



**Sustainability Case Study:
Central Michigan University Museum Studies Program & Museum Laboratory
Renovation and American Chemical Society Exhibit Installation
2021-22**

1. Contact info:

Jay C. Martin, Ph.D.
Director, CMU Museum/Museum Studies Program
103 Rowe Hall
Central Michigan University
Mt. Pleasant, MI 48859
Marti6jc@cmich.edu
989-774-7165

2. Focus of Case study; Waste Minimization

Museum Studies Program students disassembled old displays and recycled them into new exhibits at the Central Michigan University Museum, gaining valuable experience in sustainable practices.

3. Detailed description of campaign or effort:

In 2021, the Central Michigan University Museum worked with fifty-three students in the Museum Studies Program (MST) and allied programs to disassemble old exhibits, reclaiming the wooden materials (2x4 studs, plywood panels, window frames) and fastenings (screws, nails, hinges) for reuse in a new exhibit that was built during the 2021-22 academic year. Ninety percent of all materials from the old exhibits were reused in this project and the rest recycled, achieving a low impact on the environment while the students learned how to create new exhibits on a limited budget. The exhibit was designed with the help of Central Michigan University MST Program faculty and students, funded by an external stakeholder, the Midland Section of the American Chemical Society. It was initially installed at the Doan Center in Midland, Michigan, before its relocation to the CMU Museum. Ninety-nine percent of the original exhibit was reused in the expanded installation that will open at the CMU Museum in late Spring 2022. Both CMU personnel and outside stakeholders worked to maximize the reuse of material from old exhibits in this installation, significantly reducing both its cost (80% reduction) and its impact on the environment (60% reduction) compared to prior exhibits. Exhibit quality was maintained and enhanced by this reuse of materials.

4. Planning steps & timeline of implementation:

The steps involved in planning the project included:



- May 2021
 - Designing the new exhibit installation layout, alterations, and additions.
 - Surveying the existing exhibits and identifying wooden and metal materials that could be saved.
 - Deconstructing the old exhibits, separating reclaimed materials into categories, and determining which materials could not be efficiently reused and therefore needed to be recycled.
- June 2021
 - Storing reusable material.
 - Removing recyclable material from the installation site with the help of University Landscape Maintenance/Recycling.
- July-August 2021
 - Cleaning and preparing the exhibit space for new construction.
 - Planning for new construction based upon the use of salvaged wood and metal fittings.
- September-December 2021
 - Pulling and examining recycled material to select that which would be most appropriate for construction.
 - Engaging MST classes in exhibit planning and implementation.
 - Removing the last vestiges of the former exhibit, which included painting over an interpretative display on the gallery ceiling.
- January-March 2022
 - Assembling wooden panels for the exhibit space using salvaged material.
 - Installing carpet to cover wall panels, using available salvaged material with the addition of some new material.
- March-April 2022
 - Installing interpretive exhibit banners over the new wall panels.
 - Adding historical artifacts from the CMU Museum collection to bring Michigan history to life.
 - Opening the exhibit to the public.

5. Resources and stakeholders involved

The CMU Museum provided the project with a modest budget and reusable construction materials reclaimed from exhibits that were originally erected in the 1970s. CMU Facilities Management provided expertise in electrical rewiring, equipment (including a scissor lift) and training to operate it safely, and help with recycling materials. Faculty and staff of the CMU Museum and Museum Studies students worked with an external sponsor, the Midland Section of



the American Chemical Society, to design (with external exhibit designer Good Design Group) and produce the exhibit based upon a prior installation that students and faculty had helped design and install at the Doan Center in Midland, Michigan. Ninety-nine percent of this original exhibit was reused and augmented to create the exhibit at the CMU Museum. Students in the Museum Studies and allied programs worked with installation materials, applying theoretical exhibit design principles through their efforts to build and install the new expanded exhibit entitled "A Century of Science and Service, 1919-2019."

Traditionally exhibits approaching 2,000 sq. ft. cost \$25,000-\$26,000 to design, build, and install. The extensive use of recycled materials for this project slowed the pace of progress at times, but this choice reduced the cost to 10% of previous exhibits.

6. Describe the Results of this campaign component

a. General results

The first goal of the Museum Studies Program (MST) is to provide methodological preparation for students who wish to enter the field and the second to provide the students with applied experience using the program laboratory, the CMU Museum located in Rowe Hall. These goals were achieved through the active participation of six MST classes and one HONORS Program class in the project, as well as student employees and volunteers of the Museum. The project also involved students collaborating with faculty, staff, and external stakeholders to achieve a common goal. The resulting exhibit was delivered of very high quality, but cost only 10% of prior installations because of the extensive use of recycled material.

b. Specific measurable impact figures

The deconstruction of exhibits produced approximately 105 cubic yards of material, 90% of which was reused in the new exhibit installation. All material from the original ACS exhibit at the Doan was reused with the exception of a molecule display composed of Styrofoam materials, which was not suitable for the new exhibition space. In all, 99% of the ACS exhibit was reorganized and installed at the CMU Museum. Approximately 692 hours of student time were applied to this project. The Museum saved 90% of the cost of this exhibit compared to prior installations.

The educational impact of this installation will be significant. During the run of the exhibit, 16,000 K-12 students/teachers are expected to participate in tours or educational programs associated with the exhibit. Similarly, an estimated 15,000 members of the regional and university community are expected to interact with the exhibit and its message of sustainability.

7. What would you do differently in the future?



Planning for this exhibit started in 2019, but the hands-on components were completed in the midst of the COVID-19 Pandemic. As a result, this section of the exhibit took significantly more time to finish due to the need to socially distance and take other precautions for safety. Additionally, supply chain shortages pushed up the cost of the few new materials incorporated into the project, making it slightly more expensive than originally planned. Though one could not plan ahead for the pandemic, had we known the extent and duration of this event, as well as the stops and starts caused by mandatory work at home and social distancing orders, we could have used our time more efficiently. Overall, the project was very successful and serves a model for future exhibit production at the CMU Museum and elsewhere.

8. What advice would you give to another college that wanted to do a similar effort?

All university museums should be encouraged to reuse or recycle as much material from past exhibits as possible in their new installations. Student engagement is clearly the key to achieving low-waste projects in the university environment to reduce our consumption of materials. Such projects are beneficial to the students involved as well, but helping them resist a throw-away mentality. Students responded enthusiastically to being able to help use resources wisely during this project. They blossomed through the process of creative problem solving as they adapted older, oddly dimensioned materials to new functions.

9. Photos and Graphics

The images below and the associated captions provide documentation of the gallery renovation and exhibit installation process.



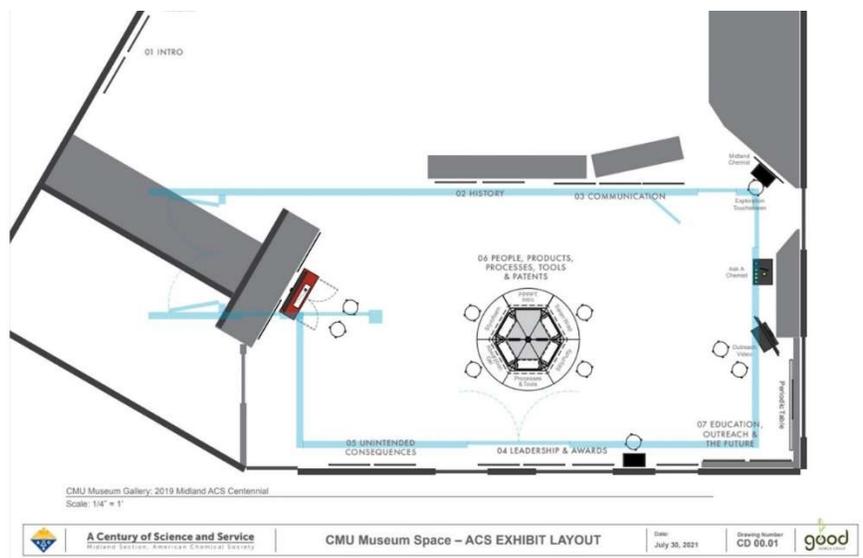
At the beginning of the project, exhibits built in the 1970s were removed, taken apart carefully, and all salvageable material recovered for use in the new exhibit. Unusable material was recycled with the help of CMU Facilities Management. Here Museum Director Dr. Jay Martin stands atop a recently toppled case, holding it in place while students remove the base to free 2x4s to be reused in the new exhibition. Visible in the background are the old exhibit cases that were removed and recycled.



Extracting nails and screws so that both the wood and the fasteners could be reused was very laborious for Museum Studies students, but it made the success of the adaptive reuse possible.



Materials from past exhibits and the demolition of existing exhibits built in the 1970s were recycled for use in the gallery renovation and exhibit installation.



The design for the exhibit installation was created by the Good Design Group, in cooperation with the American Chemical Society Midland Section and the CMU Museum/Museum Studies Program. The



freestanding cases in the middle of the space, 90% of the cladding on the walls, and the exhibit itself were all reused items.



A scissor lift and other equipment loaned by CMU Facilities made it possible to reconstruct the exhibit using 99% of its original components.



Salvaged 2x4s and plywood panels were used to clad the existing brick wall in the installation area and support the use of new inexpensive carpet to create a neutral exhibit backdrop. Those recycled materials are clearly visible beneath the carpet being installed by students. The autographed “heart” placed in the exhibit was intended to encourage future students to recycle the same material. Hopefully this will create a tradition among CMU Museum Studies students.



Installation

Students learned both basic and mid-level exhibit installation techniques during the final assembly of the *A Century of Science and Service* exhibition. On March 24, 2022, students from MST 315 erected the centerpiece, a 16 foot tower assembly that incorporates hands-on activities (for instance, making your own molecule, working with Silly Putty™, etc.) for children. Small artifact displays were also incorporated.

Our cache of available recycled building materials is visible behind the tower stacked atop exhibits in the middle left of the image.



Reused panel installation covered the newly carpet-covered wall cladding made from recycled materials. Museum Studies students learned basic installation techniques and then completed 100% of the



interpretative panel installation. The student newspaper *CM Life* did a feature story on the exhibit focusing on pioneering women in STEM disciplines.



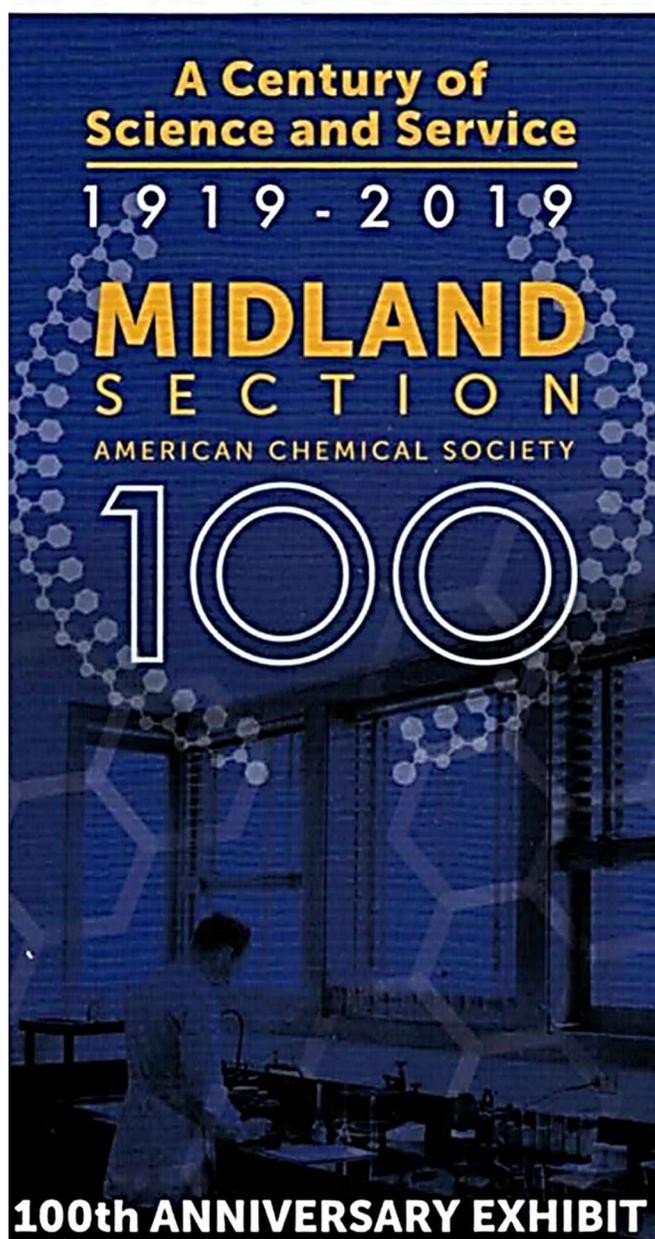
The completed exhibit provides hands-on educational opportunities for K-12 audiences, both through formal and informal educational programming. Educational programs about the responsible use of resources and environmental sustainability are part of the experience. This group from Big Rapids, Michigan, was the first to visit the exhibit in person in April 2022.



The new exhibit is the catalyst for STEM educational programs delivered nationwide through the CMU Museum's distance learning platform. This high school group in Brookhaven, New York, participated in a program entitled *Making HERstory: Women in STEM*, delivered by Museum Educator Rebecca Petrone



(on the screen at center) and American Chemical Society volunteer Regina Malczewski in March 2022. Our distance learning programs help promote the importance of creative recycling concepts to audiences throughout North America and beyond.





Promotional material supports the importance of the exhibit topic to a geographic concentration of many institutions of higher learning that research and teach chemistry, as well as pioneering industry leaders including Dow Chemical Company and Dow Corning in Midland, Michigan. Professionals, professors, and students are united by their professional organization, the American Chemical Society.