Repurposing Space in a Science and Engineering Library: Considerations for a Successful Outcome

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ABSTRACT

In response to the growth of digital collections, services, and changes in legacy operations, Rodgers Library for Science and Engineering at The University of Alabama prepared a plan to re-emphasize the "library as place." Changing expectations and needs of users was another catalyst for change. A major project followed to repurpose substantial space formerly used to house collections and deliver services linked to physical collections. As part of the change, the library streamlined legacy operations and added new services such as specialized academic software and new technology. The library was developed as a place where students can collaborate, share, and perform a wide variety of research and instructional activities using special technologies and modern facilities. Importantly, the library was designed as a flexible environment with emphasis on mobile furnishings and technologies. To create ambience and build an inviting atmosphere, library space was embellished with attractive art and high-demand accessories such as casual seating and café services. This paper reports on repurposing an area of about 13,000 square feet in the Rodgers Library for Science and Engineering. The project was completed in about one year. Preliminary assessment data revealed that in the year following space repurposing, library use increased dramatically with patron visits up about 43 percent over the prior year.

KEYWORDS Space repurposing, library buildings, renovation, planning, assessment

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INTRODUCTION

Libraries are at the epicenter of major changes sweeping scholarly communication and higher education. Legacy facilities, services, and collections that served academic communities well in the past, while still valuable, are unlikely to satisfy the needs of current students and faculty. Current students and faculty desire digital collections and virtual services. The digital library is the new norm and libraries are embracing opportunities to expand their offerings with new and novel services. Such changes into the digital library realm have led existing libraries to reconsider how physical space is currently being used and what can be done to repurpose and advance the space to better suit the needs of students and faculty.

Existing space is at a premium as most libraries are at near capacity with print materials. Transitioning space from housing print collections to other uses, while somewhat of a challenge, can be accomplished. Removal of print books and journals which are often in less demand is a common solution. Options pursued for disposal of print resources include storage in offsite facilities, withdrawal, or sometimes arranging a solution based on shared collections.

After removal of collections, space primarily dedicated to collections becomes available for a higher use. In addition, space used for legacy services becomes available for modification to reflect changes in ways that students study and learn.

While many other libraries have engaged in renovation projects few are reported, at least in complete detail, in the professional literature. This study seeks to fill the gap in the literature and focuses on a particular repurposing space project in the Rodgers Science and Engineering Library at The University of Alabama. The repurposing project evolved as a direct response to the changing academic environment. Conceptual issues, elements of planning, project implementation, assessment, and other aspects of space repurposing are discussed in this article.

LITERATURE REVIEW

Major changes are occurring within libraries worldwide to meet the needs of 21st century students, particularly in terms of services, space, and collections. Kubilius et al. (2009) discussed a shift in focus from collections to new user expectations, patron-centered collection development, and other services to promote resources. The authors also noted that library budgets, space, and staffing organization need to be revisited and adapted to satisfy the priorities of the parent university.

Several university libraries have already begun re-purposing space to meet the needs of their users, for example Bennett (2007) discussed the transformation of a section of the Georgia Tech Library. The space consists of collaborative computer stations, mobile furniture, fabric wall sections, and adjustable lighting.

Another example of a re-purposing project is the Arts Library at the University of California San Diego Libraries (Abrams, 2011). The main goal of the renovation project was to create highly functional and productive spaces. Abrams noted that establishing a task-oriented team is critical before undertaking such projects. Further, Abrams stressed the importance of working and communicating well with various administrators and staff involved in the project.

Other recent renovation projects include the James Herbert White Library at Mississippi Valley State University (Henderson, 2012) and the Rowland Medical Library at The University of Mississippi (Grabowsky and Wright, 2012). Henderson described the highlights and results of a renovation project that targeted a balance between aesthetics and functionality. Grabowsky and Wright reflected on the impact of the renovation project on themselves as new librarians involved in the project.

The particulars of these renovation and repurposing projects are unique for each library. However, all projects have a common purpose; that is, improvement of services and spaces to benefit users.

CONSIDERATIONS IN RODGERS LIBRARY REPURPOSING PROJECT

Goals

Understanding the mission and goals of the library's parent institution is a primary consideration when planning library spaces. Only after this is clear does the vision of the library and the ways the library can support learning, teaching, and research become evident. In libraries, an accepted vision holds that the library is at the center of users' academic experience, and the library is a partner in promoting academic success.

VISION STATEMENT FOR RODGERS LIBRARY PROJECT

In partnership with academic departments in the sciences, engineering, and nursing, as well as with related support centers/services, the library seeks to promote learning, teaching, and research in an information rich environment, infused with the latest technologies, in a manner that fosters individual enterprise, collaborative endeavors, sense of social community, and a common sharing of ideas all aimed toward advancement of institutional mission, goals, and priorities.

Importantly, change is a part of institutional progress. As the parent institution changes, so too must the library. In essence, the library is evolving, and building on an earlier foundation and reaching for the future. Setting goals is a major step in any library repurposing project. Goals should be formulated with an understanding that the traditional ways of operating are less important and that new and better approaches are emerging. Hence, an analysis of how research is performed, what the library offers, and the direction the library is moving are essential considerations when setting goals. Overall, the basic aim is to focus on repurposing space that meets contemporary user needs and doing so within the context of legacy operations and the modern digital library, with emphasis on the latter.

The goals for the Rodgers Library repurposing project were as follows: (1) promote student collaboration and sharing; (2) integrate the library with classroom activities; (3) expand the role of the library; (4) enhance library aesthetics and ambience; and (5) increase efficiency in library operations.

Project Team

Planning and implementation of a repurposing space project is best handled using a team approach. With representation from different areas in the library, a planning team can be assembled to consider all aspects of a project and meet the challenges that might develop along the way. Who should be on the project team? Librarians and staff who work in the building where the renovation is to take place are an excellent choice as participants on the team. Onsite personnel provide perspective on delivery of services and understand the needs and expectations of users, both students and faculty. A representative from a library's business or financial accounting unit may be important since this unit usually has experience with project management and connections with campus departments that are responsible for building and maintaining physical facilities, including computer networks, as well as outside vendors. Since new space is heavily infused with technology, participation of personnel from the library's technology department is essential. Technology personnel can provide guidance on selection of hardware, answer technology-related issues, and cost-out appropriate hardware.

Participation of departments and vendors from outside the library is essential as well. In the case of this project, many experts were used as consultants in an advisory role. Personnel from campus interior design prepared plans for layout of furniture and gave advice on carpet selection and paint schemes, for example. For Rodgers Library repurposing, the main project team consisted of two reference librarians, two administrative librarians, one staff person, and a library business office administrator.

Services.

A successful repurposing project engages students in many ways. Many students still seek a convenient and quiet place to study or conduct independent research. Further, students often collaborate on class projects such as group homework or presentations. Library space, conducive to all these student activities is critical.

Repurposing space provides an opportunity for a fresh examination of a library's services. How should services be apportioned and configured for best results? Can service points such as reference and circulation be changed, removed, or consolidated? Should particular services, such as group study rooms or desktop computing, be expanded? Is the new space compatible with overall patterns of use and movement? Mechanisms for delivery of services are also important. Further, many relationships exist between legacy and new services. Optimal results are achieved when old and new services are well coordinated. Introduction of new services is often a goal in repurposing space projects. Possibilities for new services are boundless. A modern library can dramatically expand its role in learning and research when properly executed.

For the Rodgers library repurposing project, it was decided to combine the reference and circulation desk into one service point. A large welcome area would exist in its place that

included a variety of soft seating. Further, to increase services offered, two group study rooms, a Café, and a 3D Printing Studio were added (Scalfani and Sahib 2013).

Technology

Due to changes in content and delivery of instruction and advances in methods in research, cutting-edge technologies and software are central to successful space repurposing projects. With deployment of media- and data-capable hardware, both desktop and mobile, the library must be prepared to meet student needs. For example, what technology can be added to support the needs of students and researchers? On the computing side, the presence of both Macintosh and Windows computer operating systems ensures software compatibility as well as student preferences. Beyond the library's discovery systems, academic software is essential. Computer programs such as MS Office suite, Adobe Creative suite, AutoCAD, and MATLAB foster creativity and allow students to complete a wide range of classroom and independent activities.

A variety of new technology was selected by the Rodgers Library planning committee including the addition of approximately 60 new computer workstations with a variety of advanced academic software, media hardware, three large TV monitors, a smart board, and a 3D Printing Studio (Scalfani and Sahib 2013).

Aesthetics

Application of best architectural practices is very important. In a broad sense, the new space should mesh form with function and have good aesthetic appeal. For best results, new space should be configured without permanent anchors to ensure flexibility and accommodation of a wide range of student activities. Infrastructure such as lighting and power must allow for operating in an open and fluid environment. Further, mobility is an essential characteristic when choosing and configuring hardware and furnishings. Finally, future changes or expansion must be considered. Furnishings may get less attention in repurposing projects but are no less important for project success. Selection of computer furniture for desktop operations is a prime consideration. When building workstations, desks and tables should allow easy use of computers and ensure high productivity. Is ample work surface available at workstations? Do chairs provide comfort and freedom to move back and forth? Workstation alignment and configuration are important as well.

Creating a warm and attractive environment can be overlooked in repurposing projects, but not without consequence. Thoughtful design is essential for tying components together and creating a place of harmony. Basic elements of design, such as color, texture, and style enhance the appearance of furnishings, walls, and floor coverings. When paint schemes on walls match with the furnishings, repurposed space becomes attractive and inviting.

Such aesthetic factors were considered during the Rodgers Library repurposing planning. For example, furniture finishes and paint schemes were carefully selected by the team to create modern aesthetics and all new furnishings added were mobile and could easily be adapted in the future.

Budget

How much can be achieved in a repurposing project depends on available funding and budget allocation for facilities, equipment, and furnishings. Of great importance in this regard, funds used for construction-related items means less expenditure for tangible assets which promote learning and scholarship. The budget can be optimized when fewer funds go toward making changes in structural, electrical, or mechanical components. However, building improvements for items such as painting and changes to flooring are of high value. Perhaps the most beneficial improvements are hardware and furniture. Of course, building improvements for items such as painting and changes to flooring are of considerable value as well.

Specific costs within major categories are dependent on many variables. With computers, high-end Macintosh computers may be more costly than Windows PCs. But the choice may not be only a matter of dollars and cents. Selecting an appropriate mix of Macintosh and Windows PC computers is important for compatibility of computer software. The issue of preferences of users is also in play when choosing computers. Great possibilities exist when choosing furniture and furnishings. Furniture and furnishings are at the interface of humans and machines and, as such, are a huge consideration. Design, durability, aesthetics, as well as pure functionality, are important and lead to ease of use, comfort, and productivity.

As for the relative cost of the repurposing project at Rodgers Library, furniture was the most expensive part of the project at 38 %, followed by hardware at 34 %, carpet and painting at 14 %, electrical and networking at 7 %, construction at 4%, and other at 3 % (see Figure 1). These figures represent how funds might typically be allocated for a makeover of a single, relatively large space (13,000 sq. feet) with only minor physical changes in the building layout. Space

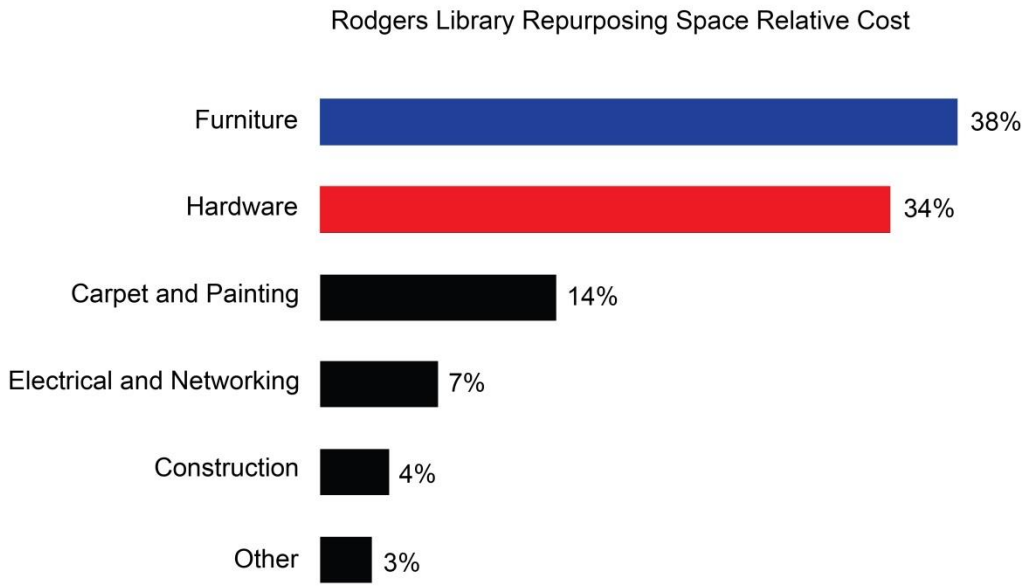

Figure 1. Relative cost, by category, for repurposing 13,000 sq. feet open space, with limited architectural changes in a standalone science and engineering library. Data in this illustration are based on expenditures from Rodgers Library repurposing project. Project Categories: Furniture includes computer tables, task chairs, soft seating and casual seating; Hardware includes desktop computers (Macintosh and windows PC), large TV screen monitors, smart boards, white boards and camcorder; Carpet and painting includes material and labor for new paint and carpet; Electrical and networking includes power and data connections; and Construction includes demolition, building and project fees.

planners should be aware that renovation costs can vary considerably in different regions of the country, so actual project costs are best estimated at the local level. Further the relative costs for this project are presented for guidance only and may not be a perfect match for projects undertaken in other institutions.

IMPLEMENTATON AND OUTCOME

Prior to 2011, the ongoing external digitization projects (e.g. JSTOR) and publisher migration of print journals to electronic format resulted in a very limited expansion of the print collections and a tremendous increase in electronic content. Print volumes were no longer significantly expanding. This positioned Rodgers Library to focus on new uses for existing spaces.

Importantly, other factors played into the space equation as well: (1) acquisition of digital archive journals; (2) growth of e-book content; and (3) relocation of selected print volumes from Rodgers Science and Engineering Library to an off-site storage annex. As a result, it became possible to completely remove print volumes from the first-floor space and allow a repurposing project to move forward.

Starting in the summer of 2011, print volumes such as reference books were relocated to the second floor of the library and placed on pre-existing shelving. Selected print journals and abstracts/indexes that were readily available electronically were moved into an off-site annex storage. The relocation project and opening of space on the first floor was completed by the spring of 2012.

Contractors were brought in following the end of spring semester 2012. In June 2012, the space was cleared by removing the empty shelving stacks, reference desk, and carpet. Next, electrical outlets and networking lines were added as needed for the new space. A café room was constructed in place of a small, shared computer workstation area. Two new group study rooms were also built. The newly constructed areas, along with new carpet and paint were completed in July of 2012. By early August 2012 the furnishings including study tables, computer tables, chairs, and soft seating furniture were installed. Pre-existing study tables and soft seating furniture were modified for the new space. The tables were outfitted with electrical outlets and the soft seating furniture was reupholstered. New chairs, computer tables, and additional casual seating were purchased and added in the new space.

New technology hardware was added in August 2012 including 35 Windows PCs, 24 Macintosh computers, three mobile large screen presentation monitors, a smart board, media hardware (e.g.

camera and tripod), mobile whiteboards, and an expansion of supported academic software. The new space was then opened in late August 2012. Notably, a 3D Printing Studio (Scalfani and Sahib 2013) and mobile charging station were added post-opening of the new space in October 2012.

In summary, the Rodgers library repurposing project resulted in several major changes to the space and services. An existing reference desk was removed. In a new service configuration, reference desk services were combined with the circulation desk. In the reference desk's place is a new welcome area with a variety of soft seating furniture. Instead of the many book stacks, there are over 50 computer workstations. Additional casual seating was added throughout the entire space. And in place of a dated and small computer catalog area is a café. Two new group study rooms were added to the space. Lastly, other major changes included a variety of technology and media additions.

PRELIMINARY ASSESSMENT

Users have responded very positively to the repurposing project. In support of this claim, there was a significant increase in library visits immediately following the completion of the project in August 2012. For example, in the month of October 2012 following the repurposing there was a 55 percent increase in visits compared to the prior year month of October 2011 (pre-renovation) and comparing December 2011 (pre-renovation) to December 2012 (post-renovation) revealed an 86 percent increase in visits. Other months (excluding summer and spring recess), following the renovation, have all seen large increases (greater than 40 percent) in the number of visits as well (Figure 2).

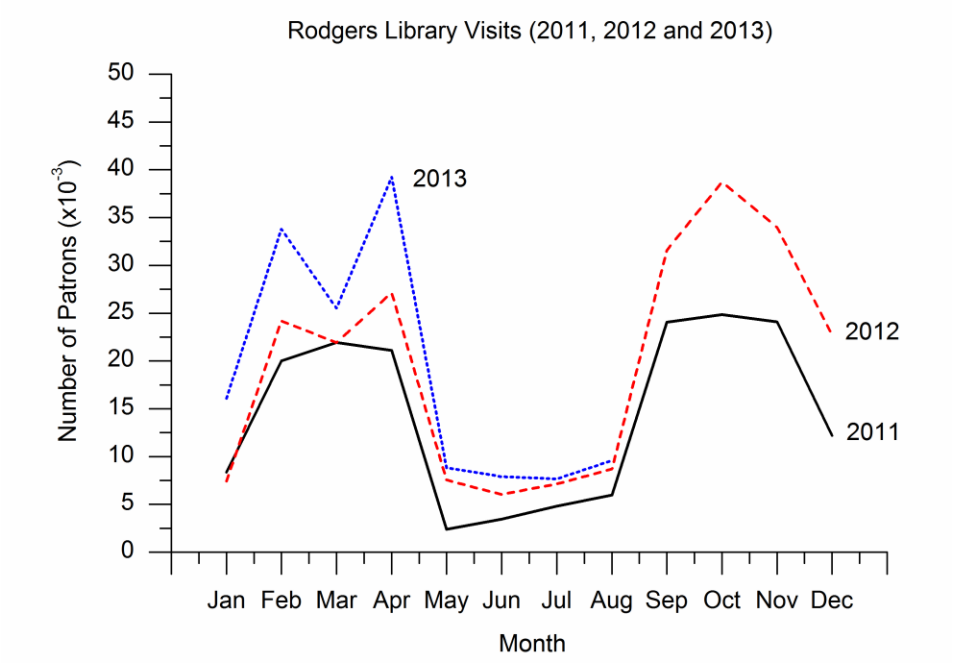

Figure 2. Patron visits to Rodgers Library, pre- and post-repurposing. Spikes in number of visitors to the library during fall term 2012 over fall term 2011 and spring term 2013 over spring term 2012 demonstrate a positive outcome from the repurposing space.

Notably, the data shows a moderate increase in traffic during the spring of 2012 and summer 2012 months. Anecdotal evidence suggests that this can be largely attributed to the increased traffic of workers during the repurposing project and does not accurately reflect an increase in library patron traffic.

The increase in patron visits observed in Rodgers Library for Science and Engineering post-renovation may slightly be accounted for by increased student enrollment (about six percent) on Campus from 2011 to 2012 more generally. However, the increase in patron visitation that we have observed in the Rodgers Library for Science and Engineering post-renovation have far exceeded the expected increase in visitation solely attributed to an increased student population.

Over the last year library personnel have monitored student usage of the new space and found that the computer workstations and group study rooms were typically the most occupied spaces. This was also confirmed from informal survey data collected from the students following the renovation project. Students noted that they enjoyed the new space, particularly the modern look, group study rooms, and large increase in the available computer workstations. Overall the vast majority of feedback collected was positive. A common suggestion for improvement to the new repurposed area was more group study rooms. Assessment of use of the new space continues as an ongoing endeavor.

CONCLUSION

Science and engineering libraries are changing in ways not anticipated even a few years ago. In past decades, space was used primarily to house vast collections of print materials and for delivery of services closely aligned with those collections. With the advent of digital materials and virtual services, the situation shifted dramatically. Physical collections and space vacated can be used as a place where students can collaborate, share, and perform a variety of activities. This shift in collections coincides with changing needs and expectations of students and faculty. These changes have opened the door to reexamine legacy services and to build new services while recognizing that the library is still in various stages of transition but is mainly on the path toward fuller integration with classroom activities and research. Careful planning with a solid vision and well-articulated goals can move a library forward in meaningful ways. Implementation of a major space repurposing project requires considerable resources, both internal and external. When a project is coordinated by a well-chosen team and available local campus resources are fully utilized, a modest-sized space can be repurposed in about one year. Assessment conducted in the year following completion of the project described in this paper shows a dramatic increase of user visits to the library as well improved user satisfaction. Even as the virtual library is rising, the library as place is still very important in the academic success of science and engineering students.

Photograph of Rodgers Library for Science and Engineering, The University of Alabama..

Appendix A
Profile of Rodgers Library for Science and Engineering

History of Rodgers Library*

Rodgers Library for Science & Engineering opened on the campus of The University of Alabama on June 05, 1990. The library represents a merger of the science library collection and the engineering library collection. This library is named in honor of Eric Rodgers, professor of Physics, and Sarah Rodgers, professor of statistics, former members of the University of Alabama faculty. In 2002, the nursing collection which was housed in Health Science Library was moved to Rodgers Library for Science and Engineering.

The Science and Engineering Library was the first departmental library at The University of Alabama built with the intent of taking maximum advantage of computer-based information systems for research. Representatives from IBM's national library research team and other library consultants from across the country met to design the floor plan of the building in order to accommodate new as well as traditional forms of information storage and retrieval. In anticipation of the electronic publication of library materials, planners studied and prepared for the use of digital information technology in the new facility. A scientific communication

laboratory inside the library (currently called Scholars' Station) helps faculty to teach students how to use special databases and other electronic research systems.

Aesthetically, the library is compatible with existing Greek revival buildings on the quadrangle. The library at the University of Virginia designed by Thomas Jefferson was the inspiration for the original University of Alabama Library, which was burned during the Civil War. The Eric and Sarah Rodgers Library for Science and Engineering incorporates dome and rotunda elements reminiscent of this earlier library. It is interesting to note here though the front of the building is strongly classical, whereas the north end has a fresh touch of modernist geometry. While the building's exterior is traditional in effect, its interior is distinctly high-tech.

*Excerpt of information reproduced from general brochure for Rodgers Library for Science and Engineering.

Profile of Rodgers Library

Demographics of Students Served at Rodgers Library

- 26 % of students in sciences
- 49 % of students in engineering
- 25 % of students in nursing

Overview of Rodgers Library Facilities, Collections, and Services

Facilities/Equipment

- 43,000 square feet (two floors) situated in the center of STEM complex of the university
- Approximately 342 seats for patrons use
- Seven group study rooms with presentation/smart board equipment
- Individual study carrels and study tables
- Silent zone for patrons
- Scholars' Station for instruction/general use
- Copiers/printers/scanners station
- 3D Printing Studio
- Abundant PC and Mac computers
- Electronic sign to display and promote new and notables
- Treat Corner - snack and vending area with television
- STEAM (science, technology, engineering, arts, medicine) themed visual displays/art pieces on the walls/floors
- Charging station for mobile electronic devices

Collections

- Over 1,600 e-journals for science, engineering, and nursing
- Several thousand additional journal titles in the online catalog (titles other than science, engineering, & nursing)
- Over 200,000 books (and additional titles stored in Annex with same or next day retrieval)
- Over 100,000 microforms mostly government documents (NASA & DOE publications)

Services

- 24/5 hours during the academic year
- 24/7 hours for two weeks during exams time
- Academic software to support STEM along with other software for general use
- Laptops and scientific calculators for check-out
- Bibliographic management software
- Circulation/reserves
- Self-check-out station
- Reference/research assistance
- Instruction services
- 3D printing studio
- LibGuides to support STEM and nursing subject areas
- Inter-library loan service
- Security guard at late night hours
- Staffing at all hours the library is open
- Support for online/distance education in STEM subjects and nursing

Rodgers Library for science and engineering, one of the branches of The University of Alabama Libraries primarily serves students, faculty and researchers in the sciences, engineering, and nursing. The library has the latest and best resources both print and electronic books and periodicals, databases, and other resources to support science, engineering, and nursing departments. It is a place to study, learn, collaborate, and conduct research, or just make a “Go to Place” for all of the university community.

REFERENCES

Abrams L. 2011. A Case Study in Transformative Renovation and Organizational Change at the University of California, San Diego Arts Library. *Art Documentation* 30(2):64-69.

Bennett C. 2007. A New Story to Tell: The East Commons at the Georgia Tech Library. *Georgia Library Quarterly* 43(4):17-18. [Internet]. [Cited September 03, 2013]. Available from: http://digitalcommons.kennesaw.edu/cgi/viewcontent.cgi?article=1005&context=glq

Grabowsky A. and Wright M. 2012. New Job, New Setting, New... Everything: The Story of Two New Reference Librarians and How They Survived a Library Renovation Project. *Mississippi Libraries* 75(2):49-52.

Henderson M. 2012. Library Renovation Lessons Learned…and Still Learning. *Mississippi Libraries* 75(2):47-9.

Kubilius R.K., Thibodeau P., White M. 2009. [Internet]. Transformation Change: The 9th Annual Health Science Lively Lunch. *Proceedings of the Charleston Library Conference*. [Cited September 03, 2013]. Available from: http://docs.lib.purdue.edu/charleston/2009/Management/10/

Scalfani V.F. and Sahib J. 2013. [Internet]. A model for managing 3D printing services in academic libraries. *Issues in Science and Technology Librarianship* [Cited August 30 2013]. Available from: http://www.istl.org/13-spring/refereed1.html

Citation

Sandy, John H., Mangala Krishnamurthy, and Vincent F. Scalfani. "Repurposing Space in a Science and Engineering Library: Considerations for a Successful Outcome." *The Journal of Academic Librarianship* 40, no. 3-4 (2014) 388–393.