*OVERALL OLIVEHURST EDUCATION PROGRAM CONTEXT*

Through the state-funded (Proposition 1) Department of Water Resources (DWR), Disadvantaged Community Involvement (DACI) Program, an education project was created to focus on Olivehurst elementary schools 4th grade classes. The initial focus was on assisting children in Olivehurst’s Ella and Arboga Elementary Schools to understand their water (via the water cycle, which is first introduced in the fourth grade).

After two years of DWR funding, the Yuba Water Agency (YWA) funded an additional 1.5 years of the Olivehurst 4th Grade water education program. The Olivehurst schools which participated in the program were Ella Elementary and Arboga Elementary – via their 4th grade classes.

As a result of these joint DWR/YWA efforts, the product of this work effort has been an integrated, exportable, hands-on learning curriculum that meet multiple educational standards for the 4th grade, importantly including STEM standards and consistency with the Next Generation Science Standards (NGSS) . The program components included:

* Experiment Boxes
* Literature Bundles
* Read Alouds
* Salmon Run
* Student Journaling
* Water Bottle Filling Stations

The following figure provides some visuals and feedback on the overall program.

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**OLIVEHURST EDUCATION PROGRAM**

**PROGRAM COMPONENTS DESCRIPTIONS**

Each of the ten program components are briefly described below. A review of the full electronic folders and files provide the specific materials and details of each component.

To deepen student understanding and awareness of where their water comes from, students were provided access to multiple Experiment Boxes. Experiment Boxes are an interactive set of discovery and engagement tools, water testing items, lessons and other customizable scientific experiments that are fun and inspiring ways to increase students’ environmental and water literacy.

The boxes were specifically designed to meet instructional and curricular goals and the Next Generation Science Standards (NGSS). Testing results across the area indicate that student’s performance with respect to STEM in particular needs significant improvement and these curriculum modules were specifically geared to provide that support with a focus on water.

The Experiment Boxes are designed as an introductory inquiry activity in which students carry out investigations, record data, and ask questions to build relationships between evidence and explanations. This activity can be used to build background knowledge about science and investigative processes.

Plainly described, Experiment Boxes are essentially a ‘lesson is a box’. The box comes with an explanatory lesson plan for the teacher, all of the materials/supplies that are required to actually use the box, and associated questions for teachers to pose to their students.

A full list of contents/materials for the Experiment Boxes is available as a separate file named “Experiment Boxes- Table of Contents”.

**Initial Strategy- Pre Covid**

Initially, teachers were provided with two in-class, physical boxes containing all of the materials and support documents necessary to provide for in-class learning. The two Experiment Boxes (Water Cycle, Water Filtration) were designed to provide lesson plans and classroom activities that align with instructional and curricular goals and the Next Generation Science Standards (NGSS). These initial boxes were used by some teachers in the first semester (late 2019), while other teachers intentionally delayed use of the boxes until second semester (early to mid-2020).

A third Experiment Box (Watershed) was designed but hadn’t been provided to the teachers before the school closings due to Covid in early-2020, so that Box was redesigned as a distance learning activity, discussed below.

**Adaptive Strategy – Post Covid**

The Boxes were originally developed pre-COVID, but adaptive strategies resulted in conversion of physical Experiment Boxes to virtual Experiment Boxes following the closure of schools and switch to Remote Learning. Extensive teacher input indicated that the virtual Experiment Boxes would be essential components to support their initial year of Virtual Learning.

A total of three virtual boxes were created: The Wonderful Watershed, Water Filtration and the Marvelous Water Cycle. Extensive discussions with local teachers supported the redesign and conversion to virtual experiences. These Boxes were virtually distributed to 4th grades across Olivehurst for the 2021/2022 school year.

In addition to these Experiment Boxes, teachers received a literature bundle with water-correlated and NGSS-aligned content (see below).

**Literature Bundles – Overview of Component**

To reinforce key concepts and understandings, each classroom was provided a set of water-and grade appropriate books (also considering English Learners and Students with Disabilities) that can support additional connections to the curriculum and Experiment Boxes. Emphasis on indigenous stewardship, connection to community and understanding of ecosystems were the basis for literature selection. Emphasis on indigenous stewardship, connection to community and understanding of ecosystems were the basis for literature selection, as was consideration of English Learners and Students with Disabilities.

The pleasures and understandings afforded by engaged reading, interpreting, appreciating, evaluating, and experiencing literature enable children to expand their ideas, think deeply and notice new things in their world. Literature provides a language model for those who hear and read it. By using age-appropriate literature, students learn new words, syntax, and discourse functions as well as learning correct sentence patterns, standard story structures. They develop their writing skills.

Finally, children’s literature is important because it provides students with opportunities to respond to literature; it gives students appreciation about their own cultural heritage as well as those of others; it helps students develop emotional intelligence and creativity; it nurtures growth and development of the student’s personality and social skills; and it transmits important literature and themes from one generation to the next. A reading of one book in both Spanish and English was provided as a way to engage students’ family, siblings and friends in the reading experience.

A full list of the literature bundle titles is provided below, while a brief description of each book is provided in Literature Bundle 1, Literature Bundle- Experiment Boxes and Salmon Booklet

Literature Bundles 1

* Aston, Diane Hutts. *A Nest* Is *Noisy*. April 14, 2015, Chronicle Books
* Argueta, Jorge. *Agua, Auguita Water, Little Water.* October 31, 2017. Panita Books
* Barnham, Kay. *The Great Big Water Cycle Adventure. May 1,2018.* B.E.S. Publishing
* Branley, Franklin M. *Down Come the Rain.* September 1, 1997. HarperCollinsPublishers
* Canavan, Roger. *You Wouldn’t Want to Live Without Clean Water.* September 2014. Scholastic Publishing
* Martinez, Alejandro Cruz. *The Woman Who Outshone the Sun.* February 1, 2014. Lee & Low Books
* Messner, Kate. *Over And Under the Pond.* March 7, 2017. Chronicle Books LLC
* Olien, Rebecca Jean. *Water Cycle at Work.* January 1, 2016. Capstone
* Paul, Miranda. *Water Is Water, A Book About the Water Cycle.* May 26, 2015. Roaring Book Press

Literature Bundle-Experiment Boxes

* Fullerton, Alma. *A Good Trade*. March 15,2013. Ingram Publisher services
* Olien, Rebecca*. Water Cycle at Work*. May 01, 2019. Capstone
* Robertson, Joanne. *The Water Walker*. May 18, 2021. Second Story Press
* McLeod, Elaine. *Lessons from Mother Earth*. 2002, Douglas and McIntyre
* Dorion, Leah M. *The Giving Tree: A Retelling of a Traditional Metis Story*, P. 2009
* Campbell, Nicola. *Shin-Chi’s Canoe.* 2008, Groundwood Books
* Ritchie, *Scot. P’esk’a and the First Salmon Ceremony*. Aug. 25, 2015. Groundwood Books
* Blades, Ann and Waterton, Betty. *A Salmon for Simon*. 1998, Groundwood Books*.*

Salmon Booklet

* Connors, Lisa. *Salmon Matters*, June 20,2018. Create Space Independent Publishing.
* Fisher-Peelen, Lori*. Big Fish Dreams*. 2018, Raven Productions Incorporated
* Hudson, Brett D. Hetxw’ms Gyetxw. *The Sockeye Mother*. Dec. 5, 2017. Portage & Main Press
* Gill, Shelley. *Swimmer*. 1995, Sasquatch Books
* Simpson, Caroll. *The Salmon Twins*. Aug. 14, 2012. Heritage House Publishing
* Krulik, Nancy E. *The Magic School Bus Goes Upstream*. 1997, Scholastic Inc.
* Ellis, Sarah and Suzuki, David. *Salmon Forest*. 2006, Greystone Books Ltd.
* Joe, Donna. *Salmon Boy: A Legend of the Sechelt People*. 1999, Night wood Editions
* Harasymiw, Mark. *The Bizarre Life Cycle of a Salmon*. Aug. 1, 2012. Gareth Stevens Publishing LLLP.
* Reed-Jones, Carol. *Salmon Stream.* 2000, Dawn Publications.
* Blades, Ann and Waterton, Betty. *A Salmon for Simon.* 1998, Groundwood Books.

Please refer to the Introduction to the Literature Bundles for a full explanation of the context for the use of literature as an educational tool.

**Salmon Run– Overview of Component**

South Yuba River Citizens (SYRCL -- pronounced ‘circle’) is a non-profit organization whose mission is to “unite the community and restore the Yuba River.” SYRCL River Science Staff and river guides coordinated with the Olivehurst team to provide an educational and engaging day (9/19/19) which included a float trip down the lower Yuba, learning about the river’s ecosystem, efforts to protect salmon and observing restoration projects.

The 300+ attending students received ‘wet shoes’ to wear on the Salmon Run, as well as personal water bottles to commemorate their experience. Students learned about first nations and indigenous people’s education while on the river. Students, teachers, and other community members are welcomed to enjoy this hands-on learning opportunity connecting with local waterways. The students and the rest of the participants were bused to the river where their day began. For many children, it was their first experience being near the river and for all it was their first experience being *on* the river.

**Journaling– Overview of Component**

As an added element of the education, during what turned out to be the pre-Covid classroom time, a graphic designer conducted a classroom segment of learning entitled “Journaling”. During this session, students were taught how to create their own journal both their educational and person learning.

The session concluded with each student creating their own journal. Experience and teacher observations indicate that, pre-Covid, this element would have been incorporated into the regular curriculum. However, the virtual lesson planning was already complex without adding time to cover this aspect of the program. However, it was deemed a “hit’ by both students and teachers and may provide a leverage point in the future to reintroduce the activity.

**Water Bottle Refilling Stations– Overview of Component**

Water bottle refilling stations will be installed by OPUD engineers in each of the 4 Olivehurst Elementary Schools. These water refilling stations will count water bottles filled, as well as filter and refrigerate the water, giving students access to OPUD water in their schools. The program will also give each 4th grade student access to metal, refillable water bottles with decorative branded stickers.