Minnesota
Children's
Museum

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Great Explorations: Children, Seasons and Cycles
US Department of Energy Project Report

In September 1995, Minnesota Children's Museum opened the doors of a new 65,000 square foot building located in downtown St. Paul, Minnesota. After five years of planning by staff and board members, with children and adults, content experts and members of the community, MCM presented four new, permanent galleries to children six months to ten years, their families and teachers. Each of these galleries, *Habitot*, *World Works*, *One World*, and *Earth World*, presented messages about the wonder, cultural perspective and power of the world.

Context

Created for children ages four through eight years, *Earth World* is an approximately 5,000 square foot indoor interactive exhibit that explores seasons, cycles and systems with forest, pond and wetland habitats. Over the last year, MCM has carried out a quarterly survey among its visitors. Consistently, visitors identify *Earth World* as their favorite gallery and the giant Anthill maze as the favorite exhibit for both children and adults.

Ducking into the Pond, children go "underwater" for a fish-eye view of home, food and neighbors. Climbing and crawling through the maze-like tunnels and chambers of a giant Ant Hill, children "become" ants and do the jobs of nurse, caretaker or maintenance worker ants. In the Forest, children follow important nutrient and energy resources through food webs. Up in the Sky, children create weather for the gallery, operating the clouds to create a thunderstorm and, if they are lucky enough to visit on a sunny day, a surprise "solar event" energizes the gallery with a magical concert of light and sounds. A special feature of the gallery is a living wetland system composed of two indoor ponds connected by an outdoor "duckweed" canal. Centerpiece of the Learning from Lemna project funded by the Department of Energy in 1993, the Lemna system uses no chemicals to process and treat wastewater produced by a mechanically-operated model rain cycle and sewer output system.

Interactive exhibits are only part of the gallery experience for visitors to MCM. Richly layered with concepts, content, and exhibits, galleries must also be animated by people to bring key messages to life. MCM encourages curiosity and inquiry, rewards exploration and risk-taking, facilitates construction of meaning through programming. In November 1994, MCM received a grant from the United States Department of Energy's Museum

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Science Education program to develop **Great Explorations: Children, Seasons and Cycles**, a core gallery curriculum related to the seasons and cycles – water, food and energy – of the natural world. This project became the heart and soul of MCM's interpretive plan for the children, families and school groups that visit Minnesota Children's Museum.

Description

The primary goal of MCM's **Great Explorations** was to inspire young children and those who teach them to engage in active exploration, discovery and learning about the natural world. Three objectives supported this goal. First, interpret *Earth World* gallery messages about seasons and cycles in the natural world. Second, guide and inspire young children with adult models who are active in and knowledgeable about the natural world. And third, connect gallery messages to school curricula and children's home life.

The project was supervised by Renée Henry, Director of Programs at MCM from May 1995 to February 1996 and, following her departure from the museum, by Jeanne Vergeront, Vice President, Exhibits and Education. Interpretive activities were developed by Marcie Oltman, Curriculum Developer. As an early childhood educator and environmental educator, Ms. Oltman brought a unique and valuable combination of knowledge, experience and expertise to the project. Heather Peske, Gallery Interpreter for school programs provided a connection to MCM's school services program. This group served as an informal project team, identifying program criteria and program messages developed during creation of the *Earth World* gallery. The team also incorporated input from teachers and museum visitors, oversaw development of a program resource file, and coordinated timelines.

This two-year program development project was carried out between May 1995 and July 1996 and occurred at a unique and exciting time in MCM's history. It began during the final four months of construction of MCM's new building, fabrication of 15,000 square feet of new exhibits and development of all new programs for the museum's grand opening in September 1995. The project was most active during the first nine months of MCM's operation of its new building when attendance increased from 190,000 to 450,000.

Project activities were designed to encourage children's curiosity and concern about the natural world as well as give them experiences from which they can gain an understanding of the Earth. Programs developed through **Great Explorations** were presented to audiences using a variety of formats such as informal exhibit activities, demonstrations, performances and special events, for the general public plus guided programs for school groups.

School programs, including those developed through **Great Exploration**, were described and disseminated to 40,000 teachers in MCM's *Educator's Toolbox* (Attachment A). As part of its school services programs Focus Visits for students began with the start of MCM's program in October 1995 and continued through the 1995-1996 school year. Public programs were offered to children and families during weekend and holiday program times between October 1995 and June 1996.

Outcomes

The project team developed a work plan (Attachment B) which closely followed the objectives and outcomes presented in MCM's original proposal.

Objective #1: Interpret *Earth World* gallery messages about seasons and cycles in the natural world through a program resource file of activities on selected environmental concepts for staff and volunteer; public programs and activities that highlight seasonal events of the natural world; and public programs and activities that extend and reinforce the Lemna exhibit.

Approximately 60 activities (Attachment C) were created on environmental concepts identified by the project team to support one or more of *Earth World's* concept messages: Earth Stewardship, Species Diversity, Natural Communities and Energy Transfer. Each activity strives to be cross-disciplinary, empathetic and sympathetic, cooperative, respectful, interactive, fun, developmentally appropriate, gender fair, and reinforce a feeling of competence in children. An "activity menu" served as the final framework for the resource file. An efficient strategy, the activity menu allows MCM staff, volunteers and contract teachers to select, combine and present activities using a wide variety of teaching methods – demonstrations, games, experiments, role-playing, etc. – to reach as many MCM visitors as possible. All activities can be found on MCM's program database for easy access and retrieval.

Combining activities from the activity menu with special performances, project staff coordinated three special programs for family audiences that highlighted seasonal events: the *World of Peter Rabbit* exhibit opening, Earth Day Celebration and MCM's Spring Fling. In January 1996, MCM offered "The Hop," a special event which opened the *World of Peter Rabbit*, a traveling exhibit produced by the Academy of Natural Sciences of Philadelphia. Activities included a special appearance by Beatrix Potter, whose living history character was created by a local actress and informal gallery activities about rabbits, making animal books, planting seeds and making rabbit ears.

Ms. Oltman took the lead in coordinating activities for the Earth Day Celebration which occurred April 12 to April 20. A family overnight for 75 people was on April 12 in *Earth World*. On Earth Day 1996, April 20, a local singer/songwriter, Rachel Kroog performed for MCM visitors in MCM's Playhouse while children created a giant earth window hanging to hang in St. Paul's World Trade Center. The highlight of the celebration was a dance performance the *Earth World* gallery. An improvisational dance composition by YoungDance Company was commissioned by MCM and performed to an original music created for *Earth World's* "Solar Event" by Randall Davis, a local composer with a national reputation. The performance was so successful it was repeated during an evening event at an MCM-hosted party for the Association of Youth Museum's annual conference May 2-4.

A "Spring Fling" was held on April 14 for over 200 children two to six years and their families as part of *Habitot Holidays*, MCM's developmentally

appropriate seasonal celebrations. Special activities from the activity menu presented during the late afternoon event related to rabbits and planting seeds.

Great Explorations provided an opportunity for MCM to extend and reinforce the *Lemna* exhibit. A series of *Lemna* cart activities were developed as part of the activity menu to help interpret the role of wetland plants in the Earth's natural cleansing process. "Pond Study," "Who Lives in A Pond?" "Bubble Ponds" and "Duckweed Cleans Up" presented this complex process in a fun, interactive format to weekend visitors.

Objective #2: Guide and inspire young children with adult models who are active in and knowledgeable about the natural world by informal exhibit activities, demonstrations and presentations facilitated by trained gallery staff and volunteers; develop a roster of environmental-oriented presenters, performers, artists and demonstrators; and provide in-service training for preschool and primary grade teachers.

To provide solid and on-going orientation and training for the *Earth World* gallery for MCM staff and volunteers, Ms. Oltman developed "*Earth World* Jeopardy." Using the familiar game show format, the training presented and tested participants on concepts, messages and facts as well as pointers in approaching visitors and methods for interpretation.

The World of Peter Rabbit exhibit provided a special opportunity to meet this objective. The museum's project team, of which Ms. Oltman was member, identified the possibility of bringing Beatrix Potter to life for visitors. As a naturalist, conservationist, storyteller and illustrator, Beatrix Potter serves as an inspiration for many and as a role model active in and knowledgeable about the natural world. Every Saturday and Sunday afternoon during the exhibit's fourteen week run at MCM, the Beatrix Potter character, portrayed by Heidi Grosch, chatted with visitors, answered questions, shared stories and talked about her life. Ms. Grosch's portrayal served as the most memorable aspect of the exhibit for many of MCM's visitors (Attachment D).

The second outcome for this objective was developed as part of a related database created for the activity menu. A roster of environmentally-oriented presenters, performers, artists and demonstrators can be accessed by MCM staff in planning *Earth World* programs. An extension of this objective, evaluation of each presenter, has been developed to provide staff with information on the presenter's effectiveness in working with our audience.

In-service training for educators was offered in MCM's *Educator Toolbox*. Due to lack of enrollment, however, no sessions were actually held. While outside the scope of MCM's DOE project, MCM incorporated this information in a current project, *Partners for Learning* (a leadership initiative funded by the Institute for Museum and Library Services), and has been working with educators to identify professional development needs of local educators.

Objective #3: Connect gallery messages to school curricula and children's home life through museum-school materials, including pre-and post-visit

materials; school services brochure and calendar of program activities; and create a journal of environmental phrenology for children to keep at home.

The first three outcomes of this objective have proven to be not only the strongest part of the project, but also, in many ways, its heart and soul. Responses from visitors identifying *Earth World* as the favorite gallery; the lack of confidence in teaching science on the part of elementary teachers; and the current emphasis on the environment all may contribute to the success of MCM's school programs for *Earth World*.

Based on research, staff expertise and input from teachers, Ms. Oltman developed a developmentally-appropriate, practical curriculum in environmental education that integrates gallery messages into existing school curricula. These programs, or "focus visits," combine several activities from the activity menu into a forty-five minute staff-mediated experience that complements a one-hour self-guided tour by a school (or community) group.

Between October 1995 and May 1996, over 2,800 students in kindergarten through sixth grade participated in five *Earth World* focus visits: *Amazing Antics*, *Forest Food Find*, *Romping with Rabbits*, *Marvelous Minnesota* and *Wet, Wild Water*. These focus visits were among the most popular of all that MCM offered, accounting for 70% of all focus visits. Focus visits were prototyped and modified prior to enrollment by school groups through participation of students at Riverfront Primary Academy (RPA), an MCM partner school in downtown St. Paul. Through a partnership agreement between MCM and RPA and with the support of this project, RPA students were able to participate regularly in MCM focus visits.

The final outcome, create a journal of environmental phrenology for children to keep at home, was dropped from the project without a substitute for a variety of reasons. First, successfully meeting the other outcomes proved to be sufficiently ambitious within the scope of the project. Second, during the course of the project, staff was able to observe how an *Earth World* hand-out and take-home piece, the *Forest Field Guide*, was used. Consumption of this paper piece was high and the activity was only partially completed. A third design revision was completed in July, 1996 and appears to finally address the problems of consumption and the attendant litter..... poor attributes of an activity supporting environmental stewardship. Staff felt the most appropriate response to this problem recommended against creating a second take-home piece before the first set of problems was corrected.

A key to successful implementation of the project was on-going evaluation of activities throughout the project. During the development stage, formative evaluation with teachers and students helped in selecting direction, concepts and methods of presentation. Piloting activities with groups of children prior to completion (see work plan) provided adequate time to incorporate changes. Teachers and families were asked to complete short written evaluations of programs they joined.

In the project proposal, observations of children and families and follow-up interviews were intended to help test informal activities and demonstrations. This occurred primarily in an informal way. Ms. Oltman

scheduled time to complete observations and interview adults who had participated in the activities, but a protocol of written questions was not developed and responses were not systematically re-recorded. As part of the evaluation of the project, Ms. Oltman completed a summary including reflections and recommendations (Attachment E) on the project.

Impact

At the time the project proposal was written, MCM estimated that 330,000 children, families and teachers would visit the museum in its first 12 months of operation. In fact, approximately 450,000 visitors came through the doors in that time. Of these, approximately 85% came in family groups and 15% came in school or community groups. Twenty five percent came from outside the seven-county Twin Cities metro area.

More than 2,800 students participated in *Earth World* focus visits while approximately 26,000 children and families participated in informal activities in the gallery. *Earth World* programs were listed in the *Educator Toolbox* and in MCM's bi-monthly newsletter, *Discoveries* sent to MCM's 10,000 family member households.

Earth World and its programs received prominence at the Association of Youth Museum's (AYM) annual conference hosted by MCM in St. Paul in May 1996. "Earth World: A Working Appraisal" brought together three prominent professionals in the museum field to critique the *Earth World* gallery and the activities they observed during their visit including school groups and informal programs. Kathy McLean, Director of programs at the Exploratorium in San Francisco; Janet Kamien, Vice President of Programs at the Franklin Institute in Philadelphia; and Lynn Dierking, Principal in Science Learning, Inc. shared their observations from the point of view of design, content and visitor studies (respectively). Proceedings from this session are available on tape through AYM.

Summary

Great Explorations has been a success for MCM on several levels. The project allowed MCM to provide extensive interpretation of one of its four permanent galleries to a range of audiences. Support from DOE allowed MCM to dedicate a uniquely qualified environmental educator to develop and test activities as MCM "grew" into its new home. Also, the project provided flexibility in adapting and presenting these activities to MCM exhibits, projects and special events. Presently, 24 months after being awarded the grant and 18 months after opening a new museum, MCM has an extensive, engaging collection of high quality, interpretive activities for its most popular gallery, *Earth World*.