A Practical Methodology for the Study of Job Components and Staffing Needs

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A methodology was developed to analyze components of all positions in the library system at the University of Iowa in order to identify staffing needs. Current job activities and levels were examined, and staff were asked to indicate how the activities making up their positions might change over the next three to five years—the time period for the full implementation of OASIS, the automated library system of the University of Iowa Libraries.

he University of Iowa Libraries is experiencing significant change. The automated library system, OASIS (a NOTIS-based integrated system), is being implemented, and a shift in leadership has occurred. Under the direction of Sheila D. Creth, the library began a strategic planning process and developed a visionary statement of how the institution should look and respond in ten years.[1] This document enumerated many areas in which development and expansion of services are needed.

It was clear that current staffing levels were not adequate nor would they be sufficient to achieve the goals and objectives identified through the planning process, including implementation of OASIS, greater emphasis on user-education programs, the use of new information technologies such as CD-ROMs, and a more subject-based approach for collection-management activities and technical services. This supported earlier conclusions of serious staffing inadequacies in a 1985 self-study and a 1986 faculty review of the university libraries.

PRIOR RESEARCH

Methods of task analysis, the study of discrete job components, were the focus of the preparatory literature search for the Iowa study. Most relevant studies concentrate on (1) job analysis techniques for examining or developing job classification systems; (2) job evaluation techniques—examining the quality of an individual's work within promotion and salary-setting systems; and (3) work flow in the current environment. No studies specify methodologies for analyzing how individual job components might change in response to environmental changes.

The business literature recognizes the importance of examining personnel resources as an integral part of an organization's planning process. In their examination of organizations implementing major change, F. L. Ficks and J. W. Suzansky note that all changes should be derived from long-range goals and should require some framework with which to examine and track all major work activities.[2] The library needed to address staffing requirements at an early stage in its planning process and continue to monitor its staffing situation during and after implementation of OASIS and other new or expanded programs. The staffing study, therefore, was to be a tool for continuous examination of specific personnel needs based on major goals and objectives of the organization.

In 1974 Myrl Ricking and Robert Booth

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completed the broadest library job analysis study to date. Its intent was to determine the nature of the work itself, relating specifically to the skills, aptitude, level of responsibility, and knowledge required to accomplish tasks. This study was undertaken by the Illinois Library Association, the American Library Association, and the Illinois State Library. An extensive standardized task list of over 1,600 items was created. The list enumerated every discrete library task that could be identified. Tasks were listed under eight functional subsystems: (1) collection development, (2) collection organization, (3) collection preparation and maintenance, (4) collection storage and retrieval, (5) circulation, (6) collection interpretation and use, (7) management, and (8) staff development.[3]

In a study examining staffing levels and utilization in U.S. health sciences libraries, Leslie Beth Rothenberg, Judith Lucianovic, David Kronick, and Alan Rees designed an index to measure an employee's involvement in twenty-seven related job tasks selected to represent the range of library tasks. This study focused on the consistency of task content to professional status. It concluded that library personnel are often employed at job levels inconsistent with their professional status.[4]

Two studies analyzed staffing patterns in academic branch libraries. Charlene Renner and Barton Clark used eight variables to determine optimum staff size in the thirty departmental libraries of the University of Illinois. They examined faculty served, instructional units taught by that faculty, monograph budget, total serial and monograph acquisition budget, hours open per week, circulation, number of volumes, and average number of student hours per week. The amount of specialized reference service was not included. A model of a typical departmental library was developed using a mathematical formula consisting of the median values of the eight variables. The Illinois departmental libraries were then compared proportionally to the model to see if staffing was adequate, high, or low.[5]

Carolyn Snyder and Stella Bentley examined staffing utilization in branch libraries at Indiana University. They compared the perceptions of public services

staff to the actual recorded time it took to accomplish broad categories of tasks (public services, technical services, collection development, and administration).[6]

The University of California system has been particularly progressive in the use of task analysis within the context of a total management system by linking library staff activities with objectives and optimum staffing levels. In two works, Betty J. Mitchell demonstrated how a specific task is related to the desired level of service and appropriate staffing level.[7]

The literature did not reveal specific methodologies that would accommodate all of the elements needed for the Iowa study, which were (1) discrete task analysis for each position in the library system; (2) an ability to analyze the effectiveness or efficiency of each activity; (3) a way to determine how each activity might change over a specific length of time under defined environmental conditions, i.e., implementation of a library automation system; and (4) the opportunity to examine individual activities from both the individual and systemwide perspectives. Therefore, a methodology was developed specifically for the Iowa staffing utilization study.

STAFFING HISTORY

The University of Iowa Libraries experienced a drastic reduction in staffing during the period 1981–82. Seventeen positions were cut, or slightly more than 10 percent of the full-time staff. Even before these cuts were initiated Iowa ranked 66th in support and 40th in professional staffing but 29th in collection size, according to the 1980–81 Association for Research Libraries statistics.[8] Some positions were added during the 1980s, and in 1987–88 the university librarian negotiated a commitment to add eight new positions over a three-year period. Still, according to 1987–88 Association for Research Library (ARL) statistics, Iowa ranked 29th in collection size and 56th in total staffing. It ranked 37th in professional and 79th in support staffing.[9] The vice-president for academic affairs requested more specific identification of how and where additional positions would be used in future years before further allocation of person-

nel resources would be considered. The library administration initiated a staffing utilization study to identify additional library staffing needs. It was completed during the 1987–88 academic year.

METHODOLOGY

A survey method was used to gather data on current and future staff activities. Three instruments were developed: (1) an individual position survey, (2) a departmental analysis survey, and (3) a standardized activities list. The survey was administered to all staff.

ACTIVITIES LIST

With the assistance of department heads and library administrators, a standardized activities list was developed to accompany the two surveys and to serve as a standardized method for describing discrete activities performed throughout the library system. Loosely patterned after the Rickings and Booth task list, it was tailored to operations at Iowa. Activities were generalized whenever possible so that they would apply to similar activities across departmental lines. The activities list aimed for a level of specificity that would allow for both discrete activity identification and ease in collecting and analyzing the data. The list of 475 discrete activities was divided into broad functional sections:

- general (consisting of broad administrative activities including personnel functions)
- technical services and related activities
  acquisitions
  bibliographic searching
  cataloging
  binding and marking
- collection development, management, preservation
  selection/collection management
  preservation and repair
- public service and related activities
  circulation, reserve, stack
  patron assistance
  interlibrary loan
- shipping and receiving
- library automation

INDIVIDUAL POSITION SURVEY

The individual position survey consisted of an instruction sheet and a chart containing six questions. Its purpose was to obtain information on current activities and the employee's best judgment about the same activities in future years. Everyone was instructed to examine the standardized activities list in its entirety and check off activities pertaining to his or her position. Once the activities were listed, staff filled in the rest of the survey form. It consisted of various questions for each activity, including the following:

- percentage of time required to perform the activity: respondents were given four ways to describe the time element for each activity—yearly, monthly, weekly, or daily
- the level of importance of each activity to the position as denoted by three choices: less important, important, of critical importance

The next set of questions concentrated on an analysis of each activity as it might change over the next three to five years. Respondents were asked to answer the following questions:

- how the activity will be affected over the next three to five years, taking into consideration the implementation of OASIS, new programs, or other changes predicted by selecting from the following choices: activity will be eliminated, activity will not change, activity level will increase or alter in some way, or unable to determine
- percentage of time required to perform activity in the future using the same four time period choices as before
- appropriate position level for each activity as it will appear in the future using three choices: librarian, merit (support) staff, or student assistant

The individual position survey was pretested during its development by one librarian and one support staff employee prior to general distribution.

DEPARTMENTAL SURVEY

In addition to filling out their own individual position survey, department heads (representing thirty discrete units) completed a departmental survey form. Its purpose was to provide an opportunity for department heads to review survey information on individual positions and to

develop a cumulative staffing needs summary.

First, department heads were asked to group staff similar in function into job families such as reference librarians or catalogers and to show the full-time equivalency (FTE) for each job family. They were then asked to collect information for each job family using a chart format. Individual or combinations of activity codes were used whenever possible:

• a description of current departmental activities and the level at which they are currently performed described in quantitative or qualitative terms (Examples of ways to describe level included types of public service desk staffing and hours this staffing is available, number of materials ordered per month, levels of acceptable accuracy for activities, circulation rate per month, number of materials to be cataloged per a certain time period, and number of volumes added per time period.)

• a description of departmental activities and the optimum level at which they should exist, taking into consideration the department's plans for the future, the implementation of OASIS, changes in current practices to achieve greater efficiency and effectiveness, and any other factors that might include altered expectations

• a list of activities that will no longer be needed once automation is in place or can be eliminated due to greater efficiency

• a list of external restraints that might prohibit the department or unit from performing at its optimum capacity, including examples such as space limitations, university-imposed limitations on organizational structures, and technological limitations currently imposed on the university

At this point the department heads were given an opportunity to identify their staffing needs in a narrative manner for both an interim period, defined as the next one to two years when most of the OASIS implementation would take place, and the long-range period of five years. The following sections were completed:

• staffing needs for the interim period

based on the premise of no additional staff

• staffing needs for the interim period based on the premise of possible additional staff with justifications

• staffing needs for the long-range period based on the premise of no additional staff

• staffing needs for the long-range period based on the premise of additional staff with justifications

ADMINISTERING THE SURVEYS

The study population included 63.5 FTE librarians, 93 FTE support staff, and 43 FTE student assistants. The method of survey administration was as critical to the success of the project as the creation of the survey instruments. Staff needed to understand both the mechanics of the questionnaires and the subject matter requested so they could provide the requested data accurately. Preparation for study began with a visit by the study project director to each department and departmental library of the system. Preliminary discussions provided staff with an opportunity to make suggestions concerning survey construction and administration. They also allowed the project director an opportunity to emphasize that the study would be activity based rather than individual position based.

It soon became obvious that staff needed more information about the effect of automation on their individual jobs. A symposium was planned and executed entitled ''Library Automation and Organizational Change: An Educational Symposium.'' Symposium speakers addressed public and technical services issues from their libraries' experience. Working sessions followed where staff could talk very specifically about how automation might affect activities within their areas and review all aspects of OASIS. Before they completed the surveys, staff were encouraged to review a document entitled ''Designing a Library Future: The University of Iowa Libraries in 1987–1997.''

After the symposium the surveys were distributed to each staff member. Detailed instructions were given on how to fill out

the survey. At these meetings all staff were provided an opportunity to ask general and specific questions about the entire study. Of particular importance were discussions about the proposed changes taking place because of the planning process and how these changes might affect individual activities. Staff also received a memo from the university librarian. It detailed goals for the study and emphasized that staffing needs were the most critical component of the ten-year plan. Staff attending a second round of meetings were divided into three groups: (1) public services, (2) technical services, and (3) departmental libraries.

The types of questions raised by staff in each of the meetings were similar. Some wanted to know if they should provide the requested data from their supervisor's point of view or from their own perceptions (the incumbent's viewpoint was sought). In some cases staff observed that an activity was not adequately represented on the standardized activities list.

The project director was available to individuals who still had problems or questions after the group meetings. Department heads, who filled out both individual position and departmental surveys, also attended these meetings, and the departmental survey was described to all staff so that they understood all segments of the study.

DATA ANALYSIS

The statistical package SAS, mounted on the university's IBM mainframe computer, was chosen for the analysis portion of the study because of its flexibility and capacity to develop charts. Data from the individual position surveys were entered. Each individual job activity was flagged by the respondent's department, position level, and questionnaire identification number. All time calculations for each activity were standardized to hours per week.

SAS programs produced charts describing the time spent on all job activities across the entire library system, for each department, and for each position level found in the library system. In addition, data were compiled on activities projected

for elimination throughout the system, by department, and by position level. The same information was compiled for activities projected to be altered in some way once OASIS is implemented or because of new services or change in procedures. Activity charts in various forms were produced to allow in-depth analysis for sound decision making on staffing needs.

The charts were compared in detail with the narrative description completed by each department head in order to develop initial recommendations concerning staffing needs. In particular, activities projected for elimination were examined in each department and compared to projected alterations as stated by both individual and departmental survey results. These comparisons were also examined by position level, e.g., all activities projected for elimination currently performed by librarians.

In addition to plans for expansion of current services or initiation of new services, the need for increased staff resources in a number of areas was projected. The individual position surveys show at least 362 separate activities that would increase over a three- to five-year period. A list of 63 discrete activities projected to increase more than twenty hours per week was prepared. These activities were in public service areas, particularly user education, and in activities related to retrospective conversion of manual records to complete the automated catalog.

The staff projected that a total of 38 activities would be eliminated in the next three to five years. This totaled 837.55 hours per week. These activities were in filing, typing forms, kardex activities, accounting functions, circulation, and materials labeling activities. The library automation project office also provided a list of activities that would be eliminated because of the capabilities of OASIS. This list further confirmed the validity of the data collected from the individual position surveys.

CONCLUSIONS

The project director made recommendations on appropriate staffing levels for each department and for the overall sys-

tem in a report to the university librarian and the assistant university librarians. Individual position survey charts were reviewed in combination with departmental reports so that the following information could be presented for each department:
- current departmental staff
- projected increases in new and current activities
- activities projected to be eliminated
- external constraints for optimum departmental performance
- staffing recommendations for the following scenarios:
  no staff increases in the interim and long-range period;
  possibility of staff increases in the interim and long-range period

Based on the results of the study and subsequent revisions, a request for additional staffing was included in the 1988–89 budget request to the university central administration. The library requested 15 recurring positions and 8.5 nonrecurring positions for 1988–89 and an additional 12 recurring and 8 nonrecurring positions to be spread over the fiscal years 1989–1992. Two positions were granted for 1988–89 but actually these positions were part of a previous commitment to the university librarian. Nonrecurring positions were primarily for automation implementation

functions. Recurring position requests were for public services, particularly in departmental libraries where staffing is extremely limited.

The library administration plans to review the additional recurring and nonrecurring staffing requests and put forward another request for the 1989–90 budget. Library administrators continue to stress that the request is conservative in relation to the long-term understaffing. Additionally, the numbers included staffing only for OASIS implementation, preservation, and ongoing needs and not for new programs.

Library administrators continue to use the study to assist in ongoing reorganization of several departments and units of the library. Staffing requests reflect some staff reallocations over the next few years. The study provides a method for in-depth examination of activities performed in various functional areas and by different levels of staff. It is also used when a position opening occurs to provide specific strategies for filling, altering, or reallocating part or all of the position. The methodology can be readministered by the University of Iowa to update the data. It can also be modified by other academic libraries interested in examining their own staffing needs.

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