

**To:** Dr. Flynn, Mr. Skrbin and Mrs. Wodnicki  
**From:** Danielle Zieger  
**Purpose:** Action Plan - Fieldtrip proposal

**Where?**

Pittsburgh Voyager - Environmental Science classroom program - located next to the Carnegie Science Center.

**When?**

April or May 2005 depending on availability

**Cost -**

\$975.00

**Number of students that would be attending:**

30 learning support science students - grades 9-12

**Number of instructional aides needed - 2**

**Number of buses needed - 1**

**Why?**

While teaching at the Wilkinsburg school district, I had the opportunity to take a group of students on the Pittsburgh Voyager. The experience was excellent! The students were engaged and participated in hands on activities where they learned about Pittsburgh's three rivers and surrounding habitat.

I have since attended two adult workshops on the Pittsburgh Voyager (Act 48). I feel that the curriculum offered on the Voyager would be an excellent extension of our Science curriculum here at Chartiers Valley. The Pittsburgh Voyager's activities are also in alignment with the Environmental Science Program Academic Standards. As you will note in the attached brochure, I will receive a "Captain's Chest" of resources and ideas to develop and/or enrich lessons at no extra cost. These lessons will be executed prior to the fieldtrip to prepare the students for the activities on the boat.

In conclusion, I feel that it is important for special education science students to have the experience of a science related fieldtrip at least once during the school year. The Pittsburgh Voyager should be prove to be an educational, enjoyable and memorable experience for these students.

Thank you for your consideration,  
Danielle L. Zieger

## **Pittsburgh Voyager's Environmental Science Program Brief Overview (4.5 hour program)**

Prior to coming aboard, teachers are provided with a "Captain's Chest." The Captain's Chest is a large bin full of materials to be used by teacher and students in preparation for the voyage. An environmental science workshop is held for the classroom teachers before each school season, in order to help them prepare for their trip.

### **While Onboard:**

(Program length: 4.5 hours (includes 30 minutes for lunch))

Throughout the day, the students are responsible for collecting data on provided data sheets. These data sheets go back to the school with the classroom teacher. The data becomes part of Voyager's database, which is linked to our web site and can be accessed online by the school.

**The students begin the day by choosing one of three hypotheses, based on their current knowledge and impression of Pittsburgh's three rivers:**

- The rivers are very healthy with not much room for improvement
- The rivers are somewhat healthy, but there is still room for improvement
- The rivers are very unhealthy, and cannot support much life

**The students rotate through three 20-minute mini-stations:**

- **Fish School/River Continuum**
  - Discussion of the different habitat types along a river continuum
  - Analysis of specific fish species that would be most adapted to living in these habitats
  - Identification of habitat related adaptations on preserved fish specimens and live specimens in an onboard aquarium
- **Watersheds**
  - Discussion of the definition and importance of watersheds
  - Discussion and review of the water cycle
  - Delineation of a watershed using topographic maps
  - Connection to the human impact component within a watershed
- **Birds**
  - Analysis of local birds and the adaptations that define their niches
  - Discussion of the importance of birds in the river foodchain
  - Identification of birds spotted in the river, along the shore, and in the air

Next, the students participate in three 50-minute hands-on activities:

- **Water Chemistry**
  - Chemical parameters are defined and utilized to characterize river water samples including temperature, pH, turbidity, dissolved oxygen and temperature.
  - Water sampling field equipment is used to collect and test water samples. Equipment used includes kemmerer, secchi disc, pH meter, dissolved oxygen meter, and temperature probe.
  - Wet chemistry kits are used to test water samples for pH, turbidity, and dissolved oxygen.
  - Analysis of data leads to evaluation of the overall water quality, and support or negation of original student hypothesis.
  
- **Plankton**
  - Discussion of the roles of phytoplankton and zooplankton as the bottom of the food chain, and how plankton can function as an indicator species for scientists
  - Sampling of plankton from the river with a plankton tow net
  - Microscopic identification and quantification of phytoplankton and zooplankton found in sample from river
  - Analysis of plankton data leads to evaluate the overall water quality, based on the finding of pollution tolerant or intolerant species.
  
- **Macroinvertebrates**
  - Discussion of macroinvertebrate life, key adaptations, pollution tolerance, and use of dichotomous keys
  - Sampling and collection of macroinvertebrates with river-bottom sampling device called a "petite ponar"
  - Identification and quantification of macroinvertebrates in the sample, using dissecting microscopes and dichotomous keys
  - Analysis of the macroinvertebrate data to evaluate overall water quality based on the finding of pollution tolerant or intolerant species.

**Conclusions:**

The students wrap up the day by deciding if they still agree with the hypothesis they made at the beginning of the day, based on the data gathered in the hands-on activities. Examples are cited that show the presence or absence of pollution in the sites sampled.

ES Captain's Chest Inventory

Teacher Signature \_\_\_\_\_

Staff Signature \_\_\_\_\_

Chest Number \_\_\_\_\_

School Name \_\_\_\_\_

Date \_\_\_\_\_

Your Name(s) \_\_\_\_\_



**Environmental Science School Program  
Captain's Chest**



**INVENTORY CHECKLIST FOR PV EDUCATION STAFF**

Please inventory and clean Captain's Chest by following the checklist below. **If items are missing or damaged, please fill in the chart on the back of this sheet and replace.** Replacement items are found in the Officer's Quarters on Voyager.

**NAMETAGS** Refill nametags as necessary (consult the chest rotation list to see where the chest is going next). One set of nametags should be added per class (nametags can be found in a plastic bin located by the staff timesheets on both Voyager and Discovery).

\_\_\_\_\_ Nametags                                  \_\_\_\_\_ Number of sets added

**CHEMISTRY ITEMS** Refill chemicals as necessary. Clean kits thoroughly, inside and out.

\_\_\_\_\_ 2 DO Kits                                  \_\_\_\_\_ 2 pH Kits  
 \_\_\_\_\_ 2 Turbidity Kits                        \_\_\_\_\_ 1 PO4 Kit  
 \_\_\_\_\_ 1 Nitrate Kit                             \_\_\_\_\_ 1 Iron Kit  
 \_\_\_\_\_ 1 Goggle/Glove/Safety Tag

**MULTI-USE ITEMS**

\_\_\_\_\_ 1 PFD    \_\_\_\_\_ 3 Navigation Charts  
 \_\_\_\_\_ 1 Pair of Binoculars

**RESOURCE BINDER** Organize binder if needed

\_\_\_\_\_ Boat Overheads                         \_\_\_\_\_ 1 Set of Bird Sheets  
 \_\_\_\_\_ 12-24 Navigation Overheads        \_\_\_\_\_ 1 Set of Fish Overheads/Sheets  
 (including bridge overheads)            \_\_\_\_\_ 1 Set of Chemistry Sheets  
 \_\_\_\_\_ 1 Set of Plankton Sheets            \_\_\_\_\_ 1 Set of MSDS Sheets  
 \_\_\_\_\_ 1 Set of Macros Sheets              \_\_\_\_\_ 1 Set of Bird Slides

**PLASTIC BIN**

\_\_\_\_\_ 1 Thermometer                         \_\_\_\_\_ 8-10 Preserved Macros  
 \_\_\_\_\_ 18 Macro Flashcards                \_\_\_\_\_ 5 Algal Slides in Blue Box  
 \_\_\_\_\_ 1 Carp Scale Sample                \_\_\_\_\_ 16 Fishy Flashcards  
 \_\_\_\_\_ 1 Copy of *Pond Life*

(continued on back)

ES Captain's Chest Inventory

**POSTERS**

- \_\_\_ 1-2 Macro Charts
- \_\_\_ 2-3 Water Resource Posters
- \_\_\_ Set of 6 Fish Posters
- \_\_\_ 1 Stream Study Guide  
(Macros dichotomous key)
- \_\_\_ Set of 4 Bird Charts
- \_\_\_ 1 Laminated Navigation Map (simply note if absent)
- \_\_\_ 1 Where Does it Go? Poster (Simply note if absent)

**VIDEOS**

- \_\_\_ 1 *The Mon, The Al and The O*
- \_\_\_ 1 *Bridge To Nowhere*
- \_\_\_ 1 *When It Rains It Drains or CSO: A Community Problem*
- \_\_\_ 1 *After the Storm* EPA Video
- \_\_\_ 1 *Pittsburgh Voyager: making a splash*

**BOOKS**

- \_\_\_ 2 Peterson's Guide to Birds
- \_\_\_ 1 Tree Guide
- \_\_\_ 1 Nature in Winter
- \_\_\_ 1 PA Fish Guide

**MISSING/DAMAGED ITEM CHART:**

ITEMS MISSING	REPLACED	NEEDED	ITEMS MISSING	REPLACED	NEEDED

**IMPORTANT!!! AFTER YOU HAVE COMPLETED THE ABOVE STEPS, YOU MUST CONTACT SUZI IMMEDIATELY AT 412-231-2876 IF ITEM(S) ARE MISSING. YOU MAY LEAVE A MESSAGE IF YOU CANNOT CONTACT ANYONE DIRECTLY.**

You should relay the following:

- Chest Number
- School Name
- What was missing or damaged
- What was replaced
- What still needs to be replaced
- If you took the last replacement item from the OQ
- Any other pertinent information

When finished, please file this sheet in the Captain's Chest folder. Thank you so much, Ed Staff, for your continued cooperation!!!