9-23-2013

Health Information Literacy Outreach: A Curriculum for Improving Health Information Literacy of 6th Grade Children

Irena Bond  
*MCPHS University*, Irena.Bond@mcphs.edu

Carolyn Friel  
*MCPHS University*, carolyn.friel@mcphs.org

Monina Lahoz  
*MCPHS University*, Monina.Lahoz@mcphs.edu

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Health Information Literacy Outreach: A Curriculum for Improving Health Information Literacy of 6th Grade Children

Irena Bond, MSLIS, Library Manager
Carolyn Friel, PhD, Associate Professor of Medicinal Chemistry
Monina Lahoz, PhD, Associate Professor of Pharmacy Administration

September 23, 2013
Foreword

This health information literacy (HIL) curriculum is designed for sixth grade students. It was developed by librarian and faculty from MCPHS University in collaboration with a local public library, art museum, local department of public health and local public elementary schools. It is designed around a major environmental health problem in the U.S., childhood lead poisoning.

The curriculum is designed to: 1) improve the health information literacy skills, and 2) increase knowledge of lead poisoning. A secondary goal of the project is to encourage 6th grade students to include attending college as one of their aspirations.

The curriculum is highly interactive and designed to be utilized over three to five sessions. A detailed description of the program components can be found in the following paper: Bond I, Friel C, Lahoz M. Spearheading Health Information Literacy in the Community: The Libraries as Leaders, IFLA Congress, June 04, 2011. Available at: http://conference.ifla.org/past/ifla77/114-bond-en.pdf.

Materials in this curriculum packet include: a pre and post-test to evaluate the effectiveness of the program, laboratory “experiments” to be conducted in the classroom or college laboratory, worksheets to guide students as they evaluate health information websites, non-fiction stories to read to students about lead poisoning cases, and a poster template for students to use to design a capstone poster. The curriculum also includes fictional Medical Mystery cases that contain artwork specific to the Worcester Art Museum. These cases could be adapted to include works of art from any partnering art museum.

This curriculum can be modified and used by librarians, teachers, public health workers, museum staff and anyone interested in conducting an HIL outreach project. The project was funded by the National Network of Libraries of Medicine-New England Region. If you use this material in a publication, presentation or teaching resource we recommend you use the following citation: Bond I, Friel C, Lahoz M. “Health Information Literacy Outreach: A Curriculum for Improving Health Information Literacy of 6th Grade Children”, Massachusetts Library System Guides, updated: September 23, 2013. <<http://guides.masslibsystem.org/index>>

Copyright Information:-All images reproduced with permission of the Worcester Art Museum
James Peale, Still Life, 1825
John LaFarge, Peacock Window, 1892-1908 Stained Glass
Christian Gullager, Captain Offin Boardman about 1787
Paul Revere, 1735-1818 Urn, teapot, coffeepot
Vincent van Gogh, Portrait of a Man in a Top Hat, 1882
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1. Have you ever searched on the Internet for health information? Circle one YES NO

2. If you have a question about a disease or medicine, where on the internet would you look?

3. Do you think this information is reliable (trustworthy)? Circle one YES NO

4. How good are you at finding health information on the internet? Circle a number

   Not good OK Very good
   1  2  3  4  5  6  7  8  9  10

5. Circle all the criteria below that you should see on a reliable health website:

   a promise of easy weight loss current information opinions

   free information contact address a place to enter credit card number

   sells miracle cures accurate (true) information author of the information

6. Do you have a library card? Circle one YES NO

7. Can you search the Internet at home? Circle one YES NO

8. Name one symptom of lead poisoning ________________________________________
9. Which picture above shows peeling paint that looks like it may contain lead?
   a. Picture A
   b. Picture B
   c. Picture C
   d. I don’t know

10. Is lead poisoning contagious? (Can you “catch it” from someone?) Circle one  YES  NO

11. Circle all of the things below that may contain lead:

   - old paint
   - paint set
   - pottery
   - lipstick
   - crayons
   - soil around older homes
   - jewelry
   - pencil
Name: _________________________________________

Medical Mystery Case Study - What ails Mr. James Peale?

My name is James Peale and I am an artist. I was born in 1739 and have been painting my entire life. When I was 86 years old, I painted an arrangement of apples and grapes in a Chinese porcelain bowl. This portrait Still Life can be seen at the Worcester Art Museum. The porcelain bowl was a gift to me from my nephew Raphaelle. He also gave me a beautiful matching lead-glazed mug that I enjoy drinking tea out of every morning and afternoon. I have been remarkably healthy for my entire life but lately I have been feeling ill. My eyesight is terrible, I have a constant headache and my stomach hurts all the time.

2. In the Search MedlinePlus window, type ‘lead poisoning’.
3. Scroll down the list of results and click on the Lead Poisoning Kids’ Page NIH link. This takes you to the NIEHS Kids’ Pages. Look through the pages to find answers to the following questions:
   
   a. What are some sources of lead poisoning?

   b. Based on the case, what sources of lead poisoning may James Peale be exposed to?

   c. What are some symptoms of lead poisoning?

   d. Based on the case, what symptoms of lead poisoning may James Peale have?

   e. Do you think James Peale has lead poisoning? ___ Yes  ___ No
4. Scroll to the bottom of the NIEHS Kids’ Pages and answer these questions:
   a. Who supports (funds) the NIEHS Kids’ Pages?

   b. What contact information is listed for NIEHS Kids’ Pages?

      Mailing address:

      Phone number:

   c. When was NIEHS Kids’ Pages last updated (modified, reviewed)?

   d. Click on the link Privacy and Accessibility, then on Privacy Policies. Does this site collect information about you? _____ Yes     _____ No

5. BOTTOM LINE:
   I can trust information from MedlinePlus because (check all that apply):
   ___ a. I can identify the author (or organization) that wrote or published the content.
   ___ b. I can contact the author (or organization).
   ___ c. The information on the website is accurate (true).
   ___ d. The information on the website is current (updated).
   ___ e. My personal information is not collected or sold.
   ___ f. MedlinePlus is available to the public for free.

6. On Your Own – Repeat steps 1 and 2.
   a. In what other languages is information on lead poisoning available?

   b. Find information on how to prevent lead poisoning. Write the information below.
My name is James Peale and I am an artist. I was born in 1739 and have been painting my entire life. When I was 86 years old, I painted an arrangement of apples and grapes in a Chinese porcelain bowl. This portrait *Still Life* can be seen at the Worcester Art Museum. The porcelain bowl was a gift to me from my nephew Raphaelle. He also gave me a beautiful matching lead-glazed mug that I enjoy drinking tea out of every morning and afternoon. I have been remarkably healthy for my entire life but lately I have been feeling ill. My eyesight is terrible, I have a constant headache and my stomach hurts all the time.

2. In the Search MedlinePlus window, type ‘lead poisoning’.
3. Scroll down the list of results and click on the Lead Poisoning Kids’ Page NIH link. This takes you to the NIEHS Kids’ Pages. Look through the pages to find answers to the following questions:

   a. What are some sources of lead poisoning?

      House paint (prior to 1950 interior/1978 exterior), dust and soil, drinking water, old or some imported toys, lead-glazed or lead-painted pottery, leaded crystal, and some inks, plasters, hobby and sports materials (such as artists' paints, ammunition, stained glass treatments, or lead sinkers used in fishing), some plastic mini-blinds and vertical blinds which were manufactured in other countries.

   b. Based on the case, what sources of lead poisoning may James Peale be exposed to?

      Lead-glazed mug

   c. What are some symptoms of lead poisoning?

      Headaches, muscle and joint weakness or pain, excessive tiredness or lethargy, behavioral problems or irritability, difficulty concentrating, loss of appetite, metallic taste in the mouth, abdominal pain, nausea or vomiting, constipation

   d. Based on the case, what symptoms of lead poisoning may James Peale have?

      Headaches, abdominal pain

   e. Do you think James Peale has lead poisoning?  X Yes  ___No
4. Scroll to the bottom of the NIEHS Kids’ Pages and answer these questions:

a. Who supports (funds) the NIEHS Kids’ Pages?
   National Institute of Environmental Health Sciences

b. What contact information is listed for NIEHS Kids’ Pages?
   Mailing address: PO Box 12233, NH-10, Research Triangle Park, North Carolina 27709
   Phone number: (919) 541-3345

c. When was NIEHS Kids’ Pages last updated (modified, reviewed)?
   Modified and reviewed on 10/28/2010

d. Click on the link Privacy and Accessibility, then on Privacy Policies. Does this site collect information about you? _____ Yes  __X__ No - We collect no information about you, other than information automatically collected and stored.

5. BOTTOM LINE:
I can trust information from MedlinePlus because (check all that apply):

__V__  a. I can identify the author (or organization) that wrote or published the content.
__V__  b. I can contact the author (or organization).
__V__  c. The information on the website is accurate (true).
__V__  d. The information on the website is current (updated).
__V__  e. My personal information is not collected or sold.
__V__  f. MedlinePlus is available to the public for free.

6. On Your Own – Repeat steps 1 and 2.

a. In what other languages is information on lead poisoning available?
   On the left, find and click on “Multiple Languages” → Arabic, Russian, Spanish, Hmong, Somali

b. Find information on how to prevent lead poisoning. Write the information below.

From: http://www.epa.gov/opptintr/lead/pubs/leadinfo.htm#protect

- Clean up paint chips immediately.
- Clean floors, window frames, window sills, and other surfaces weekly. Use a mop, sponge, or paper towel with warm water and a general all-purpose cleaner or a cleaner made specifically for lead. REMEMBER: NEVER MIX AMMONIA AND BLEACH PRODUCTS TOGETHER SINCE THEY CAN FORM A DANGEROUS GAS.
- Thoroughly rinse sponges and mop heads after cleaning dirty or dusty areas.
- Wash children’s hands often, especially before they eat and before nap time and bed time.
- Keep play areas clean. Wash bottles, pacifiers, toys, and stuffed animals regularly.
- Keep children from chewing window sills or other painted surfaces.
- Clean or remove shoes before entering your home to avoid tracking in lead from soil.

Make sure children eat healthy and nutritious meals as recommended by the National Dietary Guidelines.
Children with good diets absorb less lead.
My name is John La Farge, I was born in 1835 and I am an artist. I am a painter and I also make stained glass windows. One of my stained glass windows is on display at the Worcester Art Museum. The stained glass windows are made of colored glass and grooved lead strips to hold them in place. I solder these lead strips together with a flame and work in a small studio. My lungs often hurt after working in the studio for hours at a time. I also have headaches and stomach aches often and I am always tired.

2. In the Search MedlinePlus window, type 'lead poisoning'.
3. Scroll down the list of results and click on the Lead Poisoning Kids’ Page NIH link. This takes you to the NIEHS Kids’ Pages. Look through the pages to find answers to the following questions:

   a. What are some sources of lead poisoning?

   b. Based on the case, what sources of lead poisoning may John La Farge be exposed to?

   c. What are some symptoms of lead poisoning?

   d. Based on the case, what symptoms of lead poisoning may John La Farge have?

   e. Do you think John La Farge has lead poisoning? ___ Yes ___No
4. Scroll to the bottom of the NIEHS Kids’ Pages and answer these questions:

   a. Who supports (funds) the NIEHS Kids’ Pages?

   b. What contact information is listed for NIEHS Kids’ Pages?

       Mailing address:

       Phone number:

   c. When was NIEHS Kids’ Pages last updated (modified, reviewed)?

   d. Click on the link Privacy and Accessibility, then on Privacy Policies. Does this site collect information about you? _____ Yes     _____ No

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   __  a. I can identify the author (or organization) that wrote or published the content.

   __  b. I can contact the author (or organization).

   __  c. The information on the website is accurate (true).

   __  d. The information on the website is current (updated).

   __  e. My personal information is not collected or sold.

   __  f. MedlinePlus is available to the public for free.

6. On Your Own – Repeat steps 1 and 2.

   a. In what other languages is information on lead poisoning available?

   b. Find information on how to prevent lead poisoning. Write the information below.
Medical Mystery Case Study - What ails Mr. Christian Gullager?

My name is Christian Gullager and I am a famous artist. I was born in Denmark in 1759 and emigrated to Massachusetts in 1786. I have painted many wealthy Americans including Sarah Greenleaf Boardman and Captain Offin Boardman. Some of my paintings can be found in the Worcester Art Museum. I often mixed my own paints in my studio and was fond of licking my paintbrush tips to make a nice fine point. In 1807 I was hired to paint scenery for a New York City theatre but I was later fired because I could not complete the work. I was so ill I could not get to the theatre to work. I was tired all the time and depressed; my wrists were so weak I could not hold the paint brush anymore.

2. In the Search MedlinePlus window, type ‘lead poisoning’.
3. Scroll down the list of results and click on the Lead Poisoning Kids’ Page NIH link. This takes you to the NIEHS Kids’ Pages. Look through the pages to find answers to the following questions:

   a. What are some sources of lead poisoning?

   b. Based on the case, what sources of lead poisoning may Christian Gullager be exposed to?

   c. What are some symptoms of lead poisoning?

   d. Based on the case, what symptoms of lead poisoning may Christian Gullager have?

   e. Do you think Christian Gullager has lead poisoning? ___ Yes ___No
4. Scroll to the bottom of the NIEHS Kids’ Pages and answer these questions:

a. Who supports (funds) the NIEHS Kids’ Pages?

b. What contact information is listed for NIEHS Kids’ Pages?

Mailing address:

Phone number:

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___ c. The information on the website is accurate (true).
___ d. The information on the website is current (updated).
___ e. My personal information is not collected or sold.
___ f. MedlinePlus is available to the public for free.

6. On Your Own – Repeat steps 1 and 2.

a. In what other languages is information on lead poisoning available?

b. Find information on how to prevent lead poisoning. Write the information below.
Medical Mystery Case Study: What ails Mr. Paul Revere’s youngest child?

My name is Paul Revere and I am a patriot and a silversmith. I was born in 1735 in Boston and my father taught me how to work with metals to make functional items like spoons, buttons, teapots and candlesticks. I primarily work with silver but I have also made things from pewter, brass and copper. Many of the objects that I have made can be seen in the Worcester Art Museum. I made my family a set of pewter cups and plates and we use these for our daily meals. My wife Sarah and I have 8 children; our youngest child is very ill. She is 4 years old. She is always sleepy, complains of stomach aches and headaches and cannot concentrate on her chores.

2. In the Search MedlinePlus window, type ‘lead poisoning’.
3. Scroll down the list of results and click on the Lead Poisoning Kids’ Page NIH link. This takes you to the NIEHS Kids’ Pages. Look through the pages to find answers to the following questions:
   a. What are some sources of lead poisoning?

   b. Based on the case, what sources of lead poisoning may Paul Revere’s youngest child be exposed to?

   c. What are some symptoms of lead poisoning?

   d. Based on the case, what symptoms of lead poisoning may Paul Revere’s youngest child have?

   e. Do you think Paul Revere’s youngest child has lead poisoning? ___ Yes   ___No
4. Scroll to the bottom of the NIEHS Kids’ Pages and answer these questions:

a. Who supports (funds) the NIEHS Kids’ Pages?

b. What contact information is listed for NIEHS Kids’ Pages?

   Mailing address:

   Phone number:

c. When was NIEHS Kids’ Pages last updated (modified, reviewed)?

d. Click on the link Privacy and Accessibility, then on Privacy Policies. Does this site collect information about you? _____ Yes _____ No

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   ____ c. The information on the website is accurate (true).
   ____ d. The information on the website is current (updated).
   ____ e. My personal information is not collected or sold.
   ____ f. MedlinePlus is available to the public for free.

6. On Your Own – Repeat steps 1 and 2.

a. In what other languages is information on lead poisoning available?

b. Find information on how to prevent lead poisoning. Write the information below.
Medical Mystery Case Study: What ails Mr. Vincent van Gogh?

My name is Vincent van Gogh and I am an artist. I was born in 1853 and I’ve led a very interesting life. For ten years I have painted using thick, white lead paint that would drip on my fingers as I painted. I was often ill and my complexion was grayish. My stomach ached, I had gingivitis and I was always tired. My doctor told me I had “bad blood” or anemia. I was prone to having mad fits and I even cut off my own ear. I blame my poor health and my madness on my art. The doctor told me I have lead poisoning.

2. In the Search MedlinePlus window, type ‘lead poisoning’.
3. Scroll down the list of results and click on the Lead Poisoning Kids’ Page NIH link. This takes you to the NIEHS Kids’ Pages. Look through the pages to find answers to the following questions:
   a. What are some sources of lead poisoning?
   b. Based on the case, what sources of lead poisoning may Mr. Vincent van Gogh be exposed to?
   c. What are some symptoms of lead poisoning?
   d. Based on the case, what symptoms of lead poisoning may Mr. Vincent van Gogh have?
   e. Do you think Mr. Vincent van Gogh has lead poisoning? ___ Yes ___No
4. Scroll to the bottom of the NIEHS Kids’ Pages and answer these questions:

   a. Who supports (funds) the NIEHS Kids’ Pages?

   b. What contact information is listed for NIEHS Kids’ Pages?
      
      Mailing address:

      Phone number:

   c. When was NIEHS Kids’ Pages last updated (modified, reviewed)?

   d. Click on the link Privacy and Accessibility, then on Privacy Policies. Does this site collect information about you? _____ Yes     _____ No

5. BOTTOM LINE:
   I can trust information from MedlinePlus because (check all that apply):

   ___ a. I can identify the author (or organization) that wrote or published the content.
   ___ b. I can contact the author (or organization).
   ___ c. The information on the website is accurate (true).
   ___ d. The information on the website is current (updated).
   ___ e. My personal information is not collected or sold.
   ___ f. MedlinePlus is available to the public for free.

6. On Your Own – Repeat steps 1 and 2.

   a. In what other languages is information on lead poisoning available?

   b. Find information on how to prevent lead poisoning. Write the information below.
Health Information Web Site Evaluation Checklist

When you are looking for health information on the web and you visit a site for the first time, it’s important to evaluate how reliable the site is. Use the checklist below to help you evaluate the site.

Title of web site: MedlinePlus

Web site address: http://medlineplus.gov

1. Can you tell who **wrote** or **published** the content?
   If there is no author, look for an organization (not the webmaster)  
   Yes  No

2. Is the **author** qualified to write this information?
   Look for professional information about the author, e.g. job, title, strengths, etc.  
   Yes  No

3. Can you **contact** the author?
   Look for full contact information. E-mail address only is not enough.  
   Yes  No

4. Does the site’s address **end** on .gov?
   You can generally trust information from .gov  
   Yes  No

5. Is the site trying to **sell** you something?  
   Yes  No

6. Does the site ask for your **credit card** information?  
   Yes  No

7. Is the information on the site **factual**?  
   Yes  No

8. Is the **purpose** of the web site to educate about health?  
   Yes  No

9. Does the site provide **accurate** (true) information?  
   Yes  No

10. Can you tell when the web site was last modified or **updated**?  
    Yes  No

**BOTTOM LINE:** Is this a reliable health information web site?  
    Yes  No
Health Information Web Site Evaluation Checklist

When you are looking for health information on the web and you visit a site for the first time, it's important to evaluate how reliable the site is. Use the checklist below to help you evaluate the site.

<table>
<thead>
<tr>
<th>Title of web site: Power Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web site address: <a href="http://www.powerbalance.com">http://www.powerbalance.com</a></td>
</tr>
</tbody>
</table>

1. Can you tell who **wrote** or **published** the content?  
   If there is no author, look for an organization (not the webmaster)  
   Yes  No

2. Is the **author** qualified to write this information?  
   Look for professional information about the author, e.g. job, title, strengths, etc.  
   Yes  No

3. Can you **contact** the author?  
   Look for full contact information. E-mail address only is not enough.  
   Yes  No

4. Does the site’s address **end** on .gov?  
   You can generally trust information from .gov  
   Yes  No

5. Is the site trying to **sell** you something?  
   Yes  No

6. Does the site ask for your **credit card** information?  
   Yes  No

7. Is the information on the site **factual**?  
   Yes  No

8. Is the **purpose** of the web site to educate about health?  
   Yes  No

9. Does the site provide **accurate** (true) information?  
   Yes  No

10. Can you tell when the web site was last modified or **updated**?  
    Yes  No

**BOTTOM LINE:** Is this a reliable health information web site?  
    Yes  No
True Lead Poisoning Storytelling Narratives

Narrated by Marybeth O’Day, Housing/Health Inspector, Worcester Department of Public Health

New Baby, New Windows

The lead inspector received a phone call. A 2-year old girl had lead poisoning. During her physical exam, her doctor performed a lead poisoning test. The test showed that the girl had a toxic lead level. The girl and her family had recently moved to the U.S. from Liberia. They rented a three-decker apartment in Worcester that was built 100 years ago. By law, the landlord had to replace all windows where the baby lived. The family lived in the apartment while the repairs were done. Lead dust got in the air and lead paint chips fell on the floor where the girl played. The girl inhaled the dust, and touched floors and windows with her fingers, then touched her mouth, thus, ingested lead. She did not exhibit symptoms of lead poisoning until later. She was taken to the Children’s Hospital in Boston that has a world class environmental clinic where she was diagnosed with lead poisoning. Iron supplements were prescribed and nutritious diet. The girl recovered. The lead inspector visited the home again later to see if there was still lead in the house. All was O.K.

Lesson: The family should not have been living in the apartment while the windows were being replaced. After the job was done, everything should have been thoroughly cleaned, surfaces wiped with damp cloth and the apartment aired to prevent the baby from coming into contact with the lead dust and paint chips.

Not so Nice Spice

A call was received for a lead inspection where a 2-year old girl with elevated lead blood levels (28 mg/deciliter) lived. The girl lived in an apartment complex that was built after 1978, so no lead paint was present (in 1978 federal regulations banned the use of lead in house paint.). The walls were newly painted; there was no chipping or peeling.

How was the little girl exposed to lead? The girl’s family was from India. The spices in kitchen pantry were tested and found to be contaminated with lead. They were removed and the child’s health improved.

Lesson: Be aware of consuming foreign-grown spices. Sources of lead could be either the soil where the spices were grown, the grinder where they were ground or the packaging that they were stored in.
Spring Fever

The lead inspector received a call to check on a 2-year old boy whose blood test showed lead poisoning. The boy lived in a single family home built before 1978. (Why is this important?). A mandatory inspection of the interior and exterior of the house was done. The inspector found the presence of lead and issued an order to de-lead the property.

How did the boy get lead poisoning? During a storm, a tree fell on the family house’s detached garage and destroyed it. In the spring, the family had the tree and old garage removed, and had another garage built. During the construction, the weather was nice. The boy played outside. The dust from the old garage also came inside the house through the open windows. The boy inhaled and touched the paint chips and dust and licked his fingers. He got lead poisoning. He was treated and his lead levels went down fast. The de-leading with a licensed de-leader cost the family $45,000.

Lesson: Children should not play in construction areas to prevent exposure to dust that may have lead.

On the Go

The lead inspector received a call to check on a 5-year old boy who was exhibiting learning problems in school. He and his mom had a history of moving from place to place often. When the lead inspector visited, they were living with his grandmother in a government-subsidized housing complex. The boy was tested for lead poisoning and was found to have a very high lead level. He was admitted to the hospital where he received medications during his hospital stay that lasted 5 days.

How was the little boy exposed to lead? When the inspector went to inspect the boy’s grandmother’s house, no lead was found because the house was provided by the government and was lead-free. Unfortunately, the inspector could not check the previous homes where the boy lived. It was assumed that one of the boy’s previous homes contained lead paint.

Lesson: Lead poisoning may be found in children whose current homes are lead free. Children who move frequently may need multiple homes inspected to determine the source of lead exposure.
**Hoarding**

A call was received to check on a 3-year old boy who lived with his mom and 70-year old great-grandparents. They lived in a house that was 150 years old with old windows. The house was crowded with old furniture and material possessions, and has not been cleaned or renovated for a while. The boy had no place to play. He would touch surfaces he could reach or go to the window sills and bite them. The court ordered the family to clean the house with water using the “wet-mop method” and remove unnecessary material possessions.

**Lesson:** Homes built before 1950 that have not been renovated have a high chance of containing interior lead based paint that is decomposing. These old homes should be properly cleaned using the “wet mop” method to reduce the presence of lead dust on household objects. Reducing clutter will help reduce the hand-to-mouth transmission of lead dust in children.
Title: Preparing water based paints

Purpose: To make non-toxic paint using laboratory skills.

Procedure:

1) **Tare** a piece of weigh paper on the balance.
2) Weigh 1000 mg of paint powder. You may use any combination of colors. Record the mass in Data section below.
3) Measure 6 MLs of water into the graduated test tube. Record the amount of water measured in the Data section below.
4) Add your paint powder to the test tube. Record the total volume. Put the cap on the tube, very tightly. Shake for one minute to dissolve the paint. Record the color below.

Data:

1) Color(s) of paint powder _______________________
2) Mass of paint powder _________________________ mg
3) Volume of water added _______________________ mL
4) Final volume of paint ________________________

Results:

I successfully mixed a vial of ____________________________ paint.

(describe color)

The final concentration of my paint is ______________ mg/mL.
Experiment 1: Pharmaceutical Laboratory Activity-Teacher Sheet

Title: Preparing water based paints

Purpose: To make non-toxic paint using laboratory skills. (Point out the non-toxic labeling)

Procedure:

1) Tare a piece of weigh paper on the balance. (Explain that we “tare” the balance to zero before we weigh the paint because we do not want to include the weight of the waxed paper.)

2) Weigh 1000 mg of paint powder. You may use any combination of colors. Record the mass in Data section below. (It does not have to be exactly 1000mg. If they weigh out 975 mg then they will write 975 mg below.)

3) Measure 6 MLs of water into the graduated test tube. Record the amount of water measured in the Data section below. (Again, don’t worry if it is not perfect, they are making paint!)

4) Add your paint powder to the test tube. Record the total volume. (Ask them why it is more than 6mLs now.) Put the cap on the paint, very tightly. Shake for one minute to dissolve the paint. Record the color below.

Data:

1) Color(s) of paint powder example: __blue + pink__________________
2) Mass of paint powder ~1000 mg
3) Volume of water added ~6 mLs
4) Final volume of paint ~ 6.5 mL

Results:

I successfully mixed a vial of ex. purple_________________________ paint (describe color)

The final concentration of my paint is 1000mg/6.5 mL (no need to calculate) mg/mL

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Experiment 2: Pharmaceutical Laboratory Activity-Student Sheet

Title: Separation of Color

Purpose: In this experiment we’ll learn how to separate colors based on the chemicals in the pigment using a science technique called chromatography.

Procedure:

1) Mark the chromatography (TLC) paper with two different color magic markers, make two small marks about 1 inch from the bottom of the paper.

Record the colors you used:

Color #1___________________
Color #2___________________

2) Measure 8 mLs of water in the graduated test tube and pour it into the white Dixie cup.

3) Carefully place your TLC paper in the cup (magic marker spots on the bottom).

4) Observe the water, the solvent, as it flows up the TLC paper. Why is water moving up?

5) Carefully remove the TLC paper from the plastic cup when the solvent line is close to the top of the TLC paper. Place on a paper towel.

Results:

6) Record your observations (Draw below)

What colors did color #1 separate into?___________

What colors did color #2 separate into?___________
Experiment 2: Pharmaceutical Laboratory Activity-Teacher Sheet

Title: Separation of Color

Purpose: In this experiment we’ll learn how to separate colors based on the chemicals in the pigment using a science technique called chromatography.

Procedure:

1) Mark the chromatography (TLC) paper with two different color magic markers, make two small marks about 1 inch from the bottom of the paper.

   Record the colors you used:
   
   Color #1 ___red_______
   Color #2 ___green_______

   1 inch

2) Measure 8 mLs of water in the graduated test tube and pour it into the white Dixie cup.

3) Carefully place your TLC paper in the cup (magic marker spots on the bottom).

4) Observe the water, the solvent, as it flows up the TLC paper. Why is water moving up?

   Capillary Action

5) Carefully remove the TLC paper from the plastic cup when the solvent line is close to the top of the TLC paper. Place on a paper towel.

Results:

6) Record your observations (Draw below)

   What colors did color #1 separate into? None – stayed red

   What colors did color #2 separate into? Blue and yellow

   What’s going on here? Ask the student what they think first! The magic marker dye is a chemical. Some dyes (blue for instance) are made of more than one chemical that can be separated based on their affinity/attraction to the paper versus the water. Interesting Pharmacy perspective: Some people are allergic to some dyes (Yellow dye #3 for example) and can’t take any medication that may have a yellow coating ... It is the pharmacists job to check for this so based on this experiment you can see that even a green capsule may have yellow dye in it.
**Title**
(Think of a catchy title for your poster)

**Names of Team Members**

**Team Color**

**Your School Name**

### Lead Poisoning

**Sources of lead** - List 2 items that may contain lead.

1. __________________________
2. __________________________

**Symptoms of lead poisoning** – List two symptoms of lead poisoning.

1. __________________________
2. __________________________

**Ways to prevent or reduce being exposed to lead** – List 2 things you can do to prevent or reduce your exposure to lead.

1. __________________________
2. __________________________

### Medical Mystery Case

**Summarize** your medical mystery case study – give the NAME and describe HOW the person in your case study got lead poisoning.

__________________________

List 2 questions you were asked to answer about your case study.

1. __________________________
2. __________________________

List the answers to the 2 questions you listed above.

**Answer for Question 1:** __________
__________________________

**Answer for Question 2:** __________
__________________________

### Reliable Health Website

List the website(s) you used to obtain answers to the questions in your medical mystery case study.

• __________________________
• __________________________

List 3 criteria you can use to make sure a health website and its information can be trusted.

1. __________________________
2. __________________________
3. __________________________

### Impact

List 3 things you learned during this program.

1. __________________________
2. __________________________
3. __________________________

Design your team logo
END OF PROGRAM EVALUATION QUESTIONNAIRE

When answering the questions, please think about the 3 sessions that make up the entire Kids to College through the Library program:

A. Overall, how would you rate the entire Kids to College through the Library program? Circle a number.

Very Poor 1 2 3 4 5 6 7 8 9 10 Excellent

B. How would you rate your entire experience in the Kids to College through the Library program? Circle a number.

Extremely dissatisfied 1 2 3 4 5 6 7 8 9 10 Extremely satisfied

C. How useful was the Kids to College through the Library program in your learning about lead poisoning? Circle a number.

Completely useless 1 2 3 4 5 6 7 8 9 10 Very useful

D. How useful was the Kids to College through the Library program in your learning about how to find websites that provide reliable health information? Circle a number.

Completely useless 1 2 3 4 5 6 7 8 9 10 Very useful
E. Which of the items listed below did you learn from the program? You may check more than one box.

- How to find a reliable health website
- Knowledge of the MedlinePlus website
- How to use information from a reliable website to solve a lead poisoning problem
- How to work as part of a team
- How to do simple laboratory experiments
- Sources of lead
- Symptoms of lead poisoning
- How to prevent or reduce exposure to lead
- How to visually identify lead paint based on the cracking angle of peeling paint
- Importance of going to college

F. What was your favorite part of program?

G. What was your least favorite part of the program?

Thank you for participating in this program and for your feedback!
1. Have you ever searched on the Internet for health information? Circle one  

2. If you have a question about a disease or medicine, where on the internet would you look?

3. Do you think this information is reliable (trustworthy)? Circle one

4. How good are you at finding health information on the internet? Circle a number

Not good OK Very good
1 2 3 4 5 6 7 8 9 10

5. Circle all the criteria below that you should see on a reliable health website:

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6. Do you have a library card? Circle one

7. Can you search the Internet at home? Circle one

8. Name one symptom of lead poisoning
9. Which picture above shows peeling paint that looks like it may contain lead?
   a. Picture A
   b. Picture B
   c. Picture C
   d. I don’t know

10. Is lead poisoning contagious? (Can you “catch it” from someone?) Circle one  YES  NO

11. Circle all of the things below that may contain lead: