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## Performance Measures of Shelving Accuracy

by Curtis L. Kendrick

**Performance measures will have increasing importance for libraries. A survey of SUNY libraries and an analysis of published literature reveals no broad-based agreement on what constitutes an acceptable error rate for shelving. This article describes a process instituted at SUNY, Stony Brook to measure the accuracy of the shelving operation, and suggests a relatively simple methodology that libraries can adopt to establish performance standards for shelving.**

Returning library volumes to their correct shelf locations is an activity that reflects the efficiency and effectiveness of a library. While automated or robotic storage and retrieval systems may eventually reduce shelving inaccuracies in open stack libraries, for the foreseeable future problems of shelving inaccuracy will continue. Recent professional literature has not focused on the problems associated with reshelving. Shelving is mundane, lacking the high-wire excitement of local area networking, expert advisory systems, and other technical topics in vogue. Shelving does not involve the power politics of price differentials, nor does it offer the cloak and dagger intrigue of FBI spies in the library. Despite new technology, however, accurate shelving remains central to fulfilling the core mission of a library. As Flexner pointed out a half-century ago, "the ultimate usefulness of any library depends on the ability of the staff and the public to find books on the shelves with ease and assurance."<sup>1</sup>

This article describes a process instituted at the State University of New York (SUNY) at Stony Brook to measure the accuracy of its shelving operation. Furthermore, it describes the results of a survey on shelving among the SUNY libraries, and analyzes some of the published literature on shelving accuracy.

### Measuring Performance

An emerging trend in librarianship is performance measurement. This trend is

evident in recent library literature and in the activities of professional organizations such as the ACRL Ad Hoc Committee on Performance Measures. The growth of this trend is linked in part to the advancement and implementation of systems that automatically maintain certain measurements, but performance measurement has also extended beyond activities that can be easily quantified. In part, the emergent focus on measuring performance is a response to the need to monitor and report on library operations. Libraries have come under increasing pressure to demonstrate their effectiveness to their administrative bodies.

In the library context, Lancaster defines a performance measure as a "quantified statement used to evaluate and compare the performance of a library in achieving its objectives. It should allow one to determine whether there has been any change in performance, whether any change is in the desired direction, and if so, to what extent."<sup>2</sup> Lancaster has identified four reasons to undertake an evaluation program: as a benchmark to indicate the present level of service; to provide a comparison to other libraries; to justify the existence of an operation; or to identify sources of failure or inefficiency.<sup>3</sup> A performance measurement program for shelving can satisfy many of these criteria. Shelving is a good activity for which to establish performance measurements because there is little subjectivity involved; either the book is shelved accurately or it is not. Obviously performance

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measurement can indicate how well a shelving operation is functioning and also identify sources of failure. A performance measurement program may provide figures for comparison with other libraries, and, while shelving itself may not require justification, a performance measurement program can provide data with which to contend for additional resources.

### **The Program**

In an effort to establish better control over the stacks management operation, the Circulation Department of the Melville Library at SUNY, Stony Brook initiated a program to measure systematically the performance of student assistant stack workers. The Melville Library houses about one million volumes and primarily supports the humanities and social sciences. Stacks management is provided by two full-time clerical supervisors supported by graduate and undergraduate student assistants. In the past, new students had their shelving checked by the stacks supervisors until it was determined that they were proficient shelvees. Experienced students suspected of inaccurate shelving also had their shelving checked. No concerted effort was made, however, to check systematically the shelving accuracy of each student in the department.

During the fall 1988 semester a relatively simple method was developed for checking shelving accuracy. A form was developed and subsequently used to record Library of Congress call numbers for five books on every truck that gets shelved. After the truck is assigned to a student and shelved, each of the five books is searched in the stacks by a stacks supervisor or graduate student assistant, who records whether the books are shelved correctly. A comments section on the form helps to identify patterns in shelving mistakes. Every couple of weeks all of the slips are tallied and each shelvee's accuracy is calculated. Since the inspection program has been initiated, an average shelving accuracy of 91 percent has been realized.

An enhancement that should be made in the methodology of Stony Brook's performance measurement program is to build in a measure of the amount of staff time required to implement the program. Midway through the project the number of volumes checked per book truck was reduced from five to three to save time. Also, it was discovered that it is unnecessary to check journals because they are so much less likely to be misshelved. It was

impossible to keep up with this study during finals periods, because too much time elapsed between shelving the books and when they could be checked. Measurements should be taken during finals periods because these are the times when student shelvees are subject to the most stress, and presumably their concentration on work matters is lowest. Despite the enhancements which could be and have been made to the methodology, the figures provided by this performance measurement were of use, supporting McClure's contention that statistics can be useful even if they are not up to research-level accuracy.<sup>4</sup>

### **Performance Measurements vs. Standards**

Dougherty and Heinritz have indicated that all errors are not alike; they need to be evaluated based on their effect on the organization.<sup>5</sup> Certainly errors of inaccurate shelving are substantive and may have a significantly detrimental effect on a library. The shelving accuracy of 91 percent realized by Stony Brook may be acceptable, but with no standard by which to measure how can one know? How does this figure compare with other libraries? What is an acceptable level of error?<sup>6</sup> While French has articulated the differences between performance measures and library standards,<sup>7</sup> Cronin suggests that there is an implicit connection between the two and that performance must be measured according to standards or acceptable outputs. Cronin contends that comparison with other libraries is one of four criteria to be used in establishing standards; the others are user expectations, staff definition of excellence, and current levels of performance.<sup>8</sup>

### **Looking to the Literature**

Little assistance for determining an acceptable range of shelving accuracy is offered in the literature. The studies conducted tend to analyze library malfunctions resulting in the inavailability of material. Inaccurate shelving is just one form of library malfunction or just one reason that material may not be available at a given time. While the studies indicated below are therefore not directly parallel to the Stony Brook study, they do provide a context in which to analyze shelving accuracy.

Measurements taken at several times over the course of two years at Oberlin College showed that between 75.7 and 86.5 percent of the volumes sampled were shelved properly.<sup>9</sup> A study conducted at

the Moffitt Library at the University of California at Berkeley revealed that 94.5 percent of the sample of books were located in their correct shelf locations (95.7 percent when the study was replicated).<sup>10</sup> As part of its shelf-reading program, California State University at Northridge strives to limit not-on-shelf location inaccuracies to between 2 and 5 errors per section.<sup>11</sup>

Saracevic, Shaw, and Kantor found that 11 percent of a 1972 shelving sample and 14 percent of a 1974 sample could not be found due to malfunctions in library operations.<sup>12</sup> Kantor reported on a 1975 study at Case Western Reserve University in which 15 percent of the books that should have been available on the shelves were not available due to library malfunctions such as misshelving. Other studies reported by Kantor found that 11 to 22 percent of the books that should have been shelved were not available due to library malfunctions.<sup>13</sup>

Several studies have been conducted using a model similar to Kantor's. Whitlach and Kieffer's study at San Jose State University showed that 6 percent of the volumes that should have been on the shelves were not, due to malfunctions in the library's inventory program.<sup>14</sup> At the University of California at Santa Cruz, Ferl and Robinson found that 9 percent of the volumes that should have been on the shelves were either not yet in the circulation database, unaccounted for, or awaiting reshelving.<sup>15</sup> Ciliberti et al. discovered (at William Paterson College) that 26 percent of their sample of items that should have been on the shelves were not there. Library malfunctions—e.g., actions resulting in books being missing, misshelved, on sorting shelves, waiting to be reshelved, or being reprocessed—were the largest single factor inhibiting users from obtaining the items needed.<sup>16</sup> Smith and Granade found that 20.3 percent of the items in their sample were unaccounted for, and presumably stolen or misshelved.<sup>17</sup>

### **Survey of SUNY Libraries**

After unsuccessfully attempting to discover a standard in the library literature that would provide some significance to a shelving accuracy of 91 percent, the SUNY at Stony Brook librarians decided that a survey of other libraries in the SUNY system might provide some indication of how other libraries handle shelving and analyze accuracy. A survey was subsequently mailed to 32 libraries at the four-year nonstatutory colleges and universi-

ties in the SUNY system, from which 29 responses were received. The findings are discussed below.

#### Who does the shelving in your library?

All 29 of the respondents reported a reliance on student assistants to do the shelving in their libraries. Student crews are supplemented by staff at 15 of the libraries. Of the libraries using staff members, 9 use library aides or clerical staff, 6 use all levels of staff as needed (to clear up backlogs or at the end of semesters), and 2 use all levels of staff on a regular basis. In addition, one library uses volunteers, one has used a commercial book shelving firm, and one uses temporary employees hired through an outside agency at the end of semesters.

**What, if any, methods do you have for checking the accuracy of shelving?** Thirteen libraries reported a reliance on shelf reading or annual inventories to rectify shelving mistakes. Only ten of the respondents reported a formal method of checking shelving accuracy. The most common ongoing method for checking shelving accuracy is to spot-check by marking down call numbers for some of the books to be shelved, and later checking to see that those books were shelved correctly. Nine of the libraries use such a system. One library reported discontinuing a spot-check method that did not prove useful.

One library reported using a shelver's log. Each shelver is assigned a portion of the stacks for shelving, shelf-reading, straightening, etc. Each day the shelvers note in a log what work they have done. Once or twice per week the shelf-reading is checked by staff members based on the log. If three or more errors are detected, the errors are brought to the attention of the person responsible for the area.

#### Conclusion

The original purpose of the survey was to find out how a shelving rate of 91 percent accuracy compared to other libraries in the SUNY system. Unfortunately, none of the other libraries responding to the survey maintain such statistics. One library estimated that their shelving accuracy is 90 percent. Another library indicated that, based upon spot-checking, their shelving accuracy was "very good."

Kantor has identified five criteria for evaluating a performance measurement program.

- *Fidelity.* Are we measuring what we really want to know?

- *Validity.* Can we generalize from limited observation?
- *Intrusiveness.* How disruptive is the program for staff and users?
- *Efficiency.* Do we learn enough for the effort required?
- *Relevance.* Can what we are studying be changed or improved?<sup>18</sup>

The performance measurement program for shelving accuracy developed at Stony Brook provides a measure of shelving accuracy, allows for generalizations from limited observation, is not at all disruptive to users and only a minor disruption for staff, is an efficient way of obtaining data, and is relevant. The performance measurement program has provided the Library with valuable feedback on an important component of the library operation. The data gathered by the program are used to assess the overall success of the reshelving process and to evaluate the work of individuals. Hannabus writes that "an important criterion for the measures themselves is that we keep in mind that ultimately they are managerial tools and that their ultimate value lies in their use in evaluation and decision making."<sup>19</sup>

The Library plans to continue maintaining statistics on shelving accuracy. Measuring the performance of the shelving operation is important because it serves as a feedback mechanism, giving management an indication of how individual employees are performing. If necessary, corrective or punitive measures can be adopted to improve accuracy. In an open stack library, relying solely on shelf sampling does not give a complete measure of shelving accuracy because patron browsing affects the results. Material availability studies work well for categorizing sources of failure, but generally have not been conducted at a level of specificity that indicates the accuracy of each individual's shelving. Shelf reading is an adequate method for correcting errors, but does not address the problem of accountability: Who is making the mistakes and how can the frequency of mistakes be reduced? At Stony Brook, statistics are maintained for each shelver making it possible to see improvement or lack of improvement in each shelver's performance. While no standard has yet been uncovered against which to measure Stony Brook's shelving accuracy of 91 percent, this figure will be compared to accuracy rates in forthcoming years and may serve as a benchmark for the institution.

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