

The WaterShed exhibits: Evaluation of effectiveness with fifth grade students

Presented to the WaterShed Partners

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Prepared by:

Pamela Larson and Stephanie Nelson

Wilder Research Center
1295 Bandana Boulevard North
Suite 210
Saint Paul, MN 55108
651-647-4600
fax: 651-647-4623
www.wilder.org

Summary

The WaterShed Partners are an association of organizations located in the Twin Cities area whose goal is to educate community members about watersheds so they will act to protect water quality. The WaterShed exhibit is a project and product of the WaterShed Partners. The exhibit is designed to “provide learning opportunities about metropolitan watersheds, and about people’s connections to rivers and other waters through everyday actions in watersheds.” The Wilder Research Center conducted a survey with a convenience sample of 148 fifth grade students after they viewed the exhibit. The study evaluated the effectiveness of the exhibit by measuring:

- Students’ knowledge about watersheds,
- Students’ retention of the information, and
- Student behaviors and attitudes related to watersheds.

The exhibit, which was presented by trained staff, was one component of the October 1999 Children’s Water Festival. The purpose of the annual festival is to raise students’ awareness of water as a vital resource. The questionnaires were administered to the students at two different times, the day following the festival and again four to five weeks later, to evaluate the effectiveness of the exhibit.

In general, the results are positive, indicating that youth are interested in the exhibit, that learning objectives are being met, and that youth participants are interested in making changes to improve water quality. The results indicate that:

Youth were very interested in the exhibit. Four out of five youth who attended the exhibit at the 1999 Children’s Water Festival reported a high level of interest in the exhibit. Youth who were not as interested in the exhibit, which in this study was one out of five youth, could provide useful information for exhibit improvement. Focus groups or one-on-one interviews could be used to gather input about changes to the exhibit to increase interest levels of youth participants, particularly if the WaterShed Partners identify the engagement of the youth audience (rather than adult participants) as a priority.

The exhibit was an important and primary source of information for many youth. Four out of five youth who attended the exhibit at the 1999 Children’s Water Festival reported that they learned what they know about watersheds from the exhibit.

Learning objectives are being met for some youth. Figure 1 outlines the learning objectives by exhibit area as identified by the WaterShed Partners. Five of the 11 learning objectives were assessed in this current project.

Learning Objective: *Visitor will understand that a watershed is all the land area that drains to a common body of water such as a river or lake.* **Just over half the youth constructed an accurate or partially accurate definition of a watershed from the exhibit.** In a multiple response survey administered by the Children's Water Festival sponsors, more youth selected the correct response (92%), and there was a marked increase from the percentage of the youth who selected the correct response before the exhibit (16%). The increase in correct responses is probably due, at least in part, to viewing the WaterShed exhibit. Method differences (multiple choice versus open-end written response) probably account for the lower rates of correct definitions in the WaterShed Partner's questionnaire. If the ability to construct a definition is important, rather than the recognition of the definition in a list, the information gathered in this project suggests that there is room for improving efforts to teach the definition of a watershed.

Learning Objective: *Visitor will understand that a key difference between a developed and a natural watershed is that a natural watershed acts like a sponge, while a developed watershed acts like a raincoat.* **Over 90 percent of the youth were able to accurately identify the properties of a natural watershed with fewer (78%) able to identify properties of a developed watershed.**

Learning Objective: *Visitor will understand that land use affects water quality.* **Nearly all the youth participants identified natural watersheds as better for water quality.**

Learning Objective: *Visitor will understand that no matter where she lives, she lives in a watershed.* **Most youth knew they live in a watershed.** According to the results reported by Children's Water Festival sponsors and the information gathered for this project, a strong majority of those surveyed knew that he or she lives in a watershed after attending the exhibit. Less than half of the youth knew this before the exhibit, according to the Children's Water Festival results.

Learning Objective: *Visitor will understand that water from streets flows directly to a river, stream, or lake.* **Half of the youth knew water from streets flows to rivers.** Based on results reported by Children's Water Festival sponsors and the information gathered for this project, half of the youth surveyed knew where water from streets flows to the week after they viewed the exhibit. More than half knew where it flows to a month after viewing the exhibit. The evidence for this learning objective indicates room for improvement in learning.

Seventy percent of students retained watershed information after one month. The WaterShed Partners want to assess whether learning from the exhibit is retained over time. Retention of information learned was measured by matching correct responses on the post 1 questionnaire with correct responses on the post 2 questionnaire for each youth and for each item (Figures 8 & 9).

Based on the results of this study, there is evidence that at least 70 percent of students surveyed learned the information and retained it after one month, except in two areas. The ability to construct an accurate watershed definition declined from 19 percent to 10 percent of youth after one month. Also, youth understanding that bike riding is helpful to watersheds declined after one month.

The exhibit changed attitudes and behaviors for about half the youth. Over half of the youth reported talking about watersheds with others after the exhibit. All of the youth planned to use the ideas they learned. These self-reported behaviors and attitudes decline slightly over a month. On the other hand, youth reported an increase in the inclusion of watershed topics into classroom learning. These reports indicate an opportunity for follow up by the WaterShed Partners.

Future strategies to provide follow-up information in the classroom could enhance the learning and retention of watershed information, and encourage youth to practice behaviors that improve watershed health and water quality.

Lessons learned

The WaterShed Partners can use these evaluation results as they consider future changes to the both the way in which the WaterShed exhibit is presented, and the physical structure of the exhibit itself.

In general, the results are positive, indicating that youth are interested in the exhibit, that learning objectives are being met, and that youth participants are interested in making changes to improve water quality. The WaterShed Partners may want to consider three steps toward further increasing the impact of the exhibit:

- There is an opportunity for follow-up in the classroom by the WaterShed Partners to enhance the learnings from the exhibit and help youth follow through with behavior changes for healthy watersheds,
- There is room for improving efforts to teach the definition of a watershed, and
- There is room for increased learning of the concept that water from streets flows directly to a river, stream, or lake.

Finally, the Partners could consider including focus groups or interviewing in future evaluation of the exhibit's impact on youth. Seeking and using feedback from youth may help refine the exhibit so that it draws the attention of a broader audience of youth.