

K-12 LABORATORY OUTREACH PROJECT

07/31/2012

Michigan Department of Community Health

To address the laboratory workforce shortage by increasing interest in science, in general, and, specifically, public health laboratory careers while promoting the value of public health laboratories to the general public.

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Promoting Laboratory Careers to K-12 Students

FINAL REPORT

BACKGROUND AND PROJECT DESCRIPTION

The looming public health laboratory workforce shortage and its causes have been well documented.^{1, 2, 3, 4} An aging workforce, coupled with a decrease in the number of students entering science careers, a decrease in the number of clinical laboratory science degree programs and available hospital sponsored internships, among other issues such as lagging compensation, have brought the public health laboratory system to a point where these challenges have begun to limit the ability of the current workforce to protect the public's health. The Michigan Department of Community Health (MDCH) Bureau of Laboratories (BOL) project had three tiers. Tier 1: Elementary Students were introduced to science in general terms. Tier 2: Middle School Students were presented with laboratory terms and basic experiments. Tier 3: High School Students were presented with more complex laboratory experiments/ demonstrations. This project utilized electronic media as well as face-to-face wet workshops. The electronic method of information distribution was selected because today's children have grown up in the digital age, are familiar with electronic media, are familiar with its use, and are readily engaged by it.^{5, 6, 7, 8} This project could serve as a model program for K-12 Outreach and could be emulated at other public health laboratories.

SUMMARY OF ACTIVITIES

- I. **College Student Interns Hired.** Various student interns were hired throughout this project. Interns were responsible for web page content, development of videos/photographs for the web page, and development of hands-on activities for wet workshops. Student interns included:
 - a. Dan Frechtling, 9/2012 – 5/31/2012
 - b. Zachary Shiver, 1/10/2012 – 5/31/2012
 - c. Reneisha Scott, 1/17/2012 – 5/31/2012
 - d. William Jashego, 3/5/2012 – on going
 - e. Chinyere Uju-Ike, 4/2/2012 – on going
- II. **Explore Laboratory Science Web Page.** The Explore Laboratory Science web page went live on 12/2/2011 with three sections: MI Lab Kids (grade K-3), MI Atomic Lab Kids (grade 4-8), and MI Lab Teens (grade 9-12). The web page has its own stand-alone web

address and is also available via a link on the Michigan Department of Community Health main web page. www.michigan.gov/explorelabscience

a. **Measurable:**

- i. Web site will go live by 2/28/12. **Web site went live on 12/2/2011.**
- ii. Number of page views per month

Page Views per Month	
January 2012	57
February 2012	51
March 2012	223
April 2012	177
May 2012	109
June 2012	68

III. Printed Materials. A display design was finalized and carried throughout all printed materials plus the web page. Posters, handouts, and pamphlets were printed to promote project activities and display in school settings. A display board was designed, printed, and used for the science fairs and the Michigan Science Teacher Conference; posters were displayed in Potterville and Lansing's Sheridan Road elementary schools, Otto Middle School in Lansing, MI, and Perry High School in Perry, MI. See Appendix A for examples of printed materials.

a. **Measurable:**

- i. At least two different leaflets/handouts will be designed and printed for distribution. **Handouts were designed and printed for each hands-on activity including DNA Extraction, Green Worms, Magic Color Breakdown, and Atomic Slime.**
- ii. Display and printed materials will be developed and printed by 2/28/12. **Because of the delay in getting the grant contract signed by all parties, display and printed materials were developed and printed by mid-April, 2012.**
- iii. Posters will be displayed in at least two area schools. **Posters were placed in two elementary schools, one middle school, and one high school in the Lansing, MI area.**

IV. Exhibitions/Science Fairs. The Explore Laboratory Science Team presented at the following list of exhibitions/science fairs.

1. Michigan Science Teacher Conference, March 9, 2012 (~1200 Michigan Science Teachers and Administrators attended)
 2. Southeast Michigan Science Fair, March 9 and 10, 2012 (50 children in attendance)
 3. Flint Science Fair, March 17, 2012 (50 children in attendance)
 4. Ralya Elementary Science Night, March 24, 2012 (~300 children attended)
 5. Monroe County Science Fair, March 30, 2012 (~200 individuals in attendance including students, faculty and families)
 6. Oakland County Health Exploration Career Fair, March 30, 2012 (100 college students in attendance)
 7. Upward Bound Career Fair, April 23, 2012 (~80 high school students in attendance)
 8. Michigan Department of Community Health Take Our Daughters and Sons to Work Day, April 26, 2012 (~100 children participated)
- a. **Measurable:**
- i. The Explore Lab Science Team will exhibit at seven Science Fairs by April 30, 2012. The Team held eight exhibits at various events listed above by April 30, 2012. There was an average of 125 children at each of the above listed events. A description of each event is available in the grant milestone documents on the sharepoint page.

V. **University Events.** The Explore Lab Science Team held two university events, the first in Flint, MI on March 17, 2012 and the second in East Lansing, MI on April 21, 2012. The university events were preceded by a State Of Michigan press release and the East Lansing event was covered by a local area television station.

- a. **Measurable:**
- i. Two University Events will be held by June 30, 2012. Two University Events were held by April 22, 2012. A description of each event is available in the grant milestone documents on the sharepoint page.
 - ii. Number of students participating in each event will be documented.
 1. Twenty-five children participated in the Flint, MI event.
 2. One hundred children participated in the East Lansing, MI event.

VI. **School Visits.** The Explore Lab Science Team conducted school visits at Perry, MI High School on May 24, 2012 and the Potterville, MI Elementary School on June 1, 2012. A final visit at the Lansing South Side Community Center is scheduled for July 19, 2012.

a. **Measurable:**

- i. At least two school visits will take place by June 30, 2012. Two school visits took place by June 2, 2012 with a third scheduled for mid-July. A description of each event is available in the grant milestone documents on the sharepoint page.
- ii. The number of students participating in each visit will be documented.
 1. Perry High School – 22 students
 2. Potterville Elementary School – 25 students
 3. Lansing South Side Community Center – 60 children have pre-registered.

VII. **Presentation at the Association of Public Health Laboratories (APHL) Annual Meeting.** A poster was presented at the 2012 APHL Annual Meeting. However, because of health reasons, Ms. Sasy was not present to discuss the poster or results of the project.

a. **Measurable:**

- i. The Michigan Department of Community Health (MDCH) Bureau of Laboratories will be represented and be able to present grant activities at the 2012 APHL Annual Meeting. Mr. William Crafts from the MDCH Bureau of Laboratories was present at the 2012 APHL Annual Meeting and displayed the K-12 Poster.

VIII. **Model Program.** A template has been developed so that other public health laboratories who wish to develop similar programs may do so. The template is attached to this document and posted on the APHL Member Resource Center.

a. **Measurable:**

- i. A model program template will be submitted to APHL and the Member Resource Center on or before July 31, 2012. Model program is submitted with this final report and was added to the Member Resource Center.

LESSONS LEARNED

- Teacher involvement is critical. Utilize teachers to reach your target audience. However, a teacher's time is valuable and imperative for school visits and promotion of other K-12 activities.
 - Attendance at a Regional Teacher Conference helps to get the project noticed by teachers.
 - Schedule school visits well ahead of time and keep in contact with the teacher. Get a firm date as soon as possible.
 - Develop activities that are relevant to the curriculum for that grade level will increase interest among teachers.
- Get the most 'Bang for Your Buck.' Outreach dollars are scarce and so is the time needed to put on these activities.
 - The largest numbers of students were reached through Science Fairs and University Events.
 - School visits have a smaller number of students but each student can get more one-on-one time with the hands-on activities.
 - Consider utilizing internal staff for design of web pages and printed materials.
 - Encourage pre-registration of students for events. This will allow for pre-planning of the number of staff needed at the event, the number of hands-on activities needed, and the number of handout packets needed. Always prepare for about 10% more than have pre-registered.
- Share the work. It is imperative to have a K-12 Team large enough to handle planning, set up, and staff hands-on activities.
 - Consider hiring student interns to assist. Our student assistants were invaluable in helping develop content for our web page, hands-on activities, and helping with events and visits.

PROJECT IMPACT AND EFFECTIVENESS

I. Number of Page Views on Web Page Per Month

The number of web page views varied from 51 to 223 per month (see table on page 2 for monthly totals). The highest months were March and April when most of the

program activities were taking place. Page views dropped off during the school system summer break.

II. Number of Students Involved in Project Activities

a. Exhibitions/Science Fairs	880 students
b. University Events	
i. Flint, MI	25 children
ii. East Lansing, MI	100 children
c. School Visits	
i. Perry High School	22 children
ii. Pottersville Elementary	25 children
iii. Lansing So. Side Community Center	60 children
d. Total Number of Students Reached through this Project	1112
Total Number of Science Teachers Reached through this Project	1200

PROJECT EVALUATION

The Explore Lab Science Team met or exceeded all measurables as defined by the project proposal.

REFERENCES

1. APHL Position/Policy Statement: Public Health Laboratory Workforce Shortage. June, 2005. http://www.aphl.org/policy/Documents/Workforce_Policy_Statement.pdf
2. The Public Health Workforce Shortage: Left Unchecked, Will We Be Protected? American Public Health Association Issue Brief. September, 2006.
3. Public Health Workforce Shortage. University of Pittsburgh Graduate School of Public Health. 2010. <http://www.publichealth.pitt.edu/section.php?pageID=257>
4. Update on the Laboratory Workforce-shortage Crisis. Washington Report. March, 2006. <http://www.mlo-online.com/articles/0306/0306washreport.pdf>
5. Huff Post Education. When Youth Own the Public Education Agenda. December, 2011. http://www.huffingtonpost.com/mimi-ito/when-youth-own-the-public_b_787866.html
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7. Learning in Online Social Networks. *On the Horizon*. April, 2011. Vol. 15, No. 1.
8. Sprenger, Marilee. *Brain-Based Teaching in the Digital Age*. 2010. The Association for Supervision and Curriculum Development (ASCD).