Downstream from the hospital to the library: Using a quality improvement program for library effectiveness

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October 6, 2013
Background

Quality improvement in healthcare settings
--rising medical costs
--focus on quality of care
--need for customer satisfaction
Six Sigma

- Eliminate defects using data-driven processes
- Goal: better serve customers
- Multiple tools provide flexibility
- Black Belt...or not
- Solo, pair, or large teams
<table>
<thead>
<tr>
<th>Place</th>
<th>Goal</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deaconess Hospital</td>
<td>Anticipate and alleviate problems when transitioning from print to electronic journals</td>
<td>Esparza (2008)</td>
</tr>
<tr>
<td>Northumbria University</td>
<td>Increase the use of self checkout stations</td>
<td>McBride (2006)</td>
</tr>
<tr>
<td>Ohio State University</td>
<td>Improve turnaround time and quality of responses to email reference questions</td>
<td>Murphy (2009)</td>
</tr>
<tr>
<td>University of Arizona</td>
<td>Improve turnaround time and lower costs associated with ILL requests for journal articles</td>
<td>Voyles et al. (2009)</td>
</tr>
</tbody>
</table>

Six Sigma in Libraries
At Lovejoy Library

• Question: Can we use Six Sigma to improve liaison areas in the Health Sciences?
  • Reference
  • Collection Management
  • Instruction
  • Outreach
Steps of Six Sigma

1. Define
2. Measure
3. Analyze
4. Improve
5. Control
Our application:
Should we continue providing chat and text message reference services?

Use:
Compare costs and benefits of a particular service or product for decision-making purposes
#1: Cost/Benefit Analysis

Costs
- Librarian salaries
- Chat/Texting service fees

Benefits
- Estimated willingness to pay
  - Ex.: $0.10 for directional question
- Estimated cost of question
  - Ex. $12.18 for Freakonomics (Amazon.com)
## Cost/Benefit Analysis for Chat Service (February)

<table>
<thead>
<tr>
<th>Benefits</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Information for directional questions</td>
<td>$65.69</td>
</tr>
<tr>
<td>Information for reference questions</td>
<td>$618.62</td>
</tr>
<tr>
<td>Total Benefits</td>
<td>$684.31</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Costs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chat service for one month</td>
<td>$35.00</td>
</tr>
<tr>
<td>Salaries ($31.32 avg x 5.56 service hours)</td>
<td>$174.14</td>
</tr>
<tr>
<td>Total Costs</td>
<td>$209.14</td>
</tr>
</tbody>
</table>

<p>| Benefit-Cost Ratio                            | 3.27   |</p>
<table>
<thead>
<tr>
<th>Benefits</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Information for directional questions</td>
<td>$115.56</td>
</tr>
<tr>
<td>Information for reference questions</td>
<td>$1468.00</td>
</tr>
<tr>
<td>Total Benefits</td>
<td>$1583.56</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Costs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Texting service for four months</td>
<td>$689.88</td>
</tr>
<tr>
<td>Salaries ($31.32 avg x 5.75 service hours)</td>
<td>$180.09</td>
</tr>
<tr>
<td>Total Costs</td>
<td>$869.97</td>
</tr>
</tbody>
</table>

**Benefit-Cost Ratio**: 1.82

Cost/Benefit Analysis for Texting Service (Feb-May)
#2: Instruction: Ishikawa Diagram

Our application:
Why did students perform poorly on a graded library search assignment?

Use:
Identify causes of problems by mapping people, processes, materials, and more
CAUSES OF LOW SCORES ON LIBRARY ASSIGNMENT

Instruction Methods
- Unclear objectives
- Lack of visuals
- Inconsistent instruction

Students
- Lack of time
- Lack of engagement
- Overconfidence

Search Tools
- Buried in website
- Lack of licenses
- Permalinks

Class Work
- No chosen topic
- Varying skill levels
- Students per session

Assignment
- Draft and final
- Difficult formatting
- Inconsistent requirements
Improvements

- Improved worksheet format
- Provided note-taking handout and PPT
- Team taught first 3 sessions to maintain consistency
- Engaged students through active learning exercises
- Provided tutorials on permalinks
- Allowed one final draft
#3: Outreach: PICK Chart

Our application:
What outreach activities should we implement to draw in more faculty?

Use:
Organize ideas by Possible, Implement, Challenge, or Kill
<table>
<thead>
<tr>
<th>Implement</th>
<th>Challenge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attend a faculty meeting</td>
<td>Visit faculty offices</td>
</tr>
<tr>
<td>Present at new faculty orientation</td>
<td>Instruction (mobile apps, search techniques, etc.)</td>
</tr>
<tr>
<td>Join faculty listservs and contribute</td>
<td>Invite faculty to serve on search committees</td>
</tr>
<tr>
<td>Email individual faculty members</td>
<td>Host an authors' dinner</td>
</tr>
<tr>
<td>Create a custom LibGuide page</td>
<td>Newsletter/blog</td>
</tr>
<tr>
<td>Provide meeting spaces in the library</td>
<td>Provide library tours for faculty candidates</td>
</tr>
<tr>
<td>Participate in Faculty Fellows</td>
<td></td>
</tr>
</tbody>
</table>

$$
\rightarrow \text{payoff} \rightarrow \text{payoff}$$

Possible

Kill

$$
\rightarrow \text{difficulty} \rightarrow \text{difficulty}$$
#4: Collection Management: Histogram

Our application:
Do the nursing print monographs meet students’ needs?

Use:
Organize data in bar charts
Book Checkouts in the RT section
Defect: No checkouts

Defects: 641
Opportunities: 2846
Defective: 22.52%
Yield: 77.48%
Defects per million opportunities: 225,228

Sigma level: 2.25
Improvements

- 82 call numbers within RT section
- **To collect:**
  - Anything with 100% success rate: 23 ranges
  - Anything with >75% success rate: 32 ranges (additional 9)
  - **Subjects include:** NCLEX review, care plans, diagnosis guides, history of nursing, research
- **To weed (and not collect):**
  - Weed- Anything with 100% failure rate: 4 ranges
  - Not collect- Anything with >50% failure rate: 8 ranges (additional 4)
  - Watch- Anything with >25% failure rate: 28 ranges (additional 16)
  - **Subjects include:** Distance learning, info about nursing schools, LPN/Associate Degree programs, critical thinking
## Outcomes of the study

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Benchmarks</td>
<td>• Learning curve</td>
</tr>
<tr>
<td>• Motivation</td>
<td>• Methods</td>
</tr>
<tr>
<td>• Systematic</td>
<td>• Statistics</td>
</tr>
<tr>
<td>• Fresh eyes</td>
<td>• Focus decisions</td>
</tr>
<tr>
<td>• Opportunity for collaboration</td>
<td>• Lack of data</td>
</tr>
</tbody>
</table>
Conclusion

• Continue improving and controlling our processes
  • Update cost/benefit analysis for Fall semester
  • Analyze Fall semester nursing grades
  • Revisit outreach opportunities and ideas
  • Weed and purchase nursing monographs

• If you want to give it a try…
For More Information

Libraries & Six Sigma


Six Sigma Books & Websites


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