

Synopsis

Project Title: Classroom with a Current Watershed Education at the Grand Rapids Public Museum 2015.1517

Grantee Organization: Grand Rapids Public Museum

Project Team:

Grand Rapids Public Museum

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Grant Amount: \$99,980

Time Frame: April 1, 2015-March 31,2017

Focus Area: Stewardship

Brief Project Summary:

The Grand Rapids Public Museum (GRPM) Classroom with a Current program provided an opportunity for thousands of students to experience inquiry-based learning with a focus on the Great Lakes Watersheds. Programs were designed to provide information that assisted students in becoming (1) active and effective stewards of the Great Lakes and (2) advocates for strategies that support the long-term sustainability of the Great Lakes fisheries. Programming included new Museum based field trip programs, summer camp experiences, an after-school program and a youth watershed team. The highest level of engagement in summer camp experiences and field-trip based programming.

Project in Context

For the past 162 years, the Grand Rapids Public Museum has been viewed as an important institution that served the basic purposes of collecting, preserving and sharing artifacts for the community's benefit. This project worked to synthesize and compile best practices of cutting-edge educational approaches into teachable experiences for informal education at the GRPM. The skills that are in demand in our new knowledge economy include: Active Learning, Complex Problem Solving, Active Listening, Speaking, Critical Thinking, Reading, Comprehension, Monitoring, Social Perceptiveness, Coordination, Judgment and Decision Making, Time Management, Writing, and others. These are 21st century skills that require

practice and many experiences to master. Museums are ideal environments that can cultivate the curiosity and skills necessary to practice and perform in these critical 21st century capacities.

When children have opportunities for purposeful learning that is inquiry-based and interactive, the potential for learning is increased (Piaget, 1973). Research also shows quality learning experiences play a central role in adolescent brain development (Bransford, Brown & Cocking, 2000). However, low socioeconomic students, such as those who comprise a majority of students in urban school districts, like the Grand Rapids Public Schools, often lack quality learning experiences (Wikeley, Bullock, Muschamp, & Ridge, 2007). Quality learning experiences including inquiry are critical for students' practice and mastery of the skills required within the new knowledge economy (Wilson, 2012).

This program focused on inquiry based learning through an informal education setting using Great Lakes stewardship principles and themes. With the GRPM's location on the bank of the Grand River in downtown Grand Rapids, there was an opportunity to discuss urban watersheds, stewardship and the threatened and endangered species that are still present in the river. This focus on species, such as lake sturgeon (*Acipenser fulvescens*), wild rice (*Zizania sp.*) and the snuffbox mussel (*Epioblasma triquetra*) imparted a relationship to place and a connection for stewardship actions. By creating an addition of *Grand Fish, Grand River* to the *West Michigan Habitats* exhibition through, engagement with the general public was enhanced and discussions of watersheds and the Great Lakes became more common.

Goals of the Effort

This project provided residents and students from the region an opportunity to learn about our local ecosystem and water resources at the Museum. Programs were developed and implemented that focused on multiple user groups. Targeted programming was developed for classroom visitors (day programs and afterschool programming), summer visitors (summer camps) and high school engagement (youth watershed team). The general public was targeted with the development of the new *Grand Fish, Grand River* exhibition.

Results

The Classroom with a Current education project allowed for the evaluation of multiple watershed based programming opportunities at the GRPM. Through feedback and testing it was determined that programming that was most successful included field trip opportunities focusing on special species in the watershed, cultural resources and artifact discovery. This is aligned with the Museum's mission and education plan and will be incorporated into standard programming. The Watershed Wonders summer camp was also very successful and will continue to be offered.

General outreach and education through *Grand Fish Grand River* has also received positive feedback and will be the basis for expansion into a watershed laboratory experience at the GRPM.

Products and Resources

Educational opportunities offered at the GRPM can be found through the GRPM website. This site contains content for school visits, Camp Curious and overall science programming at the Museum.

grpm.org/Explore/Education/

The Museum is also host to an additional core exhibit *Grand Fish, Grand River* that explores the connection between watersheds, communities and Lake Sturgeon through time. This is an extension of the *West Michigan Habitats* exhibit and is open to the public.

grpm.org/GrandFish/

FINAL NARRATIVE REPORT – *Classroom with a Current Education Programs at the Grand Rapids Public Museum*

Background/Overview

This stewardship project was built to be a multi-tiered approach to watershed education and outreach. The overarching goal was to raise awareness of watershed issues and build on the success of a previous grant that developed initial prototypes for museum education as it relates to Great Lakes stewardship. The project outlined five major outcomes: 1) Employ a program coordinator, 2) Offer summer programs, 3) Offer museum-based programs, 4) Offer after-school programs, and 5) maintain a youth watershed advisory team. This project exceeded expectations and was the catalyst for a larger change to enhance science-based programming at the Museum and use the Grand River and watershed concepts as a vehicle for new experiences. The timing of the project contributed to its success as there is much discussion centered on the Grand River revitalization and the museum is positioned to become the hub of river education. The ability to prototype multiple engagement techniques has allowed the museum to focus in on the most successful for further implementation.

Outcomes

Outcomes of this stewardship program included enhancing the theme of watershed education at the Grand Rapids Public Museum. The offerings at the museum include multiple programs related to the Great Lakes ecosystem and specifically the Grand River Watershed. The Museum now has on staff a Science Director who was the original program manager for the grant (Dr. Stephanie Ogren). There are four sessions of a Watershed Wonders summer camp and multiple watershed programs options for the thousands of students that visit throughout the school year. The Museum is also embarking on development and implementation of watershed laboratory for additional inquiry based programming. This is being developed in conjunction with the Youth Watershed team. This team assists with special projects throughout the year and hosts Science Tuesday tables (hands-on activities for the public) in the summer. Overall, the museum has a renewed focus on watershed education through the lens of the Grand River. This is exemplified through the exhibit Grand Fish, Grand River which is part of the West Michigan habitats exhibition and is open to the public.

The targeted audiences were reached through our multi-tiered effort. We received much feedback from our users that these new programs were a welcome addition to the offerings of the GRPM. Through camp surveys we learned that participants engaged with their parents and were excited to talk about watersheds and scientific concepts. Parents also indicated that students were using new vocabulary that they had learned at camp. Teachers that utilized the museum-based programs indicated that the inquiry based programming that challenged their students to synthesize information and draw inferences from observations fit well into their curriculum. The youth watershed team is still working with staff from the GRPM in program development and

participates in outreach activities throughout the year. The Grand Fish Grand River exhibit has become a core exhibit at the GRPM and has inspired future programming.

These programs built new and strengthened existing relationships. For the new summer camp programming GRPM partnered with Dean Transportation for an offsite field day, and West Michigan Environmental Action Council (WMEAC) provides a day of instruction that includes their teach for the watershed program. Assistant instructors were provided by Grand Valley State University students in the teaching English to speakers of other languages (TESOL) program. The Grand Fish, Grand River exhibit and associated program is the basis for funding from the Gerber foundation which has provided funding for 2700 students from the Fremont area to visit the Museum and participate in a watershed based program. GRPM will be partnering with Groundswell to deliver professional development to educators in the area with the GRPM providing content based on watershed programs delivered at the Museum. The WEGE foundation has provided additional fund to partner in development of a watershed based laboratory experience and other environmental education partners are providing input on development. Partners include Grand Rapids Public Schools (GRPS), Grand Rapids While Water (GRWW) the Lower Grand River Organization of Watersheds (LGROW), John Ball Zoo (JBZ) and Outdoor Discovery Center (ODC).

The evaluation of the programs will allow GRPM to focus its offerings and enhance the portions that were most well received (See attached). Campers of all ages met the key learning goals for the camps. Multiple-choice tests, self-assessments of knowledge before and after the camp, and free-write assessments demonstrated that campers were advancing in their understanding of watersheds, water quality monitoring processes, sources of water pollution, and special species in the watershed. Short museum based programs showed targeted gains in understanding on a few content questions. Students in grades 3 through 5 learned something about each of the focal topics of the workshops, but began with the strongest baseline. Afterschool programming (Lyceum) data show improved content knowledge related to native, invasive, threatened, and charismatic species, but also suggest resistance and low energy. Six Lyceum students demonstrated surprisingly limited awareness of threatened and endangered species in their local area, but learned about sturgeon and wild rice through the Lyceum.

Benefits of this stewardship program included the ability to prototype programs, build upon and create new partnerships and garner future support for programming. The ability to prototype multiple engagement techniques has allowed the museum to focus in on the most successful for further implementation. New partnerships were built that created innovative programming based at an urban museum. These programs and a movement towards STEM education in an informal setting is the basis for funding initiatives and future engagement at the GRPM.

Details of each outcome specified in the grant are outlined below.

Outcome 1: Watershed Education Program Coordinator Hired, Trained, and Sustained

Deliverables:

- 1) Position description created – Completed
 - a. Science Program Manager
- 2) Coordinator hired - Completed
 - a. This was completed in July 2015. The GRPM will be taking on the expense of this position at the end of this grant. GRPM is also considering hiring a part-time Science Educator to implement the watershed programming on a regular basis.
- 3) Documented notes and attendance at professional development - Completed
 - a. Attended Great Lakes Stewardship Initiative Placed Based Education Conference (May 2016)
- 4) Business and revenue plan developed. Grants and awards written and received. Program revenue is positive. - Completed
 - a. Applied for and received WEGE foundation grant for watershed economicology laboratory space (June 2016).
 - b. GRPM is developing a sustainability plan for the watershed laboratory. This will be the home of watershed programming. GRPM has hired Stephanie Ogren as the Science director and is using additional grant and internal funds to support a learning specialist and science educators to continue watershed programming.

Outcome 2: Summer Programs Offered

Deliverables:

- 1) Program description developed and advertised.
 - a. Developed and marketed. Summer programs that were developed for 2016 are also being offered for 2017.
- 2) Curriculum with scope and sequence documented within the GRPM education programming framework.
 - a. Developed an implementation team with GVSU and WMEAC to offer a strong watershed based program that was appropriate for multiple audiences, including English Language Learners.
 - b. Developed curriculum and sequencing for 6-8year olds, 9-11 and 12-14 (See attached).
 - c. Watershed Wonders was sold out and completed for 2016.
- 3) Pre and post-evaluations delivered and compiled.
 - a. Pre and Post evaluations were completed for Watershed Wonders.
 - b. Assessment of camp programming is completed (see attached).

Outcome 3: Museum-Based Programs Offered

Deliverables:

- 1) Program description developed and advertised.
- 2) Curriculum with scope and sequence documented within the GRPM education programming framework.
 - a. Prototype program of Habitats of the Grand River Watershed was developed.
 - b. Prototype program based on What's in your Watershed? was developed.
 - c. Prototype program on Native and Invasive species in the Grand River Watershed was developed.
 - d. Program based on new Grand Fish, Grand River Lake Sturgeon exhibit was developed.
- 3) Programs offered and students attended.
 - a. Prototype program of Habitats of the Grand River Watershed was delivered to 120 students.
 - b. Prototype program based on watershed and water quality was delivered to 40 students.
 - c. Prototype program on Native and Invasive species in the Grand River Watershed was delivered to 60 students.
 - d. Final Program for What's in your Watershed (see attached) offered for Fall 2016 (13 schools booked programming – over 300 students) and Spring 2017 (22 schools booked - over 500 students).
 - e. Grand Fish, Grand River program booked for 1200 students through a grant from the Gerber Foundation (Spring 2017).
- 4) Pre and post-evaluations delivered and compiled.
 - a. Evaluations completed – see attached.

Outcome 4: After-School Programs Offered (Spring and Fall 2016)

Deliverables:

- 1) Program description developed and advertised.
 - a. Special Species in your Watershed has been developed as a 12 week course that was offered for 1 hour each week. This program was delivered in spring and fall 2016.
- 2) Curriculum with scope and sequence documented within the GRPM education programming framework (See attached).

- a. The 12 week course has been developed and focuses on the design thinking process, allowing students to come up with a solution to an issue pertaining to threatened species in their watershed that they see as important.
- 3) Programs offered and students attended.
 - a. Programming was completed.
- 4) Pre and post-evaluations delivered and compiled.
 - a. Pre and Post evaluations were completed (See attached).
 - b. Pre and Post knowledge test was developed in coordination with Grand Rapids Public School Museum School Curriculum integration specialist.

Outcome 5: Establish and Maintain Youth Watershed Education Advisory

Deliverables:

- 1) Youth Advisory created.
 - a. The GRPM developed a Youth Watershed Team.
- 2) 4-8 youth committed to the program.
 - a. There are nine students registered and attending regularly.
- 3) Documented students' engagement in local watershed related activities and meetings (see attached).
 - a. Grand River Exploration (initial meeting)
 - b. Grand Rapids Restoration presentation
 - c. Grand River Forum
 - d. Plaster Creek Steward Annual meeting
 - e. Plaster Creek Steward Workdays
 - f. Science Tuesday Volunteers at the Museum
 - g. Grand River Water Festival - Volunteer Day
 - h. Watershed Laboratory development
 - i. Mayors Grand River Clean Up
- 4) Youth voice represented in museum's decision-making related to watershed programs.
 - a. Students are engaged in new Watershed Laboratory development.

Related Efforts

The classroom with a current educational programming at the GRPM has been the inspiration for many new programs. GRPM will implement watershed programming into its yearly offerings. While prototyping programs, the GRPM was able to secure outside funding to begin the construction of a watershed laboratory. With this dedicated space GRPM will be able to provide programs on a routine basis. The watershed laboratory will be tied closely to work that is taking place within the Grand River watershed. With riverbank restoration, floodwall management,

threatened and endangered species studies ongoing, the tie to the local environment is strong. With GRPM staff integrated into the GRForward planning process, the river rehabilitation planning process, the Lower Grand River Organization of Watersheds (LGROW), Groundswell, and coordinating with the City of Grand Rapids for interpretation and dissemination of water quality data, the GRPM is will provide current and relevant programming to the community. To further ensure there is regional collaboration in environmental educational offerings the GRPM was awarded funding to facilitate coordination of environmental education in West Michigan.

The collaborative process will take place over the next year and will inform the future direction of overall environmental education at the GRPM. Programming developed as part of the classroom with a current also allowed the GRPM to garner support from the Gerber foundation to bring 1200 Fremont area students to the Museum to learn about watersheds ecology. GRPM was also a partner with Grand Rapids Public Schools when Wilderness Canoes brought 1200 8th grand students to the banks of the Grand River for a day of canoeing. The GRPM provided a land-based station where all students participated in a cultural artifact activity that related the value of the river to people historically and currently. The development of an extension of the GRPM West Michigan Habitats exhibit title Grand Fish, Grand River highlights the GRPM dedication to Great Lakes Stewardship and place based education. GRPM is currently planning to expand into the world of Virtual Reality with a partnership with Ferris State University to develop a simulation of the Grand River over time, with a pre-settlement view, a current view and a future condition where visitor will be able to experience the Grand River with rapids created.

Communication/Dissemination

Educational opportunities offered at the GRPM can be found through the GRPM website. This site contains content for School Visits, Camp Curious and overall Science programming at the museum. The watershed programming will be advertised to all educators interested in GRPM programming. There are approximately 30,000 students that visit the museum annually. The GRPM will be developing professional development for teachers that focuses on utilizing the Museum to teach core watershed principals and Great Lakes Stewardship for fall 2017 and spring 2018.

<http://www.grpm.org/explore/education/>

The Museum is also host to an additional core exhibit “Grand Fish, Grand River” that explores the connection between watersheds, communities and Lake Sturgeon through time. This is an extension of the West Michigan Habitats exhibit and is open to the public.

<http://www.grpm.org/grandfish/>

Presentations were given at the quiet waters symposium and the Grand River Spring Forum. A presentation at the American Alliance of Museums is planned for 2018. This will detail out the

work done through the three GLFT grants and highlight the role of Museums and other public institutions in informal education including watershed education.

Reflections

This stewardship project has been a great benefit to the GRPM and the surrounding community. Overall, the results were very positive and have allowed the GRPM to build new programs based on Great Lakes stewardship principals and watershed ecology. Specific to a non-profit that uses a volunteer base for programming, it was a challenge to train volunteers on new programs. One system that has helped this effort is to have the volunteers assist in program delivery. New volunteers are more receptive to the programming as it is divergent from traditional programs and is a culture shift in the way the GRPM has historically delivered programs. Feedback from students and teachers has reinforced that inquiry based programs provide a superior experience for the visitors. Space is also limited at the GRPM and creative solutions to program location needed to be developed.

Camp curious programming for watershed wonders was developed for multiple age groups. We were interested to see how the youngest age group (6-8yrs) would respond to the four day camp experience. They were highly engaged, had positive feedback and there are now repeat customers for summer 2017. GRPM is offering additional sessions of camp for 2017 based on the attendance from 2016.

Overall, the ability to build and test program content, structure and evaluation methods over an entire academic year was a great benefit to the GRPM. GRPM has incorporated watershed content into all areas of its offerings and will use relationships built through this grant program to enhance future programming.

Attachments

1. Program Evaluation
2. Camp Curriculum
3. Watershed Wonders Flyer
4. What's in your Watershed? Program Overview
5. After School Program (Lyceum) Overview
6. Youth Watershed Team Flyer and Photos
7. Grand Fish, Grand River Opening