Environmental Health Literacy for Youth
Project Partners and Acknowledgements

The following people have contributed to the development of this program:

• **Crow Agency Public School**: Jason Cummins*, Lisa Stevens, Kristen Merchant, Jonna Chavez
• **Crow Tribe Cultural Committee**: Grant Bull Tail
• **Little Big Horn College**: Velma Pickett, Dr. David Yarlott, Frederica Lefthand, Dayle Felicia, Winters Plain Bull, Te-Ata Old Bear, Sa’Rayna Stops, Melvin Ware, Eduardo Nunez, and LBHC interns.
• **Montana State University**: Erin Smith, Jessica Milkovich, Deborah LaVeaux, Kendra Veo, Christine Martin, Hannah Rieth
• **Crow Environmental Health Steering Committee**: Sara L. Young*, Myra Lefthand, Dr. Mari Eggers*, Robin Stewart, David Small*, John Doyle*, Ada L. Bends*
  *Also on the Guardians of Living Water Steering Committee,
• **Consultants and Advisors**: Dr. Suzanne Christopher & Dr. Rima Rudd

• **Crow Environmental Health Steering Committee (CEHSC)**
• **New Partners including:**
  • Crow Agency Public School (CAPS)
  • MSU Researchers
Environmental Health Literacy (EHL)

<table>
<thead>
<tr>
<th>Program goals</th>
<th>Student evaluation concepts</th>
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<tbody>
<tr>
<td><strong>Functional EHL</strong></td>
<td>Ability to apply literacy skills to water and</td>
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<td></td>
<td>health related information</td>
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<td></td>
<td>Basic knowledge:</td>
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<td></td>
<td>Vocabulary</td>
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<td>Math skills</td>
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<td><strong>Interactive EHL</strong></td>
<td>Ability to evaluate water related information</td>
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<td>Ability to share information with peers and</td>
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<td></td>
<td>family members</td>
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<td></td>
<td>Dissemination projects:</td>
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<td>Take home activities</td>
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<td><strong>Critical EHL</strong></td>
<td>Ability to analyze water related problems and</td>
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<td>to work with others to argue for or take action</td>
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<td>Advocacy skills:</td>
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<td>Digital stories, moviemaking, art projects</td>
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Nutbeam, 2008

Adapted from:
PMID: 15967559.
Development of Program

• Bring together steering committee including CEHSC and new partners (~Monthly Meetings)
  • Identify goals of the program
  • Discuss the role of children in Crow community
  • Determine method for implementing the program
  • Determine topics and messages to cover

Overview of the Program

• Summer Camp & After school Program
• Components of Program:
  • Functional Literacy Objectives
  • Interactive Literacy Objectives
  • Critical Literacy Objectives
Summer Camp and Afterschool Programs

Components of Program

- Science based activities from Project Wet
  - Ask the bugs, Aqua Bodies, Life Box
- Field Trips
  - Water treatment plant, Stream assessment, Spring sample collection
- Art based activities
  - Drama Activities, Posters
- Storytelling
Main Health Message

Water is life. Water is sacred. Water is essential to community and personal health.
Stream and Ground Water Health
Water conservation
Who uses fresh water and how much do we use?
Integration of Crow Values and Culture
Integration of Arts and Public Speaking Skills

Evaluation Measures

- Pre/post test of environmental health attitudes and behaviors
- Pre/post test of knowledge objectives
- Paired interviews with students
- Individual interviews with parents.
Attitude Questions from Existing Valid and Reliable Measures

<table>
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<tr>
<th>Question</th>
<th>Rating</th>
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<tr>
<td>To save water, I would be willing to use less water when I take a bath or shower.</td>
<td></td>
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<td>I would be willing to talk to tribal leaders about reducing water pollution.</td>
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<td>I have talked with people about how to help with environmental problems</td>
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<td>I have a teacher or friend who is a role model who respects the environment</td>
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<tr>
<td>I do not let the water faucet run when it is not necessary.*</td>
<td>*P&lt;0.1</td>
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<tr>
<td>I enjoy learning about rivers and springs.</td>
<td></td>
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<tr>
<td>I feel confident talking to my family and friends about environmental information.</td>
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<tr>
<td>I have often heard stories about rivers and springs.</td>
<td></td>
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<tr>
<td>I have picked up trash at the river when I see it and thrown it away.</td>
<td></td>
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<tr>
<td>People are treating the rivers and springs badly.</td>
<td></td>
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<tr>
<td>It upsets me when I see people use too much water.</td>
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Findings

- We found students reporting increases in attitudes related to:
  - Role models who respected the environment,
  - conserving water
  - talking to others about water related issues.

- We modified questions for clarity and specificity:
  - I turn off the water when I brush my teeth vs. faucet
New example question

- John went swimming with his family. He noticed a lot of trash along the river edge. What should John do?
  - Nothing. It is not his problem.
  - Tell his parents
  - Ask everyone to help pick up the trash and take it away
  - Something else
Water And Health

Water Cycle

- Pre and Post, most students knew four essential factors of life. Most already knew about photosynthesis.

Water And The Human Body

- What percent of your body is water?
- Pre 50% correct vs Post 100% correct
Ground Water Contamination, Spring Formation

- Taught on field trip day, information was complex needed modification for grade level.

Watershed And Water Quality

- Timing of pre/post tests.
- Matching our terminology with question terminology
Paired Interviews with students

What did you like most about camp today?
- Student A: I liked camp today because we got to go on a field trip to Pryor and hear a story from a guy. I liked it because I got to learn history...
- Student B: I learned about... water is sacred, how to keep it clean... not to make fun of water.
- Student A: Water is [one of ] the four elements. it so that you keep it clean and you respect it. Don’t throw no trash in there ....

Paired Interviews with students

What will you share about today’s camp with your family and friends?
- Student A: that you have to test the water before you drink it. And, and not to throw, like stuff inside the springs and water.
- Student C: I would tell them that was fun and talk to them about the springs and then all kinds of stuff that we went to.
Parent Interviews

Did your child talk with you about their experience with the summer camp?

**Parent:** My girl loved the camp. I think before the camp she didn’t know much about water issues but after the camp she was more aware of them. She said she liked the trip to Pryor and she told us about how she got to test the water and it came back yellow. She told us about the story of the boy who threw a rock at the white buffalo...

Lessons Learned for Measuring Literacy

- Make sure questions and activities are at appropriate grade level.
- Match objectives closely with knowledge questions.
- Use vocabulary from questions while teaching activities.
- Focus in on main message and repeat them!
- Explicitly state role of guardians.
Lessons Learned for Improving Camp

- Small groups with an assigned leader.
- Interview students in equivalent age pairings.
- Include relevant Crow words.
- Include more audio visual resources, games, etc. for downtime.

Summer 2016

- Modified questions, test for reliability
- Formative assessments for each day
- Increase process evaluation
- Focus on interactive literacy
- Focus on critical literacy
- Focus on parent’s perception of student as change agent
Afterschool 2016

- Focus on interactive literacy
- Focus on critical literacy
  - Photovoice or digital storytelling
  - Sustainability and dissemination

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- **Consultants and Advisors**: Dr. Suzanne Christopher & Dr. Rima Rudd
- **Camp Assistance**: Xada Littlewolf
- **Guest Speakers**: Tilton Old Bull, Elias Goes Ahead, William Big Day, Timothy McLeary, Chairman Darren Old Coyote, Secretary Shawn Backbone, & Noah Watts

References