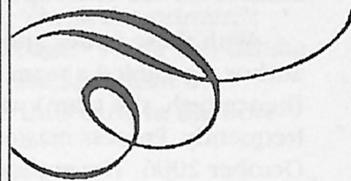


# THE APPLICATION OF PROCESS MASTERING TECHNIQUES TO A LIBRARY INSTRUCTION CLASSROOM

*by Stephan J. Macaluso*



When librarians at Sojourner Truth Library (STL) at the State University of New York at New Paltz began a process master for STL's electronic classroom in the fall of 2006, the potential for success was on their side. Members of the library's administration had attended a series of process mastering and continuous improvement workshops during the 2003-04 academic year. At that time, faculty and staff were introduced to process mastering techniques and tools; they developed departmental and library-wide Constancy of Purpose statements, assessment plans, and process mastering documents. Second, the library's relatively flat organizational structure and team-based culture lent itself to planning assessment initiatives. Third, the library had a long history of data collection (for example, through surveys, focus groups, and advisory boards, and through its suggestion box) and the use of those data for library planning and improvement.

During the 2006-07 academic year, the author attended a series of similar workshops on behalf of STL. These workshops were facilitated by Sara Laughlin and Ray Wilson. One of the goals of the workshop series was to develop a process master on an issue of lingering concern. The author worked with seven librarians to create a process master for STL's classroom, called STL18. The librarians were inclined to assess and improve STL18 because it was a primary tool in our information literacy program and because the space presented some unique challenges.

## THE ELECTRONIC CLASSROOM: STL18

Instituted in 1998, STL18 is STL's electronic classroom, serving nearly five thousand students each year. Led by teaching librarians, groups ranging from first-year orientees through the graduate level meet in STL18 to receive hands-on information literacy instruction. Class sessions are scheduled by course instructors; sessions range from 45 minutes to about three hours. STL18 is a key part of STL's information literacy endeavor. At the time of the process master's creation, eight librarians taught in STL18 on a regular basis. It

was also the primary space in which to host in-services and vendor demonstrations.

At the time of the process improvement, its equipment included nineteen student PC workstations, an instructor PC workstation, a document camera, a projector and sound system, a VCR, Internet access, and classroom control software.

Several factors contributed to the need to improve the STL18 space. First, there were several weeks during each semester (usually in September and February) where library instruction classes were held in rapid succession on the same day. Moreover, librarians would often need to rush off to another assignment immediately after their classes. This often resulted in librarian-instructors leaving materials behind and being unable to erase the STL18's whiteboards. Second, librarians would often have to bring in additional chairs from adjoining rooms to accommodate larger classes. During high-traffic times, these chairs were often left in the room, to be cleared away at a later time. Over the years, additional furniture and other equipment found their way into the space but were never removed. Space and clutter were obvious issues in STL18.

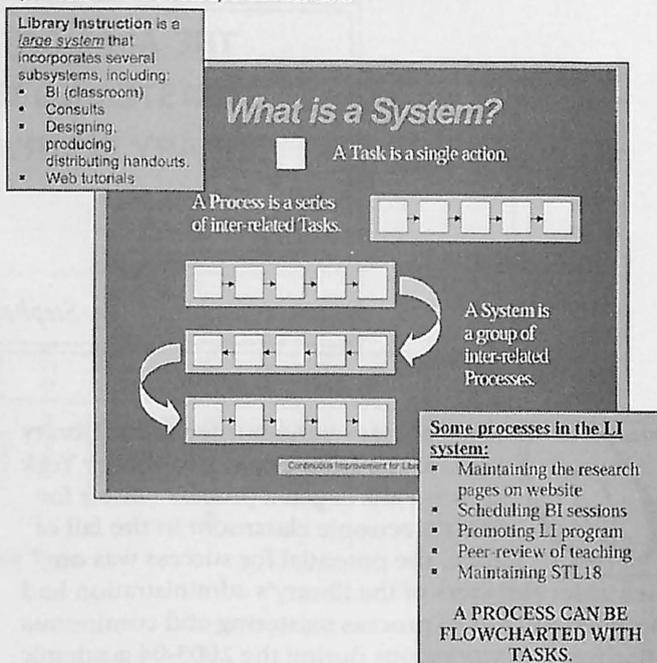
STL18's décor was maintained by library staff, and so it was more appealing than other campus classrooms or computer lab spaces. However, liberal food and drink policies and unchecked printing resulted in additional litter. There were few obvious places in STL18 to deposit waste materials or recyclables. Librarians often noted that while no-cost printing and refreshments might motivate some students, a cleaner, better-defined workspace would greatly enhance the library instruction experience.

Librarians were fortunate that STL18 had very stable technology, administered by an internal computer support department. The space was secured and available by reservation only, in this way saving it from some of the issues that might befall a more heavily-used, public computing lab. PCs and projectors were maintained regularly. While the technology in STL18

was well managed, librarians depended upon its stability and predictability. Questions often emerged about how to operate specific technologies or how to address service interruptions.

With these issues and questions in mind, the author assembled a team of seven teaching librarians (henceforth, the team) who used the STL18 space frequently. Process mastering meetings began in October 2006. The author, who acted as team sponsor and leader, led the team through an overview of the process mastering technique. Some of the notes from the process mastering workshops he attended were modified for the team meeting, in order to provide a quick overview of the process ahead, and to connect team members' earlier process mastering efforts e.g., listing internal and external customers, and defining systems and processes, to the work at hand. While previous efforts concentrated on big-picture issues, like program assessment, STL18's improvement was a more manageable initiative, and so issues regarding systems, processes, and tasks would become more concrete to team members in this context. See Figures 1 and 2.

Figure 2: Quick explanation of library instruction as a system, made up of a number of processes, which are made up of individual tasks.



**Figure 1: Quick review of process mastering principles**

**Process Mastering is “recording the best-known way” to do something**

1. We brainstorm what it takes to get something done.
2. We flowchart the process into tasks.
3. We identify the most important, or KEY tasks.
4. We note who our customers and suppliers are—who we’re doing the tasks for, and what we need to do them. We also note what our suppliers and customers need from us.
5. We document the “best-known way,” then test the process to make sure we’ve got all the steps right.
6. We work on improving this streamlined process.

**Process Mastering is about reducing variation.**

1. We’re not talking about teaching, or liaison work. These are individual endeavors.
2. When it comes to STL18, we want to have as little variation as possible, e.g.:
  - The remotes work, and you know where they are.
  - The desktop doesn’t change much.
  - The trash is taken out and the space is clean; no one has moved the furniture.

At the initial meeting, a Consensogram exercise (Laughlin, Shockley & Wilson, 37) was employed to help focus the team’s attention to STL18 as a workspace. When asked “How well maintained do you think STL18 is?” and “How conducive to successful teaching do you think it is?” team members used sticky notes on a whiteboard to respond on a scale from zero to one hundred. Both questions received responses between eighty and ninety. This demonstrated that, while librarians’ were generally pleased with the space, there was room for improvement.

It should be noted here that having the project team meet in the STL18 space offered a unique opportunity to brainstorm potential improvements. Librarians were able to sit in the space and discuss how well they used it, and what barriers they encountered with it.

**QUICK OVERVIEW:**

The team employed a number of exercises to discover root causes and issues relating to the STL18 space. One was a Cause and Effect Diagram (“fishbone” diagram), shown in Figure 3. The diagram enabled librarians to see which potential issues fell under their control and which were larger, more involved issues that would involve other departments.

The team leader helped the team create a charter, from which future meetings and the process master would ensue. See Figure 4.

**TEAM NORMS**

In the workshop series, Laughlin and Wilson recommended setting up team norms, in order to

promote conducive, inclusive meetings. Team members were familiar with this technique from earlier initiatives, but rather than forego this formality, team norms (which included a commitment to honesty, affirmation, and communication) were modified to include statements about library instruction. Members agreed to concentrate on STL18 as a learning environment, rather than on teaching outcomes. Team members also agreed that the process master would not mandate a change in their class content or teaching methods. By employing these norms, team members were better able to focus on improving the physical space.

## FLOWCHART AND KEY STEPS

An essential step in creating a process master is to develop a detailed but understandable flowchart to illustrate the best-known way to complete a process. Team members were asked to flowchart the steps a librarian would employ to prepare STL18 for a class session. Workshop instructions suggested two things in particular: that a process flowchart should have a clearly-defined beginning and end; and that there should be a maximum of 10 major steps, with a reasonable number of sub-steps. Wilson and Harsin (p. 73) posit that if there are many more than ten major steps, then the process should be contracted or divided into multiple processes. In this case, the "Set Up STL18" process began when a librarian entered the space before class, and ended upon leaving afterwards. As per the norms described above, team members elected not to include the teaching itself in the flowchart, to better concentrate on maintenance issues.

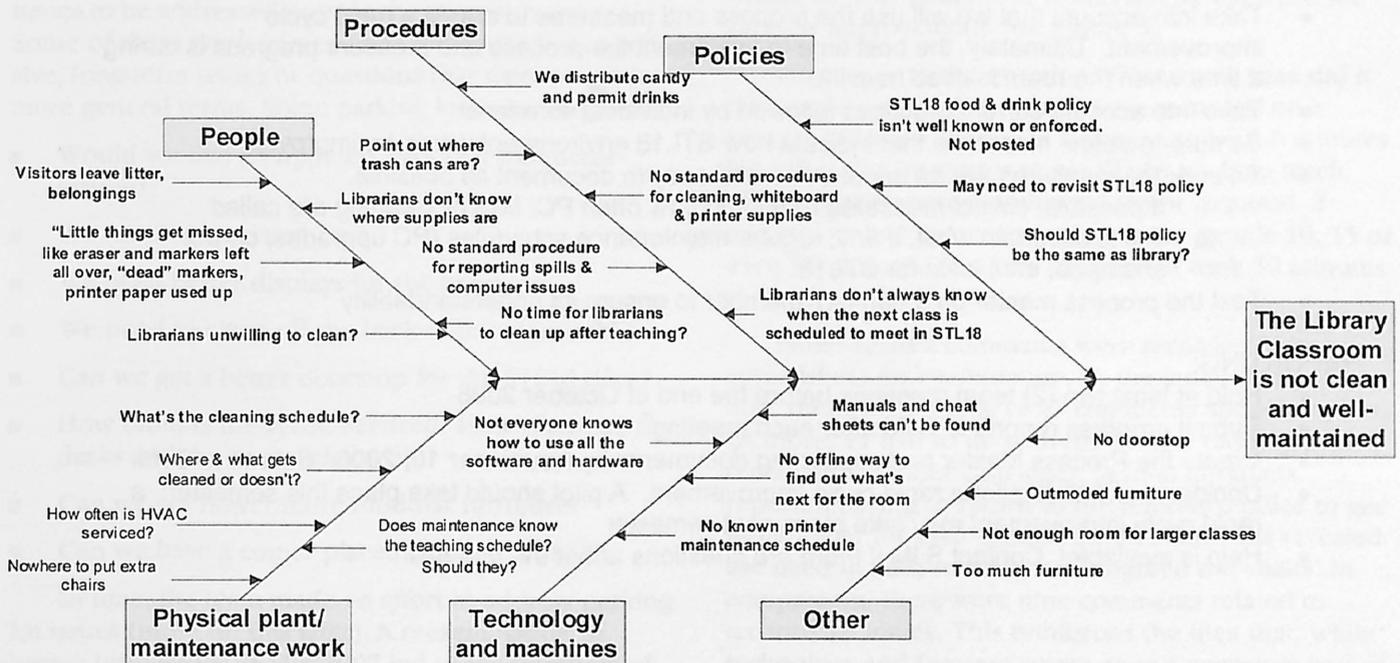
The flowchart resulted in 25 steps, and many questions surfaced during the exercise. Some steps were pedestrian but considered important (e.g., write on the whiteboards, refill staplers). There were a number of "check" steps, e.g., "check the printer," "check the PCs", "check for garbage." There was debate over when someone should erase and clean the whiteboards (before class, and thus early in the flowchart, or after?)

Unlike its originally-intended use, the flowchart was used, not as a prescribed set of directions, but as an exercise to uncover the challenges of setting up and maintaining STL18, especially during peak times of the year. Several team members expressed surprise over how many steps this endeavor required.

The team next examined which flowchart tasks it felt were essential "key steps" to success. Some of the key steps chosen were:

- Turn on the equipment.
- Fill the printer with paper.
- Arrange guides, books, etc.
- Collect the books that were handed out.
- Note which PCs aren't working; report the issue.
- Erase the boards.
- Remove personal belongings.
- Clean off the demonstration table.

Figure 3: Cause-and-effect Diagram



## Figure 4: Charter

DATE: October 19, 2006

CHARTER: Improving the Teaching & Working Environment in STL18

CHARTER NUMBER: F2006.1

TO: Susan Kraat, Colleen Lougen, Morgan Gwenwald, Valerie Mittenberg,  
Rus Springer, Megan Coder

FROM: Stephan J. Macaluso, Team Sponsor

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### PURPOSE OF THIS CHARTER (Your Charge):

To develop a standardized process by which teaching librarians and other STL18 group leaders can maintain and improve its environmental quality.

### PRODUCT/EXPECTED RESULTS:

- An easy-to-follow Process Master document that describes a maintenance procedure for STL18; including a top-down flowchart, A-Charts (for external and internal customers and for suppliers), a Key Steps worksheet, and Measures
  1. Flowchart should clearly outline steps that a nonlibrarian may follow
  2. Other documentation should include plans for short-term improvement of the space e.g., changes or upgrades in furniture, equipment, security etc.
- A Process Behavior Chart showing measures before and after rapid cycle improvement
- A presentation describing the new process, that will be made to IAT librarians and to the Library Council

### AUTHORITIES:

- Divide the process into sub-processes if necessary
- Involve additional people, e.g., IMS or Computer Support members or others, if desired
- Spend up to 2 hours/week on the Process Master document
- Meet in STL18 and other STL spaces whenever available
- Look to other organizations, search the literature, and undertake other research as needed

### LIMITATIONS AND BOUNDARIES:

- Take into account that we will use the process and measures to create a rapid cycle improvement. Ultimately, the best time to implement the process and measure progress is during a time when the room is used heavily.
- Take into account current practices followed by individual librarians
- Be sure to define measures that indicate how STL18 environment would be improved
- Be sure the measures are as unobtrusive and easy to document as possible.
  1. If possible, collect measures regarding how often PC, IMS or cleaning are called
  2. Try to ascertain what, if any, regular maintenance schedules (PC upgrades, carpet shampoo, etc.) exist for STL18
- Test the process master on a non-IAT member to ensure its understandability

### REPORTING:

- Hold at least two (2) team meetings before the end of October 2006
- Submit progress reports to SJM after each meeting
- Create the Process Master and supporting documents by November 10, 2006. Submit to SJM.
- Decide on a time to pilot a rapid-cycle improvement. A pilot should take place this semester; a rapid cycle improvement may take place next semester
- Help is available! Contact SJM if there are questions about the process!

“Tricks of the trade” were recorded for these and other key steps. Among these were instructions that, though simple, were not known to all team members, e.g., how to set the room’s thermostat and where the document camera instructions were kept. Many tips and tricks were discussed at subsequent meetings. Some were later incorporated into process improvements or new staff training materials.

## BRAINSTORMING AND PARKING LOT

By employing the Cause-and-Effect Diagram, other brainstorming exercises, and ongoing e-mail dialogue, team members assembled a lengthy list of areas for improvement for the STL18 space, along with a list of questions regarding the space. Upon examination, some of these issues and questions were given priority as short-term, measurable areas for improvement. These included:

- Should we have a recycling station in STL18?
- Where should we place the markers and erasers when finished? Where is the supply of markers, erasers, staples for STL18?
- Who stocks the printer with paper and toner? Who orders supplies?
- Where are the directions for using the classroom control software?
- I don’t know how to use the document camera.

These brainstorming exercises helped the team realize that it should be expanded to include the department secretary and a representative of STL’s computer support team.

Other items were placed in a Parking Lot—a list of issues to be addressed outside the process master. Some of these were immediately recognized as expensive, long-term issues or questions that were relevant in more general terms. Some parking lot items included:

- Would we like an updated, modular instructor station?
- We need more computers.
- We need better displays for the handouts.
- We need to clean off the back-of-the-room table.
- Can we get a better doorstop for the STL18 door?
- How often is the HVAC serviced? How often are the desks and the carpet cleaned?
- Can we get newer/more modular furniture?
- Can we have a copier placed closer to STL18?

In time, the team made an effort to address parking lot issues (more on this later). A reexamination of longer-term issues in May 2007 led to the purchase of

updated furniture, additional computer workstations, and redecoration.

Subsequent process mastering exercises, e.g., a Customer Screen, helped solidify priorities by challenging the team to explore what aspects of STL18’s maintenance were most important to its primary clientele (i.e., students). The short list included (but was not limited to) predictable technology; a clean and motivating learning environment; and librarian-instructors who were prepared, friendly, and knowledgeable. It became clear that specific setup actions, like booting up the technology, having a working high-quality projector, and distributing relevant handouts and exercises were very important steps in the process.

## GATHERING DATA

In order to examine these issues, the team devised a form that librarian-instructors would complete when they arrived at STL18 for a class. Librarians were asked to record how long (in minutes) it took them to prepare the room for their session and to record any issue that they found. The form itself was designed to address the issues most frequently-cited at team meetings, i.e., materials, supplies and technology.

Data were collected over a two-week period in January and February 2007. In doing so, librarians recognized several pertinent issues: First, that there were peak and valley times for library instruction. While an initial data collection might be possible, subsequent ones might not yield as much data due to decreased numbers of classes. Second, there was general agreement that, while providing the date and time of the class could lead to the discovery of who filled out the form (or who led the class immediately before it), this dimension would not be explored for process improvement. See Figure 5.

Responses to the question “How much time did it take to set up the classroom?” were recorded on a process behavior chart.<sup>1</sup> On average, it took 5.6 minutes for a librarian-instructor to get STL18 ready to teach. While eight responses indicated that it required 2 minutes or less to set up, it took some people 10, 15 or even 30 minutes. (On one occasion, it took 30 minutes to clean up the room.)

Issues-related comments were recorded on a spreadsheet for examination. In the initial data collection, there were a total of 27 comments about supplies. Of those, 11 had to do with the printer (adding paper, replacing the toner cartridge). Several librarians reported having to return to the reference office to get more paper for their classes. Seven comments revealed the need to add, remove, or straighten the chairs. In comparison, there were nine comments related to technology issues. This reinforced the idea that, while technology and Internet access were a necessary part of

FIGURE 5: Librarian Data Collection Form

TODAY'S DATE \_\_\_\_\_

HOW MUCH TIME did it take to set up the classroom? \_\_\_\_\_ minutes

**SUPPLIES\***

(CIRCLE ONE OR MORE) I had to move/locate/dispose of/service

Paper low/out of paper in printer Remote(s) Erasers Whiteboard

Toner low/out of toner Trash on floor/desks Chairs Markers

Books/handouts left from earlier class

List any other issues with supplies

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**TECHNOLOGY ISSUES\*\***

(CIRCLE ONE OR MORE) I had the following hardware/software issues

PC/projector not working Remote(s) not working Printer

Internet was slow/sites not working Plugins(.pdf, flash, etc.)

Classroom control software Document camera

List any other technology issues

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**REPORTED ISSUES**

CIRCLE ONE OR MORE

PC/Projector Network Spills/trash HVAC

Other \_\_\_\_\_

\*For work orders or cleanup of spills, call Rosemary: x.3719, \*\*for pc/network issues, call Gary (3704) or Anna (3709)

teaching in STL18, technology was one of the more stable factors in the room. Two comments during round one had to do with the remote control. Three issues of general slowness of the network, databases or PCs were reported. In sum, the team discovered the following

- Technology worked very effectively in STL18, with little down time.
- The most common technology issue was with the projector remote.
- There were numerous supply issues (paper and markers).
- There were clutter issues (chairs).

## MAKING IMPROVEMENTS

In response to these data, team members elected to make a number of changes to the workspace and, to a smaller degree, to their behavior in STL18. Librarians agreed to ask students to push in their chairs and throw away their trash (an unreported but persistent theme among team members), to install a recycling bin near the printer, and to load a supply cabinet with paper, markers and other supplies. A link to the library's online calendar was placed on the instructor workstation PC desktop, so that librarians could better determine when the room would be used next and the size of the class.

At the suggestion of one team member, simplified instructions were mounted to the document camera and other technologies. The effects of this endeavor were not measured, but subsequent conversations at STL suggest a renewed enthusiasm for incorporating these tools into library instruction.

A fortuitous discovery was made during this improvement time. Between data collections, the room's PC projector was serviced by a technician from another campus office. Upon reporting issues with the projector's remote control, the technician provided several tips (in a sense, key steps) for maintaining it. The technician also agreed to change the remote's batteries on a regular basis. In this way, the effort of servicing the projector remote was moved to a supplier's process, where it could be handled better.

To determine whether the above changes had an impact upon setup time and the quality of librarian comments, another two-week data collection cycle took place in March 2007.<sup>3</sup> While the number of data points is smaller than in the first round of data collection, the quantitative results suggest a decrease in average setup time, from 5.6 minutes to 4.2 minutes, with less variability.

The comments from the second data collection suggest substantial improvement. There were six

supply-related issues reported, two of which concerned paper and printers. Only one comment regarded chairs. There were also just three technology issues reported (all about network speed.)

While there were just seven librarian comments in round two, their quality suggests that an improvement had taken place (e.g. "room in perfect shape"). Other comments suggest that librarians were willing to contribute to a growing pool of key steps (e.g., "click the mouse to avoid the PC going into hibernation"). Two comments opined a need to improve the classroom control software.

In sum, it took less time to set up the teaching space, and there were fewer reported issues, especially in the area of supplies. Fueled by these positive results, the process team continued to meet during spring 2007 in order to continue its improvement work.

## FUTURE DIRECTIONS

The process team plans to address several of the issues that surfaced in its meetings and were relegated to the Parking Lot. At the time of this writing, librarians have volunteered to redecorate the space. The library intends to purchase modular seating, upgrade the instructor's workstation, and install additional computers. The process mastering experience has contributed to these endeavors because it has refocused STL's collective lens on making STL18 more functional and inspiring.

The true intent of a process master is to develop a worker-centered, worker-developed strategy for doing a job effectively and efficiently. It replaces and improves upon a Standard Operating Procedure (SOP) document (Wilson, 76). In that regard, this document is not a true process master, as it does not describe exactly how a librarian-instructor should prepare and strike the space. Such a document may not materialize as many individual tasks are either situational or are performed at the discretion of the librarian. But it continues to be a living document whose principles may be applied to other library issues. One such application of process mastering techniques bears mention here: This author has incorporated several exercises from the workshops, including the Cause-and-Effect diagram and Norms into subsequent meetings and instruction sessions.

## LIMITATIONS AND CHANGES WE MIGHT HAVE MADE

A word should be said regarding how the process of *creating* a process master could have been improved. For one thing, only the author attended the 2006 process mastering series; his was one of a small handful of libraries to send a single participant, as many more libraries sent their entire process teams. As a result, the

author acted not only as project sponsor and team leader, but as a coach and project mastering tutor for the team. Some team members were hesitant to participate in exercises that had intimidated them in past process mastering initiatives (e.g., the Customer Screens). A few were unable to attend all of the meetings due to other commitments. While motivation and momentum remained high during the project, it might have been much greater with increased workshop participation.

In hindsight, the author should have considered involving the library director in a greater capacity, such as that of project sponsor. This might have yielded two benefits in particular: because she had attended a similar workshop series, the team might have called upon her expertise; and her involvement would have added greater authority to the improvement initiative. Had this been a more time-consuming, costly improvement endeavor, the author would not have hesitated in having the director sign the process charter.

As mentioned earlier, STL18 is busiest during certain weeks of the fall and spring semesters. Therefore, it would not be practical to collect data to measure small changes on an ongoing basis: the room use dictates data collection. Future improvements may have to be deployed more rapidly during those peak times, or may have to be measured differently, in order to gauge success.

## CONCLUSION

Process mastering provides an excellent pathway for libraries to focus their energies toward the improvement of customer service. Individual process mastering exercises promote a systemic viewpoint and provide a means to discover a problem's root causes; they suggest a step-by-step program for making improvements and measuring one's success.

As a result of using these techniques, participating STL librarians focused their attention on STL18, brainstorming and suggesting areas for improvement. Due in part to the development of the STL18 process master, librarians feel empowered and encouraged to suggest changes in seating, software, and other dimensions of the space; they are aware of their stakeholders as well as their suppliers in the processes that make up STL18 and, in a larger sense, the library instruction program. They are more aware of how they work, individually and symbiotically, with other librarians and patrons to provide quality service in STL18.

While there was only one data collection subsequent to making changes in STL18, the results suggest that small changes can positively impact one's job—a key tenet in process mastering. By developing their own data collection form, the participants learned that one can collect data regarding certain aspects of one's

teaching (specifically, one's interaction with the instructional space) that are less-often considered, but just as important, as collecting data about student learning.

## NOTES

<sup>i</sup>N=24, average=5.6 minutes; standard deviation=3.8; upper process limit =17; lower process limit = 0

<sup>ii</sup>N=17; average=4.2 minutes; standard deviation= 2.1; upper process limit=6.2; lower process limit =1.1

## REFERENCES

- Laughlin, S., Shockley, D., & Wilson, R. (2003). *The library's continuous improvement fieldbook: 29 ready-to-use tools*. Chicago: American Library Association.
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## ABOUT THE AUTHOR

Stephan J. Macaluso, MM, MLS, coordinates library services for distance learners at Sojourner Truth Library at the State University of New York at New Paltz. He is the library's liaison to the music, nursing, and educational administration programs. Stephan's assessment activities at STL have included process mastering, survey construction, strategic planning, and LIBQUAL+. He is currently considering a process master for weeding the STL collection.