Mississippi River Water Journey Camps

Toolkit Guidance Document

August 10, 2017

INSTITUTE ON THE ENVIRONMENT
UNIVERSITY OF MINNESOTA
Driven to Discover℠

Prepared by Institute on the Environment
By Jonee Kulman Brigham, Senior Research Fellow
Beth Mercer-Taylor, Sustainability Education Coordinator

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND

Funding for this project was provided by
the Minnesota Environment and Natural Resources Trust Fund
as recommended by the Legislative-Citizen Commission on Minnesota Resources (LCCMR).

Contents

Toolkit Guidance Document Summary

This Toolkit Guidance Document is one of the outputs of the Mississippi River Water Journeys grant led by Institute on the Environment, with a team of collaborators, and funded by the Minnesota Environment and Natural Resources Trust Fund as recommended by the Legislative-Citizen Commission on Minnesota Resources (LCCMR).

This Toolkit Guidance Document is the main reference document for the toolkit, and makes reference to supplies, equipment, and other supporting documents. The "Camp Toolkit" per the grant work plan consists of documentation, supplies, and equipment.

> ***" Camp Toolkit including physical maps, camp outline, information resources, contacts, camera equipment, digital mapping system, website, and service planting guide"***

Purpose of the Toolkit Guidance Document

This document is intended primarily for three audiences.

- For camp coordination team, to help plan for the camps before, during, and after they are held each year including contacts to make, and supplies to inventory and replenish

- For camp instructors and staff (support team from IonE as well as camp counsellors) to become familiar with the camp background, goals, and procedures. Instructors will be primarily concerned with achieving camp goals, but support team and camp counsellors will find this to be useful background as well.
- For formal and informal educators who are interested in this model, to understand the types of planning activities needed, even though the details and participating partners will change for different locations and program needs.

Notes for Educators Interested in the Model

- *Note that this is not intended to be a free standing "how to" guide, but rather a glimpse into some of the particulars of this application of the Earth Systems Journey model to this summer camp format.*
- For educators considering implementing a program similar to this, please contact the leadership team for advice.
- The model is intended to be adapted to place, program, and people meaning it is specific to the age, learning goals, teaching goals, integrated standards, and specific water systems at the learning location.
- Also, to get a sense of campers' experience, learning products, and more on the approach, please see the website that has blog posts of daily activities, a professional video about the camps, GIS Story maps with youth telling the story of their water journey with pictures and words, a record of images youth created, and a "learn&act" page with advice on how to learn about water systems in your area, and actions you can take with students to help protect water resources.
- This is a fairly thorough application of the Earth Systems Journey model, and simpler versions of this are possible and have been conducted before, including shorter journeys that remain on school grounds. Prior Earth Systems Journey projects are listed and linked at http://earthsystemsjourney.com
- GIS Story Maps: the camps use the University ESRI account to create the GIS Story maps, but educators should know that ESRI GIS resources for schools and now school clubs as well are **FREE**. The contact, more info, and opportunities for available training is available at this website from the Minnesota Department of Education http://education.state.mn.us/MDE/dse/tech/gis/index.htm
- If you are interested in outcomes, please contact leadership regarding the evaluation report. While this evaluation was for a camp as an informal education program, we'd be glad to discuss applications in schools where the model has also been implemented from pre-k and kindergarten, second grade, 6th grade, and 9-12th grades.

Introduction

"Water Journey Camps" get children outdoors exploring the natural environment, doing service plantings, and teaching the public how to conserve water and improve water quality to help protect natural areas. Two different one-week summer camps: "Water Journey: Drink" and "Water Journey: Rain," are held twice each (a total of four camps) at the St. Paul campus of the University of Minnesota. The camps serve youth ages 6-8 and 9-11 and are part of the University of Minnesota Recreation & Wellness Summer Youth Program.

Funding

Funding for this project was provided by the Minnesota Environment and Natural Resources Trust Fund as recommended by the Legislative-Citizen Commission on Minnesota Resources (LCCMR). The Trust Fund is a permanent fund constitutionally established by the citizens of Minnesota to assist in the protection, conservation, preservation, and enhancement of the state's air, water, land, fish, wildlife, and other natural resources. The initial investment established the camp design, content, materials, and approaches so that it is set up to repeat within the structure and fee system of the youth camp program. The first camps were in summer 2016.

Background

The camps use an engaging arts/science adventure approach, called Earth Systems Journey, designed to bridge a gap between environmental education focused on conservation behavior and environmental education focused on downstream impacts of conservation. By revealing the water infrastructure that connects daily use of water with what happens at the other end of the pipes, conservation lessons can be made more relevant to students' experience. The camps are designed to address four areas that research indicates enhance stewardship behavior. (1) Children need more opportunities for outdoor experiential environmental education to form bonds with nature. (2) People must see the connection between their actions in the human-built environment and the associated impacts in the natural environment. (3) Children need opportunities to contribute through service activities and using their learning to help others in order to enhance their stewardship competence and identity. (4) Children and the public they will help educate need to have local, place-based examples of how their actions affect the natural areas in their community to increase the immediacy and relevance of stewardship. See the section on key elements of the model in a later section.

Goals

The grant goals and outcomes of Water Journey Camps were:

1) Participants (the children who are campers) will gain first-hand knowledge of how they depend on and impact freshwater, the way that infrastructure carries water into and away from their homes and

schools, the benefits of healthy wetlands, lakes and rivers, and will develop inspiration and skills for stewardship. This will impact 32-56 campers in the project period, with an estimated additional 128-224 campers affected in the four years of camp this project makes possible after the project period.

2) Water Journeys will serve as a demonstration to formal and informal educators for how integrating STEM skills, arts, storytelling and experiential learning develops in children an awareness of water and of how to live more sustainably by conserving and keeping water clean. The project will be shared to educators through targeted outreach and dissemination, including a website and short video that will be created.

3) Through the work of Institute on the Environment's communications team—who will make use of participants' artwork, stories and service projects—the public, and particularly the St. Paul campus and its immediate neighborhood will become a more water-aware, sustainable community through the Water Journeys programs taking place in indoor recreational spaces, outdoor classroom spaces, field trip locations and at the St. Paul campus Sarita wetland and pond, which is also a location for service learning.

Contacts

The project is led by Institute on the Environment at University of Minnesota with a team of collaborators and supporters.

INSTITUTE ON THE ENVIRONMENT
UNIVERSITY OF MINNESOTA
Driven to Discover℠

For more information about the team, the planning, or design of the Mississippi River Water Journey Camps see the project website at

waterjourneycamps.blogspot.com

or contact Beth Mercer-Taylor or Jonee Kulman Brigham

For more information about the camp program in which water journey camps are held please see: University of Minnesota Recreation & Wellness Summer Youth Program

Camp Roles: Leadership, Partners, and Staffing

These roles represent what has been the case for the first two years of camps. The roles can be changed as camp logistics and circumstances evolve over time.

Leadership

The Mississippi River Water Journey Camps are led out of Institute on the Environment (IonE) by Beth Mercer-Taylor, Sustainability Education Coordinator and Jonee Kulman Brigham, Senior Research Fellow and developer of the Earth Systems Journey model on which the camps are based.

The leaders role includes: to contract for the camps with the University Recreation and Wellness Program, recruit teachers, receive and manage the camp budget for materials which is used to replenish or repair prior inventory and is also used for annual expenses such as the river boat portion of the drink camp. Leadership also reserves the classroom and art space at IonE, and coordinates planning of tours with place guides to reduce the work load burden on the teachers. In addition, leadership coordinates set up of the classroom and an art-science exhibit for the camps, and conducts an annual pre-post evaluation to help continually improve the camps. The leadership also coordinates with U-Spatial to borrow the Geo-Design display, part of the camps, as well as the associated exhibit. Leadership may also conduct the creation of the GIS story maps, depending on the skills/interests of the instructors.

Note that this time from leadership is not reimbursed from camp tuition, and represents an ongoing commitment of resources from Institute on the Environment to this project, which in return offers engagement opportunities for sustainability education student staff (described further below) to grow their experience and skills.

Camp Program Partner

The primary partner is the University of Minnesota Recreation & Wellness Summer Youth Program. Contact Venessa Fiedler, Youth Programs and Community Outreach Coordinator, University Recreation and Wellness, University of Minnesota, mill1707@umn.edu

In Fall, a contract is set up between leaders at Institute on the Environment and University Recreation and Wellness to propose the camps for the following year. At this time, the teachers need not be identified, but the promotional text, desired camp weeks, and bus schedules corresponding to the planned itinerary do need to be set up.

Instructors

There is recommended to be two instructors, due to the amount of preparation needed and the dual age groups with twice the number of campers present for some of the days. This also allows for different strengths and can be a good opportunity for dual Science-Technology-Engineering-Arts-Mathematics (STEAM) teaching experience for a more STEM oriented teacher to work with a more arts oriented teacher. The teaching staff should be identified in winter, so planning can begin for the summer. While the essential aspects of the camp are determined, there is room for teachers to innovate and customize to explore their strengths and teaching interests.

The camp tuition covers the cost of the teacher's wages based on the length of each camp. Note that as an unusually intensive camp, with dual teachers, there is more investment of time relative to pay for each teacher than they might find for other camps. Thus, teachers for whom this is a valuable growth/educational/career experience should be sought.

Instructors, in addition to teaching/leading the interface with the campers, also take responsibility for adjusting the itinerary and following it, deciding which of the menu of prior activities to include and delivering those activities, proposing new activities if desired, and communicating with leadership about

needed materials to support activities. Instructors work with leadership to identify support tasks needed.

If instructors are comfortable learning to use GIS Story maps, they can take that on, otherwise leadership can do that. Depending on recruitment and other logistics, one of the leadership may serve as one of the instructors.

Camp Counsellors

Included in the University of Minnesota Recreation & Wellness Summer Youth Program, is the provision of counsellors that accompany the campers at all times and attend to their needs. While this is their primary duty, they are also usually available to assist with instructor-led activities, for example helping campers work through instructions, or engage with their art materials. The Instructors should make sure to be in strong communication with the counsellors regarding schedule, and any desired assistance with instructional content.

Support Staff

IonE has and plans to continue to offer support (via time designated from sustainability education student employees) to instructors on many of the tasks of the camp, particularly those that go beyond the normal contents of a camp. This helps provide experience for students, and helps the camp achieve its dissemination and outreach goals. Some of the tasks that have been provided by support staff in the past include: daily camera downloads of camper cameras and posting online, preparation of parent flyer for Friday reception, daily blog posts on the camp website to inform parents and public of activities as well as serve as a record for future reference, help photograph camp activities, participate as added support to implement some of the camp activities in which more adults are especially useful, help set up the exhibit and take it down, help campers select and caption their favorite photos, and other types of activities.

Place Guide and Other Partners

The camps rely on the participation of place guide and other partners as participants in the experience. The roles and contacts are listed on the website team acknowledgement page and can change, but this represents the past participation which is a starting point for planning future camps.

Place Guide Partners and/or their organizations volunteer their time, and should be gratefully acknowledged, as well as given ample time to plan. Before setting the time for the camps the prior fall, be sure to confirm with the most critical place guide partners that the proposed weeks are available, particularly those where tours are only possible with their participation, such as the St. Paul Regional Water Services who offer a tour of their water treatment plant, and the University Civil Engineer / Facilities Department that make interactive exploration of campus infrastructure possible.

Key Elements of the Camp Model: Earth Systems Journey

The camp uses the Earth Systems Journey model for art/design-led, place-based, experiential environmental education. The model is used with permission. In order to operate the camps in the way intended, leaders and instructors should become familiar with key elements of the model on which the camps are based. A brief summary of its intents and components is shown here, but more about the model, the intended sequence, and key elements can be learned at its website at www.earthsystemsjourney.com, which also has links to videos, articles, and other projects. The following excerpt is from Earth Systems Journey documentation:

Earth Systems Journey

Mission: "Help youth connect and contribute to the world around them."

Earth Systems Journey (ESJ) is a curriculum framework for art-led, experiential, place-based environmental education about environmental flows, (such as water, air, energy or material) through the school building and grounds. ESJ is an approach that teaches ecological and environmental content, principles, analysis and decision skills in way that shows how human-engineered systems are integrated with natural systems. At its core, the design of an Earth Systems Journey is to make a special journey starting from a place of personal experience, following a flow of interest to its source and destination, as far as you can, so that when you return to where you started, your view of that place and its flows is transformed by knowing the larger story that runs through it and the places, and people and natural elements that live in relation to it. What makes the journey "special" is its composition as a transformative experience paying attention to props, interactive and expressive activities, participatory storytelling, and time to reflect and integrate the experience into a personal story. By using the natural learning form of story, complex systems can be made both engaging, and comprehensible.

Application Notes: In the case of the Water Journey Camps, the camp poems, ceremonial activities at the "flow nodes" and along the journey (eg. collecting and pouring water), and returning to themes from the poems and camps that reinforce the continuity of the story of water are all important. Even the way the water testing looks at how the stream of water they are following changes its properties over time and space can help reinforce the story of how all the places are linked by the flow of water. The students photos, writing, and artwork should be emphasized as contributions to the public, to help show the story of water, and their own particular perspective on what they are seeing and learning. While specific reflective activities can change, Mississippi River Water necklaces and using the river water for water color were engaging ways to interact with the water itself. The document outlining art map methods, can also lend insight to the nature of the land/human/river interaction, as with the "flood maps" that flood the drawing with dyed water over the flood plain represented.

Camp Themes and Outline Itinerary

Camp Themes

Earth Systems Journey can be applied to any number of flows through the learning environment. In the case of Water Journey Camps, there are two different camp themes representing two different flows.

In "**Water Journeys: Drink**" the campers start at the drinking fountain in the atrium of IonE and go on a journey upstream and downstream to find out where the drinking water comes from, and where the water that goes down the drain ends up (both ends of the journey leading to the Mississippi River.) This drinking water/sanitary sewer journey is described in more detail in the GIS Story maps and blog posts on the website. Other nick names for this camp are "Drink Camp" or "Drink Week" or in the case of the GIS Story Map, the story of the camp is called "The Water We Drink."

In "**Water Journeys: Rain**" the campers start at the storm drain, outside of the IonE building and go on a journey from where the rain comes from to where it ends up at the Mississippi River. This stormwater journey is described in more detail in the GIS Story maps and blog posts on the website. Other nick names for this camp are "Rain week" or "Rain Camp" or in the case of the GIS story map, the story of the camp is called, "The Story of Rain."

Camp Outline Itinerary

The Camp outline itinerary adapts the Earth System Journey (ESJ) model to the youth camp format and length. The overarching conceptual outline for each camp aligns with the key steps of ESJ as follows. A more detailed itinerary is refined each year by the instructor, building off of the last year's detailed itinerary. The details on the itinerary can change each year based on place guide availability, chosen art/science activities, etc.

Monday	Tuesday	Wednesday	Thursday	Friday
Preparation [two camp shifts]	**Upstream [combined camp]**	**Downstream [combined camp]**	**Stewardship and Reflection [two camp shifts]**	**Science and Story Sharing [two camp shifts]**
Campers get to know each other and instructors; camp opening ceremony with poem and engagement with the "flow node" (drinking fountain or storm drain); excitement is built by preparing for the journey with cameras, notebooks, maps	Field trip starting upstream of the flow node, arriving at the flow node.	Field trip downstream of the flow node, starting at the flow node, and continuing downstream.	Reflective art maps, selection and captioning of favorite photos; steward ship planting project at nearby Sarita Wetland	Complete science study; prepare for exhibit, camp closure ceremony; after camp parent reception (4:30 pm)

Two Camps per Week

Two age groups are represented for each camp, and are, in fact, technically two different camps in the Youth Recreation Wellness System. Each camp can have up to 14 campers and comes with dedicated counsellors who handle supervision, discipline, and assistance for the campers and bring them to the instructional area (this camp) each day. Other parts of the day, the camper participate in a variety of activities, some of which are very active such as swimming or rock climbing.

The two age group camps are concurrent during a single week for sake of time and cost efficiency. On field trip days, the two groups are combined to save on the cost of the bus, and also relieve time needed for the place guides at the visited locations. Note that on combined days, instructors will have twice as many campers at once (up to 28 vs up to 14). This is one of the reasons two instructors are recommended for the camps. Note, however, that on combined days, there are also twice as many counsellors to offer support.

Facilities and Locations

As early as possible, before finalizing the camp weeks in the contract, the classroom and Commons room should be reserved.

The map of locations for each camp along with selected photos and activities at each location is found in the GIS story maps for each camp that can be linked from the website.
http://waterjourneycamps.blogspot.com

The primary classroom is the “Seminar Room” in Institute on the Environment which should be reserved for the two weeks of camp. This allows art and science supplies to be set up at all times, and ready for use. It is conveniently located to the Commons room and to the two “flow nodes” (drinking fountain, and storm drain) that are the starting points for the two camps.

The Commons Meeting and Art Space is a multi-use space, this is reserved to make sure campers have access, but there will be others passing through, and in fact this is one of the benefits: the cross-exposure of scientists/scholars and youth, who one day may attend the University.

The second aspect of reserving the commons is to reserve the wall space for an exhibit. Typically the exhibit starts a week or more before camps and runs through the summer. But a week before camp, and a week after camps would also work. Here the idea is two fold: the campers get the experience of interacting with a gallery space full of aerial photos of their journey and waiting for their photos and art work to complete it. This not only heightens the value placed upon their exploration but doubles as a way for them to tell their families the story of their journey at the end of week reception to reinforce their learning and help educate their families as well. Furthermore, for the length of time the exhibit stays up, it helps display water awareness work to IonE’s many visitors and show how IonE is engaging with K-12 .

Sarita Wetland, and Campus Infrastructure Facilities.
The near-infrastructure for drink camp and rain camp includes pumps, water towers, man-holes, overflow drains, and a wetland. The wetland also serves as the site for the youth service-planting project. Coordination with Facilities and Land Care is important early to confirm their ongoing support of offering infrastructure tours, as well as the use of Sarita for planting and education/service projects.

Camp Planning Steps

Fall prior to camps

- Youth programs contract
- reserving space
- reserving dates/ tours with partners
- determining camp weeks AND bus schedule (thus detailed itinerary changes relating to bus schedule need to be determined by then.)

Winter/Spring prior to camps

- recruiting and hiring teachers
- determining level/type of support and staffing
- checking toolkit equipment inventory
- ordering replenishment of consumable supplies (eg. notebooks)
- camera testing/repairing if needed
- planning for plants and planting locations
- Coordinate with instructor to finalize detailed itinerary and activities

During or before the week before camps

- Buying plants for Stewardship project
- All equipment and supplies ready
- Pre and post tests for both camps finalized and printed
- Print out backgrounds for art maps printed on cardstock or appropriate material
- Parent flyers prepared for the two exhibit receptions
- Outline version of GIS story maps for that year ready – so kids can see the framework they will fill in
- All during-camp responsibilities/schedule confirmed (eg. camera downloads, blog posts, photography, needed support)
- Itinerary finalized, sent to in house team AND to camp counsellors
- Classroom set up
- Commons set up with exhibit materials all ready
    - Geo Design display delivered
    - Maps hung, pedestals designated for exhibit objects

    - Interpretive materials posted
    - Custom annual poster created
- Science/Water testing kit and logistics plan set up.

During 2 weeks of Camps

- per itinerary coordinated by instructors
- leadership and support staff at ready for trouble shooting and support

Immediate Post camp –ideally within a week

- clean, evacuate classroom (at end of reservation)
- put supplies/materials away inventorying and making note of any damage/losses
- debrief meeting with team
- Follow up thank you messages to partners
- Final, summarizing blog post, and outreach

Post camp over the summer

- Process the pre-post evaluations, discuss with team
- Resolve any remaining financial items
- De-install exhibit
- Arrange for Geo-Design Display pick up – coordinated with end of exhibit
- Plan for any new dissemination and outreach possibilities over course of the following year.

Other Toolkit Items

Since there is continuity of camp leadership, questions that arise about camps and prior methods of delivering them can be directed to the leadership contacts.

Other toolkit items managed by leadership include

- Website (and associated video, and water protection guidance)
- GIS Story Maps
- Supplies and Equipment (IonE Sust Ed Storage Area)
    - Art supplies, notebooks
    - Cameras and chargers
    - Planting tools
- Exhibit materials (all in IonE Sust Ed Storage Area)
    - Large maps, hanging structure
    - “cloud” cloth, Rain can, Rain collecting jars, etc.
    - Interpretive material
- GeoDesign Display (Owned by U-Spatial, arranged to borrow each year)
- Service Planting guidance/map/ reference materials – though locations may change each year