Meredith McClure-Scott. Trainers, Shorten Thy Training! An experiment to predict the effectiveness of a high-quality, interactive electronic LC shelving training tool. A Master's Paper for the M.S. in L.S degree. November, 2014. 32 pages. Advisor: Robert M. Losee

Training students to work in academic libraries is important work. It is also constant, given the nature of student turnover. Therefore, library managers and trainers should seek efficiencies in training without sacrificing quality. One part of training to examine for efficiencies is LC (Library of Congress) shelving training. This study examines which characteristics the best interactive electronic LC shelving games share per a literature review. Then it compares the performance of twenty shelvers who trained with a high-quality interactive electronic LC shelving training tool versus the performance of twenty shelvers who trained with an excellent static guide. The interactive electronic group scored higher on average and experienced fewer low scores on the LC shelving test. More significantly, the interactive group members pinpointed where they made errors, which suggests that library employees trained with interactive shelving tutorials would need less remediation than employees who were trained using static shelving guides.

Headings:

Library shelving

Computer software

Shelving for books

Library materials

Training

Outcomes-based education

Teaching machines

Tutors & tutoring

Libraries

TRAINERS, SHORTEN THY TRAINING! AN EXPERIMENT TO PREDICT THE EFFECTIVENESS OF A HIGH-QUALITY, INTERACTIVE ELECTRONIC LC SHELVING TRAINING TOOL

by
Meredith McClure-Scott

A Master's paper submitted to the faculty
of the School of Information and Library Science
of the University of North Carolina at Chapel Hill
in partial fulfillment of the requirements
for the degree of Master of Science in
Library Science.

Chapel Hill, North Carolina

November, 2014

Approved by

_____

Robert M. Losee

Introduction

Academic libraries rely on student labor for a variety of work, but particularly for help with staffing service areas and shelving books. Since these functions have an immediate impact on patrons and the collection, it is important to spend the time and energy on training student employees well. While well-trained student labor is valuable, it requires considerable investment from academic libraries. In many cases, students are only employed on a semester-long basis or less, which means that training new student employees remains a frequent and time-consuming process for library staff. Thus, student-employee training programs in libraries must be both effective and efficient. Given that training student employees is viewed as a perpetual need in most academic library settings, it makes sense for library management and trainers to regularly evaluate their student employee training programs to identify areas in which training efficiencies can be implemented without sacrificing training quality.

One area to examine for efficiencies is shelving training. Decades ago, training employees to shelve materials correctly involved staff supplying the new employee with a call number guide and then instructing the new employee to practice placing materials in order, often on a small cart or shelf. The staff member would need to be present and give feedback until s/he was satisfied the new employee understood how to put the books in order. Then the new employee would put a cart of books away in the library's stacks and the work was checked for accuracy. Though shelving work certainly still needs to be

checked periodically by library staff, using an interactive game to teach and provide accurate feedback to a new shelving trainee can reduce the amount of time permanent staff spends on training the new student employee. Multiple games to teach shelving order have already been created for this purpose (Driscoll, pp. 73-74). A range of interactive Library of Congress (LC) shelving games is available for purchase; some are even free via the web. The quality of electronic interactive shelving training tends to vary from product to product, however, which can leave academic library trainers in the difficult position of having to know which characteristics to look for in an interactive electronic shelving training tool.

The purpose of this study is twofold. The first aim is to identify which characteristics the best LC electronic shelving tutorials and games share. Secondly, the study seeks to determine to what extent a high-quality interactive electronic LC shelving game can train student employees more effectively than a standalone quality static guide. The main argument of this study is that using a high-quality electronic LC shelving game or tutorial to train student employees will lead to greater shelving accuracy by student trainees in an academic library setting.

Literature review

In spite of widespread digitization of library materials, most libraries still need many items to be physically shelved. Often the people who shelve in academic libraries are student employees (Banks, 1991; Sichel, 1982). Shelving remains important because it continues to have an impact on library budgets. A misshelved book consumes staff time

and attention. Each misshelved book uses library funds for 1) staff wages for time spent on searching for the lost item, 2) work and money related to potentially replacing the item, and 3) increased interlibrary loan expenses. Just as importantly, incorrect shelving sends a message to patrons about the library culture as a whole. Shelves of disorganized library materials indicate that library staff is not interested in whether or not the collection is maintained or that library patrons are inconvenienced. Since accurate shelving will continue to be a priority for the foreseeable future, it makes sense to study the way organizations conduct shelving training to ensure that it is being done in an effective and efficient way.

The literature review revealed general agreement that training student employees is an important and constant investment. University of Minnesota scholars Michael and Jane Kathman estimated that library student employment turnover ranges from 33-100% each year (Kathman & Kathman, 2000, p. 77), which means that supervisors and other library staff members spend much of their time training student employees. Student employees are also a challenge because their work commitment is partial and they need to be trained quickly (Baird, 2006.)

One area of training that has been made more efficient is shelving. The use of interactive electronic LC shelving games and tutorials reduces library staff time investment and still achieves excellent results. Initially, however, this method of training certainly had critics. In a 1996 article entitled, "Using Library of Congress playing cards to train student shelvers", Librarian Jim Smith asserted that modified LC playing cards are better than interactive, electronic LC tutorials or games. Smith characterized electronic

shelving tutorials of the time as being faddish (Smith, p.7). If applied today, this viewpoint would fail to consider key advantages that the best interactive, electronic LC training tools provide. The first is immediate feedback and remediation. The advantage of a high-quality interactive, electronic LC shelving game is that the learner receives immediate feedback either confirming his understanding of a concept, or feedback that tells him what is wrong *and why it is wrong*. A modified LC card game can show that a card is out of order, but it cannot explain why the card is out of order. Neither can a static guide, however excellent. Other advantages provided by interactive electronic shelving tutorials/ games are that they ultimately save staff time and provide standardized training (Rapp and Skuba, p.12). Lastly, one can also train multiple student employees at a time, whether they are learning on different machines simultaneously or asynchronously. The literature review generally shows agreement that interactive electronic shelving tools have great potential for providing effective training while providing efficiencies.

While there are several advantages to using an excellent interactive electronic LC shelving game or tutorial for shelving training, the quality of these products may vary, so the first priority in selecting a game for shelving training is to know which features characterize the best tutorials and games. According to the literature, there are four features that characterize excellence in training tutorials: 1) They teach the content they claim to, also referred to as validity; 2) They are simple; 3) They are interactive and give immediate feedback; and 4) They are accountable. All four will be explored in more detail below.

The first feature of an excellent game or tutorial is that it teaches the content or skills it claims to. Not all interactive electronic educational games for the library world have been a success (Broussard, 2012). The best educational games across industry, education and the military actually teach the content they transparently claim to (Salas & Cannon-Bowers, 2001; Markey, 2010). In a library environment in particular, Librarian Lori Driscoll goes one step further and recommends that the electronic tutorial (or game) teach the basics of LC shelving, be easy to use and take a short amount of time to effectively train an employee (Driscoll, p. 72).

Simplicity is the second most important characteristic in an educational game or tutorial. The best interactive electronic games/tutorials are simple (Salas & Cannon-Bowers, 2001; Rice, 2008). In an LC game, this involves starting with the simplest concept first: top to bottom, left to right, alphabetical order, whole number value, decimal value, et cetera. Graphics do not have to be state-of-the-art, but they do need to be clear.

The third feature the best interactive games and tutorials share is a combination of interactivity and feedback. An excellent tutorial offers the learner interactivity and feedback throughout the learning process (Salas & Cannon-Bowers, 2001; Markey, 2010). One technique for achieving this is to use a series of mini-games (Markey, 2010) that offer feedback as the tutorial-taker progresses in skill level.

Accountability is the fourth feature that the best tutorials and interactive games share. "Accountable games" is a phrase coined by researcher Timothy Charoenying in his 2010 article entitled, "Accountable game design: structuring the dynamics of student learning interactions". By definition, accountable games are transparent about what their instructional aims are; they teach what their makers say they teach (test validity) and the learner's needs are taken into account. In addition, players need to accomplish the learning goal and *they need to be aware* that they've accomplished it (Charoenying, 2010). Ibrahim Jabry, CEO of Gamelearn, further elaborates on the importance of accountability when he wrote, "Quality online training must have excellent content, a clear practical application, interactivity, [and] genuine skills development." (*Training Journal*, 2013, p. 27) Lastly, an excellent interactive game or tutorial imparts a feeling of accomplishment to the learner (Trefry, 2010). The tutorial taker needs to know what he is supposed to learn and should know when he has mastered it. An excellent LC game imparts not just shelving skills, but the feeling of mastery.

Though interactive electronic tools have been lauded in the literature, I was unable to find research that indicates that LC shelving training tools have been fully evaluated for effectiveness in academic library environments. In 2001, Karla M. Rapp and Millini R. Skuba wrote about building a library classifications systems module to train student employees to shelve. Rapp and Skuba built a module to teach LC, SuDocs and Dewey classifications systems, an impressive accomplishment. Then they randomly selected and tested nine participants, none of whom had library experience. When tested, the nine participants' median score on the module test was 94.4 percent (Rapp and Skuba, p. 16).

Since the test questions and answers were not included in the study and there was no control group for comparison, we do no not have an answer to the question of whether or not the interactive electronic shelving tool trained the nine participants more effectively than a static guide would have. We also don't know how or to what extent the nine participants' LC shelving was tested.

Five years after the Rapp and Skuba article, Lori Driscoll published an article that included a practical and condensed review of five interactive, electronic tutorials/games that were for sale or available online at the time of the article's writing (Driscoll, pp 72-74). Driscoll's article also listed a practical series of issues for librarians to consider before investing in an interactive electronic shelving tutorial/game.

The body of research on this topic seems to be missing a study that measures and compares the performance of shelvers who trained with interactive electronic games versus the performance of those who trained with static guides. My study adds to the body of knowledge about how to train shelvers because it trained two groups, one with a static guide and the other with an interactive electronic LC shelving guide, and then gathered and compared quantitative data from performance on an identical shelving test. Additionally, my study incorporated qualitative data from paper surveys filled out by 40 participants in two groups (20 in each group) to further analyze the effectiveness of both an interactive electronic LC training game and a static LC guide. The hypothesis of this study is that online interactive games with feedback will improve trainee performance on a LC card ordering test relative to static guides. Many academic libraries have invested

in interactive electronic games to teach shelving to new employees in part because they appear to save staff time. This study seeks measure to what extent (if any), interactive electronic LC shelving games are more effective at training new employees to shelve than static shelving guides.

Methodology

Recruiting

Following the receipt of IRB exemption (Study #**:** 14-1438) at the University of North Carolina – Chapel Hill and receipt of permission from the Duke University Office of Research Support, undergraduate and graduate student participants were recruited at Duke University, the author's workplace, via a DukeList posting (Appendix A**)**. DukeList is a classified advertising website for Duke University and it includes human research recruitment advertising. Potential participants emailed the author of this study to make an appointment to participate. If the participant had worked as a shelver in an academic library, s/he was not permitted to participate in the study. Forty appointments were held between July and August 2014 at the Ford Library at the Duke University campus. Participants were paid $ 5.00 in cash regardless of their performance following their participation.

The Experiment

Each participant was tested individually and in isolation from other study enrollees. Participants were first given an informed consent form to read and sign (Appendix B). Each participant was randomly assigned to one of two groups: In the static group,

participants were asked to study a quality static LC shelving guide on a computer screen for 10 minutes. In the interactive group, participants were asked to study the same static guide and play the interactive LC games for 10 minutes. Participants were not allowed to ask questions or for help. After the 10 minutes were over, participants were asked to put 25 LC cards in order (Appendix C). Again, participants were not permitted to request help. Each participant received the same 25 LC call number cards. After the participant completed putting the cards in order, s/he was asked to fill out a brief survey. The survey first asked if the person had ever worked in a library before. (Participants had also been asked the same question before filling out the informed consent. Only one person had worked as a shelver in an academic library, so he was not permitted to participate.) Then the survey asked what the participant's native language was, what other languages the participant was fluent in, and whether or not the participant had ever been diagnosed with a learning difference. The survey also contained a sample LC call number. Participants were asked to circle the parts of the call number parts that confused them or where they knew they made errors. They were also asked to explain why they made the errors or were confused (Appendix D). I used an LC shelving rubric to score the cards (Appendix E). Participants were asked if they wanted to know their scores. All 40 were very curious and wanted to know. Errors were explained and the participant was paid. No personal identifiable data was added to the surveys, but I did make a note of each participant's sex (male or female) on the survey.

Definitions

What is a high-quality interactive electronic LC tutorial? Per the literature review, high-quality is defined as teaching incremental instruction about LC shelving, giving feedback and helping the user build on small gains of knowledge. Thus, a high-quality interactive electronic LC shelving game or tutorial needs to be interactive, electronic and give feedback. It also needs to be transparent about what content it is supposed to teach the user. Lastly, the user needs to be aware of what she is supposed to learn and know when she has learned it. For testing purposes, I selected Kent State University Library's "Library of Congress Call Number and Shelving Tutorials", which are free and accessible online. The tutorial includes links to three online shelving games. All three games were used for this experiment. They can be found at:

http://www.library.kent.edu/page/13761

http://www.library.kent.edu/page/13762 and

http://www.library.kent.edu/papge/137823.

A quality static guide was defined as providing clear, accurate LC call number shelving information in a static format. For testing purposes, I used the University of North Carolina's Library of Congress Call Numbers online shelving guide, which can be accessed at http://library.unc.edu/instruct/tutorials/lc/. Note that the guide that accompanies the Kent State University Libraries game tutorial was not used by the interactive group. Instead, participants in that group used the UNC guide as well to

ensure that the only difference between how the groups were treated was the online games intervention.

In this study, more accurate is defined as a higher test score on an LC shelving test, which consisted of putting 25 LC call numbers in correct order (Appendix C).

Methods of Analysis

I used three separate methods of analysis for the study. First, the means of both groups' scores on the 25 point LC card assessment (Appendices C and E) were compared to learn whether there was a statistically significant difference between the groups' performances by using a t-test of group means. I also reviewed the range of scores on the 25 point LC card test for each group in order to learn if there were any interesting patterns in the distribution of scores. Next, I looked at whether or not participants in each group had an accurate understanding of what types of errors they made during the 25 point LC test. This was analyzed by group and used the participants' self-reported perceptions of what types of errors they made or what confused them (Appendix D). Each participant's perception of error types made was then compared it to the actual types of errors the participant made while performing the 25 point card assessment. To accomplish this, I manually counted the number of matches between observed error types (actual errors the participant made during the 25 card ordering task) and participants' self-reported errors on the survey. The result was a measure of perceived accuracy of errors that is a binary variable in which 1 equals accuracy and 0 equals inaccurate perception of errors. Then the matches were sorted and analyzed by static and interactive groups. Matches were further analyzed by sex and native language. One data item from the survey, a diagnosed

learning difference or disability in math or reading, was not included in the calculations because just one participant out of the forty indicated that s/he was diagnosed with a math learning difference or disability. There was just not enough information to draw any conclusions about training methods for participants with diagnosed learning differences or disabilities, so the category was not used in the analysis.

Data Analysis and Results

The hypothesis is that the group that played the online interactive games with feedback would outscore the static guide group on a 25 LC card ordering test. The results on the 25 LC card ordering exercise indicate that the interactive group performed better than the static guide group. Overall mean score for the interactive group equaled 22.45 and the overall mean score for the static group equaled 21.95, a small difference of .5 in favor of the interactive group. A t-test of group means shows there is no statistical significance when the two average scores are compared (See Table 1. Performance Means for All Participants, Static Participants and Interactive Participants).

Table 1. Performance Means for All Participants, Static Participants and Interactive Participants

PARTICIPANT GROUPS	MEAN SCORE (OUT OF 25)
Both Groups (40 participants)	22.2 points
Static Group (20 participants)	21.95 points
Interactive Group (20 participants)	22.45 points
	Difference between static & interactive group means = 0.5 points
	T score = .608139741, not statistically significant

Perhaps these results suggest that the static quality guide by itself is nearly as effective at training students to shelve books as an interactive electronic LC shelving game. A review of the range of scores showed an interesting phenomenon, however. The interactive tool seemed to reduce the occurrence of the lower scores (<20 points). The distribution of points for the static LC guide group varied more widely, from 12 to 25. The distribution of scores for the interactive group ranged between 19.5-25 (See Figure 1. Range of scores by static and interactive groups on LC card test and Table 2. Range of Scores by Training Type on page 14).

Figure 1. Range of scores by static and interactive groups on LC card test

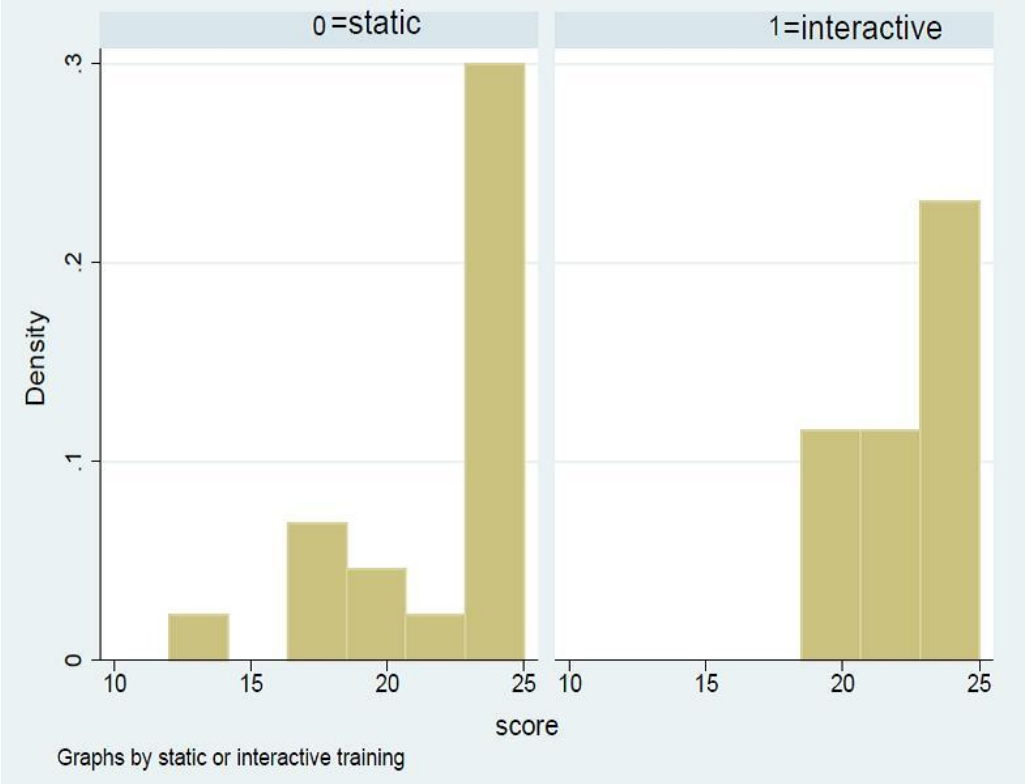


Table 2. Range of Scores by Training Type

PARTICIPANT GROUP	RANGE OF SCORES (OUT OF 25)
Static (20 participants)	12 – 25 points
Interactive (20 participants)	19.5 – 25 points

The distribution of scores in the static and interactive groups suggests that the interactive LC training provides remediation that the static training simply cannot. This outcome could be extremely important in a library workplace setting because the remediation takes place without taking any extra time or needing additional staff intervention. This form of remediation and learning could represent significant time savings for training staff,

particularly when a trainer needs to train multiple student employees each semester. Both groups had the same amount of time in which to learn LC shelving, so this strongly supports the idea that interactive electronic LC games can make a big difference in bringing up the lowest scores. Interestingly, there were more participants in the static group that scored a perfect 25 (6 in static group, 3 in the interactive group). The literature search did not yield information on this topic, but it may merit further study.

To learn if I could understand this difference in the range, there was one additional method of analysis used in the experiment; it used answers the participants provided on the paper survey given at the end of the experiment. Analysis of the qualitative survey data provided by participants revealed that the interactive tool also seemed to promote a more accurate perception of participants' LC shelving errors, or areas in which a participant needed clarification.

The twenty static guide users and twenty interactive game users put the same 25 call number cards in order after having equal time to study and/or play the interactive games. I checked each participant's card order and assigned a maximum score of 25 using the Scoring Rubric (Appendix E). I then noted the type of errors each participant made and coded them for type of error. For example, one type of error was: Cutter number level, treated decimal value as a whole number value. While I graded the LC cards test, the participant filled out a paper survey (Appendix D). One part of the paper survey contained a sample LC call number. Participants were asked to circle any part of the call number that they found confusing and to briefly explain why. (Appendix D). The

researcher then compared the participant's survey notes about what part of the call number s/he thought s/he missed to what each *actually* missed on the LC card ordering exercise. The participants in the group that used the interactive tool had a much more accurate perception of what types of errors they actually made on the 25 LC card order test. As noted above in the methodology section, I learned this by manually matching participants' self-reported perceived errors on the paper survey with the errors they actually made on the LC card ordering exercise. Then a t-test was used to compare the group means of the static group (.2) and the interactive group (.5), resulting in a T score of -2.0422 (see Table 3. Matches between Perceived Errors and Actual Errors)

Table 3. Matches between Perceived Errors and Actual Errors

PARTICIPANT GROUP	**MEAN (out of 1, ie, had at least 1 match between perceived error and actual error)**
Both groups (all 40 participants)	.35
Static (20 participants)	.2
Interactive (20 participants)	.5
	T score = -2.0422, with a probability that the observed difference is not different than that generated by chance is 0.04

Participants in the interactive electronic LC group had a statistically significant higher rate of identifying their own errors or trouble spots than the participants in the static

guide group. When compared using a t-test of groups means, this significance was a consistent outcome whether the participant was male, female, spoke/wrote/read just English or spoke/wrote/read more than one language.

Conclusions

The forty participants were recruited from the Duke University student body and are therefore reflective of the population that LC shelving training programs address at Duke University. Since student characteristics vary from academic institution to institution, however, I cannot claim that the results are generalizable to other academic institutions. In addition, enrollees were not selected on a random basis, which could skew the results. Participants were assigned alternately to either group to make sure there were equal numbers in each group and because of time constraints. Perhaps a future study could address these shortcomings by recruiting participants using random sampling at several different academic institutions.

To summarize, participants who benefited from the interactivity and feedback from the high-quality interactive electronic LC shelving game outperformed the participants who had an excellent static LC shelving guide on the 25 LC card ordering exercise. The difference in participants' mean scores was modest and favored the interactive group. The area more worthy of interest was that the interactive tool seemed to reduce the incidence of low scores, which is ideal in a library training environment since employees would require less one-on-one remediation (and it might mean less error-fixing time in the stacks). Possibly the most exciting aspect of using an excellent interactive electronic

shelving game is that it appeared to give participants in the experiment a greater edge in pinpointing their own errors, which is ideal in a workplace environment. It could help new employees find and remedy shelving problems early in the training process without using additional staff time.

Bibliography

Baird, L. (2006). Students as story-tellers: advocacy from the ranks. PNLA Quarterly, 70:4, 4, 16-17. Accessed at http://ehis.ebscohost.com.libproxy.lib.unc.edu/ehost/detail?sid=3ee954bd-b813-441f-898d-252cf5b24084%40sessionmgr112&vid=6&hid=102&bdata=JnNpdGU9ZWhvc3QtbGl2ZSZzY29wZT1zaXRl#db=llf&AN=502987662

Banks, J. (1991). Motivation and effective management of student assistants in academic libraries. *Journal of Library Administration*, 14:1, 133-154, doi:10.1300/J111v14n01_09

Broussard, M. (2012). Digital games in academic libraries: a review of games and suggested best practices. *Reference Services Review*, 40:1, 75-89, doi:10.1108/00907321211203649

Charoenying, T. (2010). *Accountable game design: structuring the dynamics of student learning interactions*. Journal of Educational Computing Research, 43:2, 135-163, doi: 10.2190/EC.43.2.a

Driscoll, L. (2005). Technology for access services: shelving tutorials. *Journal of Access Services*, 3:3, 71-74, doi: 10.1300/J204v03n03_07

Jabry, I. (2013). Game on! *Training Journal*, October, 26-29, accessed at http://ehis.ebscohost.com.libproxy.lib.unc.edu/ehost/pdfviewer/pdfviewer?sid=5992bf02-c032-47d5-ac26-df6eadf2a4ce%40sessionmgr15&vid=7&hid=3

Kathman, J. and Kathman, M. (2000). Training student employees for quality service. *Journal of Academic Librarianship*, 26:3, 176-182, accessed at http://ehis.ebscohost.com.libproxy.lib.unc.edu/ehost/pdfviewer/pdfviewer?sid=5992bf02-c032-47d5-ac26-df6eadf2a4ce%40sessionmgr15&vid=7&hid=3

Markey, K (2010). The benefits of integrating an information literacy skills game into academic coursework: a preliminary evaluation, D-Lib Managzine, no 16, available at www.dlib.org/dlib/july10/markety/07markety.html.

Rapp,K. and Skuba, M. (2001), An interactive library classification systems module, *Technical Services Quarterly*, 18:3, 11-19.

Rice, S. (2008), "Education on a shoestring: Creating an online information literacy game", in Harris, A. and Rice, S.E. (Eds.), Gaming in academic libraries: Collections, marketing, and information literacy, Association of College and Research Libraries, Chicago, IL, pp. 175-188.

Salas, E. and Cannon-Bowers, J. (2001). The Science of training: a decade of progress. *Annual Review of Psychology*, 52, 471-499, 10.1146/annurev.psych.52.1.471

Smith, J. (1996). Using Library of Congress playing cards to train student shelvers. *College & Undergraduate Libraries*, 3:1, 1-15, doi: 10.1300/J106v03n01_01

Trefry, G. (2010). Casual game design: designing play for the gamer in all of us, Morgan Kaufmann/Elsevier, Boston. MA.

Appendix A

Duke Listserv announcement:

Play a game and complete a short survey, 15-20 minutes

UNC Study conducted on Duke's West Campus:

You will be asked to read a guide OR play an online game.

You will also be asked to put some cards in order and then fill out a brief, anonymous, paper questionnaire.

As a gesture of my thanks, you'll receive $ 5.00 in cash.

Take advantage of our 20-minute time slots available Monday through Friday with hours from 7:30am to 2pm. Please note, you must be at least 18 years old to participate.

Contact me, Meredith McClure-Scott, mcscott@live.unc.edu with questions and/or to sign up.

The study will take place at the Ford Library at the Fuqua School of Business on Duke University's West Campus. **Thanks for your interest!**

Appendix B

Description of Experiment and Informed Consent for Library Training Study

Dear Duke University Student,
I'm writing to ask you to participate in a short experiment that will help examine the effectiveness of employee training methods in a library setting. Please consider taking 15-20 minutes of your time to participate in the study. Your participation will take place at The Ford Library at the Fuqua School of Business, Duke University at a time that is convenient for you. As a gesture of appreciation for your assistance, you will receive $ 5.00 in cash following your participation.
If you agree to participate in the study, you will be asked to do the following:

- Complete a brief reading OR play an online game (5-10 minutes).
- Put 25 cards in order based on what you learned during the reading or game you just completed (5 minutes).
- Complete a brief, anonymous questionnaire (paper format, no personal identifiers will be added to your survey, 5 minutes)

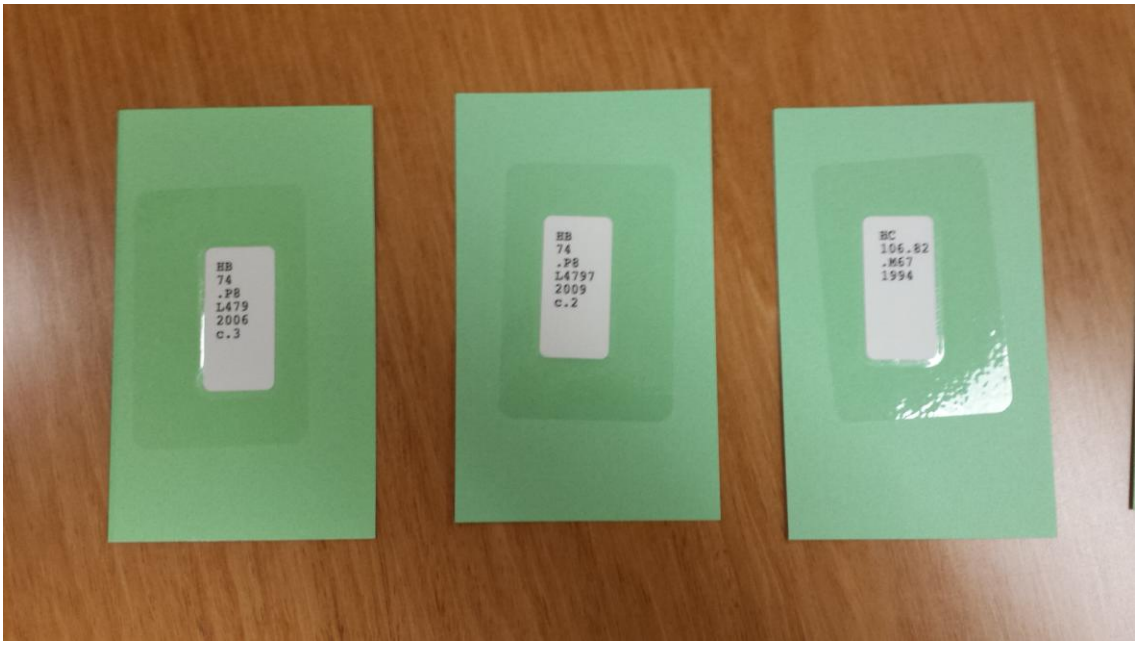
No risks are anticipated to participants and all information you give on the questionnaire will be completely anonymous. You are also free to withdraw from the experiment at any time without penalty.
If you have any questions regarding this research, I encourage you to contact me at (919) 660-7690 or mcscott@email.unc.edu . Thank you in advance for your consideration of this project. I know your time is valuable. I appreciate your help!
Sincerely,

Meredith McClure-Scott, M.Ed
University of North Carolina–Chapel Hill, School of Information and Library Science
Masters Student (and Ford Library employee)

Agreement to Participate/Informed Consent: By signing here _____, I indicate that I agree to participate in this study. I understand that I may withdraw at any time. Today's date: _____
Thanks for participating! If you'd like to know the results of this study, please write your email address in the space below. You may participate in the study without including your email address.

Appendix C

C-1. Photo of 3 LC cards out of 25



Appendix C

C-2. 25 LC call numbers used on the 25 card order test

HG 4027.65 .Z538 2007	HC 106.83 .L36 2010
HG 4027.65 .Z54 2007	HC 106.83 .L5 2010 c.1
HB 74 .P8 L4797 2009 c.2	HG 4027.7 .S5 2004
HC 106.83 .L5 2010 c. 2	G 154 .B67 1st ed. 2001
HG 4027.6 .S78 2012	HB 74 .P8 L479 2006 c.4
HC 106.82 .M67 1994	G 154 .B65 5th ed. 2012

C-2. All 25 LC call numbers used on the 25 card assessment (continued)

HB
74
.P8
L479
2006
c.1

G
154
.B433
4th ed.
2011

HG
4027.7
.S47
2008

HB
74
.P8
L479
2006
c.3

G
154
.B412
5th ed.
2013

HC
106.83
.P73
2003

G
154
.B364
2005

BC
141
.M35
2010
c.2

BC
141
.M35
2010

BC
141
.K92
1980

B
945
.P44
F66
2002

C-2. All 25 LC call numbers used on the 25 card assessment (continued)

Appendix D

Library Training Experiment Questionnaire

Thank you for participating in the library employee training experiment today! Please spend 5 minutes on this survey and your participation will be complete. Do not write your name on this questionnaire.

1. **Please *circle* one response: I have been employed at a library before.**

   True or **False**

2. **Please check one response**:

   ___I completed the reading before putting the cards in order.

   or

   ___I played the online games before putting the cards in order.

3. Below is a sample call number, much like the ones on the cards you were just asked to put in order. **Please circle any part of the LC call number that was confusing to you. Then briefly explain why it was confusing in the white space below.**

HE

8700.7

.P674

1983

c.2

Please turn page over for last questions.

4. **Circle all that apply: Which of the following languages do you speak fluently or read well?**
   English Spanish Chinese French German Russian Other_____

5. **Which of the following is your native language? Circle all that apply.**
   English Spanish Chinese French German Russian Other_____

6. **Have you ever been diagnosed with dyslexia (or another reading difficulty not related to eyesight problems)?**

   _____Yes, dyslexia
   _____Yes, not dyslexia (please briefly describe)

   _____No, I've never received this type of diagnosis.
   _____ I prefer not to answer this question.

7. **Have you ever been diagnosed with dyscalculia (or another type of math processing difficulty not related to eyesight problems)?**

   _____ Yes, dyscalculia
   _____Yes, not dyscalculia (please briefly describe)

   _____ No, I've never received this type of diagnosis.
   _____ I prefer not to answer this question.

Thank you! Your participation is complete. If you're interested in learning about the study's results, please write your email address on the form provided (on the bottom of the experiment description page, **not this page**). Be sure to collect your $ 5.00 before you go! Thank you very much for your help!

Best Regards,
Meredith McClure-Scott, MEd., University of North Carolina - Chapel Hill, School of Information Science Masters student

Appendix E

Grading rubric for LC Shelving Cards

- If all 25 cards are in correct order, a score of 25/25 is given.

- If 1 (one) card is in the wrong section, but cards are otherwise in LC order, 1 (one) point is subtracted from the score. **Example**: A card beginning with the LC classification letter A is accidentally placed within a section of cards that all begin with LC classification letter G. The G and A sections are otherwise in LC order.

- If the LC classification letters are *repeatedly* mixed in with other letters, 1 point will be subtracted for each wrong card.

- If an entire section is in order, but *is placed incorrectly between two other classification sections*, 1 (one) point is subtracted for the first incorrect card and ½ point for each of the other incorrectly ordered cards within that section. **Example**: Four cards beginning with HG are in perfect order within the HG section, however, the HG section is placed between the B and BC sections instead of after the BC section. 2 ½ points would be subtracted for the four HG cards.

- If the Cutter numbers are treated as whole numbers (instead of decimals) within a section, then 1 (one) point is subtracted for the first incorrect card in the section and ½ point for the other incorrectly ordered cards within that section. Example: Four HG cards are placed together. The participant put them in the incorrect order as follows: **HG 100 .P7**, **HG 100 .P18, HG 100 .P37 and HG 100 .P210**. 2 ½ points would be subtracted for the four cards.

- If there is a problem with a **decimal value in the LC Classification number line** (example: HG 4027.6 is placed before HG 4027.5), then 1 point will be subtracted for the first incorrect card in the series. If more errors in the range occur, then .5 points will be subtracted for each of the same type of error within the section.

- If cards are in correct order except for **copy number** (example, c.3 being placed before c.1), 1 point will be subtracted for the first incorrect item. ½ point will then be subtracted for the next copy order error within a section.

- **Letters** on Cutter level are out of order (placing H 65 .K47 before H 65 .G53). 1 point will be subtracted for the first incorrect item. ½ point will be subtracted for the same type of error within a section.