting on response

Library Staff Remarks

(a) Total no. responses
(b) Total no. actions
(c) Total time expended
(d) Av. time/action

Figure 13 could also be modified to provide for a more complex account of response if librarians wanted to assess, for example, the value of particular literature sources or types of notifications to their patrons. Columns would be needed for these categories and a procedure would have to be established with patrons to ensure that they furnished the desired information. It should be noted that obtaining precise and complete source information from patrons is a difficult feat to accomplish. Patrons often delay responding to notifications, they forget the sources that stimulate their requests, and they recall items partially and sometimes with errors. Therefore, Figure 13 is designed for readily collectible data; refinements must be tailored to the work situation.

Figure 14 (page 58) is another summary form, this time for the Selection and Notification activity. Figure 14 is similar in design to Figure 11, but it reflects a wider variety of ways of accounting for the work of different tasks. Tasks 2, 3, 5, and 15 are likely to be performed repetitively, possibly Task 2 with groups of teachers and Tasks 5 and 15 with individual teachers. Task 3 is also likely to be performed several times for different information acquisition purposes. Tasks 1, 6, 7, and 8 may be performed only once during a time period; some of these tasks may need no attention during a given period. Should several instances of performance actually occur during a period for these tasks, a modification could be made to the format of Task 4.

Several of the selection and notification tasks are separately represented by other records and need a clarification of actual library work procedures. For example, Tasks 9 and 10 refer to Figure 12. However, Figure 12 is designed as the librarian's work record. The symbol explanations at the bottom of Figure 12 show that the librarian marks a title for routing or pages for photocopying. If the library prints a routing sheet that is routinely attached to each title by the librarian or an aide before or at the time of review, then marking completes the routing part of Tasks 9 and 10. If photocopying is to be done or citations transferred to cards or listings, implementation of the librarian's markings is likely to be done at another time by the librarian or an aide. The performance time for Task 10, then, is principally that of the implementation that may be recorded on a photocopier log or an aide's log. The performance of Tasks 12 and 13 also depends on decisions the librarian must make regarding how responses will be processed. The librarian may decide, for example, to review responses once a week, separating them into action categories. This procedure would affect the design of Figure 13; if a separate copy of the response log were completed each week, the date columns could be deleted. Each group of responses might then be handled as a work unit by the librarian or an aide. Task 13, action on responses, might be a sum of individual work components such as acquisition and photocopying. Tasks 14 and 15 may be done once or twice during a school year and may result in a brief status or progress report to the school principal or administration. Task 16 might involve changing some procedures and preparing notes on the procedures for an informal file or as instructions for aides. The foregoing comments are illustrative, but they are intended to underscore the close interrelationship between reporting forms and actual work procedures.

LITERATURE SELECTION & NOTIFICATIONS RECORD
SUMMARY LOG

TASKS	Period:							TOTAL TIME
1. Education program review								
2. Discussion with teachers on program	Group							
	Time							
3. Resources reading	Subject							
	Time							
4. Literature aids review								
5. Discussion with teachers on notification needs	Teacher							
	Time							
6. Work on policy, procedures								
7. Work on notification mechanisms								
8. Update selection aids list								
9. Review literature	See Literature Selection & Notifications Record							
10. Prepare notifications	See Literature Selection & Notifications Record							
11. Route notifications								
12. Analyze responses	See Notifications Response Log							
13. Act on responses	Depends on work procedures; see text.							
14. Assess response data								
15. Assessment discussion with teachers	Teacher							
	Time							
16. Modify	Depends on work procedures; see text.							
							TOTAL	

Figure 14. Literature Selection and Notifications Record, Summary Log

PART FIVE

SUMMARY REMARKS

The task descriptions illustrated in Part 4 of this document intentionally focused on product- and output-oriented activities rather than on internal and "housekeeping" activities because decisions for the continuance of an enterprise are based on demonstrations of its uses or "payoffs" or benefits. Though technical processing activities are essential in making appropriate materials and equipment available for service products, they are not ends in themselves [32] and they are not useful indicators of library performance needed for accountability reports. Additionally, as centralized processing by school library centers increasingly replaces processing in individual libraries, service activities will be the principal work of school libraries, but literature is scarce on how to record this work in measurable terms.

Nevertheless, school librarians beset with small staffs, low budgets, and/or limited facilities may view the work and accounting tasks advocated in this document as unrealistic or highly futuristic. Are they? A basic text on school librarianship enumerates current expectations of performance by school librarians; these are reproduced in Figure 15.[33] The fundamental problem presently facing school librarians may truly be an inability to meet expectations, not because of personal deficiencies, but because the expectations have not been accounted for in school library planning. School planners, who consider library needs as but one of many system elements, can legitimately contend that they can make decisions only on facts, on data, and if librarians furnish them with no statistics on services, they have no basis for decision-making. A mere listing of duties or activities or expectations without supporting numeric quantities cannot be translated into monetary terms. The only practical recourse that school librarians have is to collect data, if only for one or two specimen activities, to establish a concrete basis for needs.

Both the ALA Occupational Definition (Figure 7) and the list of performance expectations (Figure 15) suggest that no single individual is likely to be an expert in all of the described characteristics. Allocations to school libraries and even the ALA Standards raise moot questions about the layman's and the professional's images of the library and the librarian. Do taxpayers, legislatures, teachers, and students think that one or two school librarians can fully execute all types of service they wish libraries to perform? Do librarians themselves think that they can discharge all responsibilities imposed on them single-handedly? As work study begins to be applied to an operation, staffing and other resource needs become evident and questions about allocations, policies, and priorities can be formulated and appraised. When hard data are available, workload distributions among

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32. It should be noted that technical processing activities yield end products for cooperative library centers. See: Centralized Book Processing, A Feasibility Study Based on Colorado Academic Libraries, op. cit. (Ref. 29), for a discussion of measures for accounting for these activities.

33. The School Library, A Force for Educational Excellence, op. cit. (Ref. 7).

individuals can be determined and the library manager or supervisor can specify the outputs that particular inputs will buy. Work study, often resented by workers in industry as a work-extortion device before its application, gives both management and labor a means of quantifying and explaining requirements. Judiciously used in libraries, work study could be the librarian's best friend in permitting the librarian to show, in business fashion, the work that librarianship entails.

Lack of knowledge and understanding of librarianship among the lay public has not benefited librarianship. Work study can contribute data to meet the expressed desire of the lay public for accountability and the need of librarians for justifications of requests. Work study is not easy to plan or to execute, but if work is worth doing, it is also worth documenting. The magnitude of libraries' role in society as the principal resource for society's diverse information needs demands librarians' assumption of the responsibility of proof that this great public trust is deserved.

As an educational generalist the school librarian must possess and demonstrate:

- Enthusiasm and respect for teaching and for learning;
- Zest for keeping informed as to the innovative trends in education;
- Perspective in viewing self as a teacher;
- Perspective in viewing the educational role of the school library as support agent to the total educational endeavor;
- Broad academic background and interests;
- Knowledge in depth of the educational program;
- Competence to relate the resources and services of the library to the total educational program;
- Authentic concern for the optimum achievement and self-realization of each student;
- Competence to plan and work cooperatively and effectively with administrators and fellow teachers for the purposeful, appropriate, productive use of library resources, facilities, and services.

As a materials specialist the school librarian must possess and demonstrate:

- Respect for all medium of knowledge regardless of format;
- Sensitivity to the educational potential of instructional media;
- Knowledge in depth of the content of the library's resources;
- Zest for keeping informed as to the latest media developments, trends, releases, productions, and concepts;
- Competence to search for, select, organize, balance, and administer a media collection which will effectively meet the developmental needs of the curriculum and the personal and educational needs of the students.

As a media programming engineer the school librarian must be competent to:

- Design media usage patterns reflective of teaching goals and commensurate with individual learner needs and potential;
- Design and produce or supervise production of instructional media to meet unique curricular development needs;
- Relate specific resources to specific topic and/or concept development needs;
- Determine when the use of a resource is: timely to topic and/or concept development; suitable to class, group or individual student interest, ability, and maturity level; educationally appropriate, supportive, necessary, and significant;
- Blueprint media usage sequence patterns to introduce, develop, relate, and interrelate ideas in a logical, progressively sequential order;
- Personalize the services and resources of the library by designing media usage programs commensurate with the developmental needs of the curriculum and/or the educational and personal needs of the students;
- Implement with imagination and stamina all library strategies.

Figure 15. Expected Performance Characteristics of Today's School Librarian

In Ruth Ann Davies, The School Library, A Force for Educational Excellence, R. R. Bowker Co., N. Y., 1969, pgs. 245-6.

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