



2018

City of Bothell's
Water Education Programs

Final Evaluation Results

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Prepared for



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Final Evaluation Results for the City of Bothell Water Quality Education Programs 2018

Description and Purpose

The City of Bothell's Water Quality Education Program continues to educate students about pollution prevention, stormwater quality, and watershed ecosystem health. Students that participate in these workshops learn how natural water systems keep our water healthy, how human built water systems interact with these natural systems, and what we can all do to be good stewards of our watershed. This program is helping to create awareness and foster sustainable practices and behaviors in the City of Bothell.

This report presents the results from the ninth year of evaluating these programs.

Evaluation Goals and Methods

The evaluation was designed to measure:

Goal 1: Student Retention: To evaluate the retention of lessons in short-term and long-term student memory (short term immediately following the lessons, long term after 60 days). We made the change to 60 day surveys from 90 day as we have found teachers are more likely to return long term surveys on this schedule.

Method 1- select classroom surveys

- Method 2- follow-up surveys after 60 days when applicable
- Method 3- student letter analysis
- Method 4- select student responses to essay questions

Goal 2: Teacher Satisfaction: To evaluate how the program is received by teachers, i.e. are the workshops helping teachers meet state and local education standards and therefore desired by teachers as a teaching resource.

- Method 5- post workshop email survey

Goal 3: Agency Goals Met: To evaluate how we can more directly meet agency goals within NPDES permit and budget parameters.

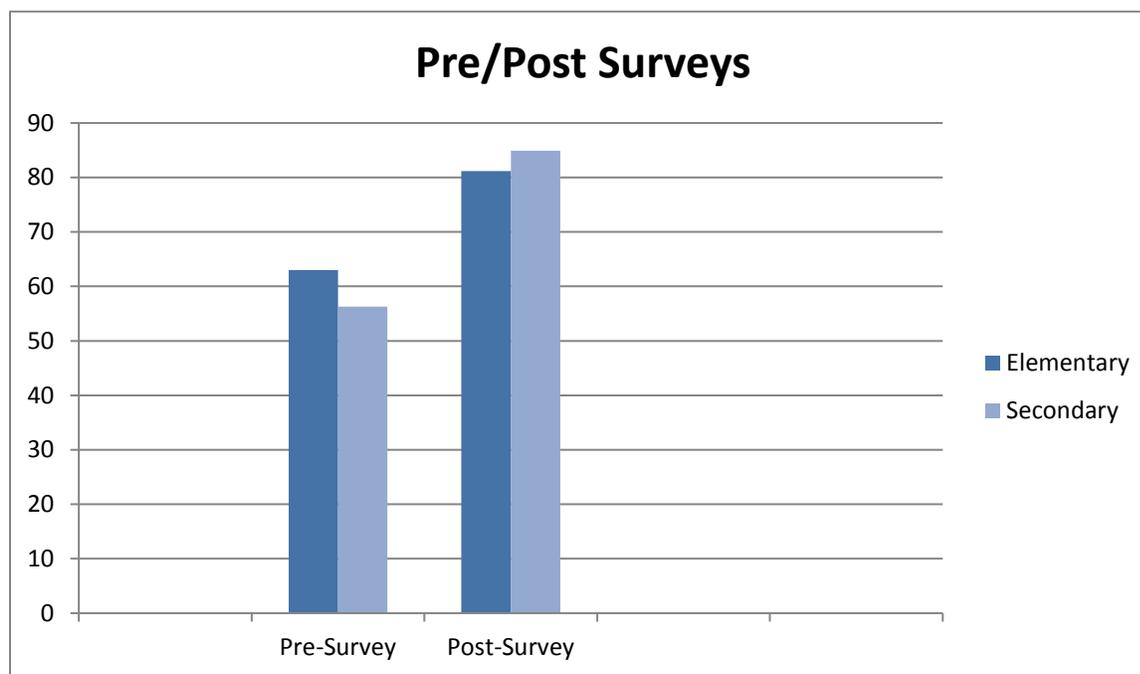
- Method 6- classroom observations (done by City of Bothell, not included in this report)

Results

The 5 question classroom evaluation surveys given before and after each workshop show significant short-term retention of key facts by students at the elementary school level. Significant is defined as a 10 point or greater spread between pre and post-surveys. Four

elementary level classes of students participated in the surveys. The survey results showed that the 65 students that participated had an average score of 63% on the survey prior to the workshop (pre-survey). The 65 students that participated in the post-survey had an average score of 81.2% immediately following the workshop. The classes took place too late in the school year for 60 day surveys to be possible.

The 5 question classroom evaluation surveys given before and after each workshop show significant short-term retention of key facts by students at the secondary school level as well. Six secondary level classes of students participated in the surveys. The survey results showed that the 165 students that participated had an average score of 56.3% on the survey prior to the workshop (pre-survey). The 165 students that participated in the post-survey had an average score of 84.9% immediately following the workshop. The classes took place too late in the school year for 60 day surveys to be possible.



No letters containing content were sent in during the survey period, despite leaving prompts and postage paid envelopes at schools, and reminding teachers via email. Teachers again indicated that they did not have time for letters due to prolonged testing periods in schools this spring. Some letters sent in were meant as simple thank you letters and delivered to the City of Bothell.

Select student responses to questions

Further examination of specific survey questions yielded significant results as well. These results are presented below. For fill-in questions, results were compiled by the number of students that responded the same way. For example, if a student response to *How can we help*

keep water in our rivers, lakes, streams and the Puget Sound healthy? is *Pick up after your dog* 10 students, that means that 10 students responded to this question in the same way in the class or combined classes. Many students list multiple options on fill-in questions. We only compile the answers to the fill in questions on post-surveys, as pre-survey fill in questions have little to no information from students.

Water Cycles Round

- Water Cycles Round - Bothell – 4 June 2018 - Shelton View - Anderson
Question #5: List 3 ways you can keep water in our rivers, lakes, streams and Puget Sound healthy.
Post-Survey:
 - Do not pollute / 5 students
 - Pick up trash / 6 students
 - Do not litter / 10 students
 - Pick up pet waste / 6 students
 - Teach people not to litter / 5 students
 - Don't use oil near water / 2 students

- Water Cycles Round - Bothell – 4 June 2018 - Shelton View - Clements
Question #5: List 3 ways you can keep water in our rivers, lakes, streams and Puget Sound healthy.
Post-Survey:
 - Do not litter / 11 students
 - Do not pollute / 6 students
 - Do not let oil leak / 3 students
 - Pick up pet waste / 6 students
 - Use cars less / 1 student
 - Pick up trash / 1 student

- Water Cycles Round - Bothell – 4 June 2018 - Shelton View - Nelson
Question #5: List 3 ways you can keep water in our rivers, lakes, streams and Puget Sound healthy.
Post-Survey:
 - Do not litter / 10 students
 - Pick up pet waste / 3 students
 - Stop polluting / 2 students
 - Do not dump chemicals / 2 students
 - Picking up trash / 2 students
 - Properly wash car / 1 student
 - Keep storm water clean / 1 student

- Water Cycles Round - Bothell – 4 June 2018 - Shelton View - Walloch
Question #5: List 3 ways you can keep water in our rivers, lakes, streams and Puget Sound healthy.
Post-Survey:
 - Properly wash car / 2 students
 - Stop polluting / 4 students
 - Recycle / 2 students
 - Check car for leaks/ 2 students
 - Don't litter / 13 students

- Pick up trash / 6 students
- Don't release balloons / 1 student
- Keep hair out of the drain / 1 student
- Pick up pet waste / 1 student
- Don't put anything down storm drain / 2 students

Watershed Ecosystems

- Watershed Ecosystems - Bothell – 7 May 2018 – Skyview - Bahr
Question #5: List 5 ways you can keep water in our rivers, lakes, streams and Puget Sound healthy.

Post-Survey:

- Keep storm drains clean / 9 students
- Don't put paint in sink / 1 student
- Use water in moderation / 2 students
- Do not pollute/litter / 26 students
- Educate others on Pollution / 2 students
- Research Pollution/ 1 student
- Carpool, bus, bike, walk, etc. Instead of cars/ 1 student
- Pick up dog poop / 18 students
- Put cigarettes in right disposal / 20 students
- Clean oil spills / 4 students
- Use Compost and not Fertilizers / 1 student
- Don't use pesticides / 3 students
- Put out more trash cans on street/ 1 student
- Use Carwash / 16 students
- Reusable bags/containers / 11 students

- Watershed Ecosystems - Bothell – 7 May 2018 – Skyview - Hardwick 1
Question #5: List 5 ways you can keep water in our rivers, lakes, streams and Puget Sound healthy.

Post-Survey:

- Keep storm drains clean / 15 Students
- Keep oil/soap out of water / 15 students
- Use water in moderation / 11 students
- Do not pollute/litter / 26 students
- Don't let the faucet run / 4 students
- Fix leaks / 2 students
- Recycle / 11 students
- Educate others on Pollution / 1 student
- Research Pollution/ 3 students

- Watershed Ecosystems - Bothell – 7 May 2018 – Skyview - Hardwick 2
Question #5: List 5 ways you can keep water in our rivers, lakes, streams and Puget Sound healthy.

Post-Survey:

- Keep storm drains clean / 3 students
- Use water in moderation / 4 students
- Do not pollute/litter / 24 students
- Educate others on Pollution / 9 students
- Research Pollution/ 2 students
- Carpool, bus, bike, walk, etc. Instead of cars/ 11 students

- Pick up dog/animal waste / 3 students
 - Electric car / 2 students
 - Clean oil spills / 4 students
 - Don't use pesticides / 3 students
 - Make rain gardens / 1 student
 - Plant more trees / 11 students
 - Stop building factories / 2 students
 - Keeping trash out of the toilet / 1 student
- Watershed Ecosystems - Bothell – 7 May 2018 – Skyview - Hardwick 3
Question #5: List 5 ways you can keep water in our rivers, lakes, streams and Puget Sound healthy.
Post-Survey:
 - Use water in moderation / 6 students
 - Do not pollute/litter / 26 students
 - Don't let the faucet run / 4 students
 - Recycle / 6 students
 - Educate others on Pollution / 2 students
 - Pick up dog poop / 19 students
 - Clean oil spills / 5 students
 - Use Compost and not Fertilizers / 12 students
 - Don't use pesticides / 13 students
- Watershed Ecosystems - Bothell – 7 May 2018 – Skyview - Kull 1
Question #5: List 5 ways you can keep water in our rivers, lakes, streams and Puget Sound healthy.
Post-Survey:
 - Keep storm drains clean / 1 student
 - Don't put paint in sink / 1 student
 - Use water in moderation / 5 students
 - Do not pollute/litter / 25 students
 - Recycle / 3 students
 - Educate others on Pollution / 2 students
 - Carpool, bus, bike, walk, etc. Instead of cars/ 13 students
 - Pick up dog poop / 17 students
 - Electric car / 4 students
 - Put cigarettes in right disposal / 5 students
 - Clean oil spills / 2 students
 - Use Compost and not Fertilizers / 1 student
 - Don't use pesticides / 3 students
 - Put out more trash cans on street/ 5 students
 - Use eco-friendly products / 1 student
 - Make rain gardens / 2 students
 - Use Carwash / 1 student
- Watershed Ecosystems - Bothell – 7 May 2018 – Skyview - Kull 2
Question #5: List 5 ways you can keep water in our rivers, lakes, streams and Puget Sound healthy.
Post-Survey:
 - Keep storm drains clean / 1 student
 - Don't put paint in sink / 9 students

- Do not pollute/litter / 19 students
- Don't let the faucet run / 2 students
- Fix leaks / 1 student
- Recycle / 8 students
- Educate others on Pollution / 1 student
- Carpool, bus, bike, walk, etc. Instead of cars/ 11 students
- Pick up dog poop / 9 students
- Electric car / 9 students
- 5-10 min. Shower / 1 student
- Put cigarettes in right disposal / 8 students
- Clean oil spills / 5 students

Teacher Satisfaction Results 2018

This program was great and Rachel was fantastic! She was engaging with the kids and had great classroom management. I would love to use the programs in the classroom next year. I have letters from the kiddos coming your way with some stories and things they have learned!

██████████, Westhill Elementary

This program was wonderful and my students love their terrariums! Rachel was knowledgeable and great with the kids. I would love to do another program from Nature Vision next year. Earlier in the year we learned about cycles and only spend 1 day on the water cycle so the review and further understanding of the water cycle was good for the kids. I heard them saying I remember this from before but now we get to see rain in our own cup! Also many of them said they were excited to show their parents and siblings when they got home. Thank you for your time and knowledge! I would highly encourage this sponsor to fund this program next year.

██████████, Westhill Elementary

Kirsten did a fantastic job engaging the students in her presentation and being patient with the students during the project. She responded well to student questions and comments, adding to students' current knowledge and corrected some misunderstandings. I appreciated her efficiency as well. I would love to have this program next year and encourage the City of Bothell to continue fund Nature Visions visits to schools.

██████████, Woodin Elementary

Are there any improvements you would like to suggest? *No, the program was great as is!*

Would you like to see these programs in your school next year? *Yes!*

Also, we would like to hear any special stories or examples of how this program helped your students gain awareness, understanding, or appreciation of ecological concepts. *Learning about the water cycle and making terrariums really set my students up for success for the plant and animal survival science unit.*

Would you encourage this sponsor to fund this program next year? *Yes!*

██████████, Crystal Springs Elementary

The program was great. My Kinders really enjoyed making the terrariums. Mike was so on their level. I just wish that there was more time discussing the water cycle as we had to zip through it. I would definitely like to do this again next year!

██████████, Crystal Springs Elementary

The program was engaging and age appropriate. The children had fun and it was well-orchestrated. Additionally, Mr. Mike was excellent. His time spent addressing the class was personable, engaging, and clear enough for kindergarteners to understand. He was well organized. It was a great additional supplement to what we are already doing regarding science and the environment. This program helped give students a visual example of what the water cycle is and helped us to start thinking about water awareness and how we can be more conservative. It was an informative and engaging experience and the kids loved it.

██████████, Crystal Springs Elementary

Are there any improvements you would like to suggest? *No*

Would you like to see these programs in your school next year? *Yes*

Also, we would like to hear any special stories or examples of how this program helped your students gain awareness, understanding, or appreciation of ecological concepts. *I had a guest teacher the day Nature Vision presented this year, but the kids shared about all the learning and exploration they experienced, and it sounded amazing as usual. I also heard that the instructor was knowledgeable and great with management.*

Would you encourage this sponsor to fund this program next year? *Definitely!*

██████████ Westhill Elementary

Thank you for reaching out. I did the "Water Cycle Terrariums" program with a first grade class of mine a few years ago, but I think I loved the program/presentation even more this time around. Kirsten was wonderful. My kids totally enjoyed themselves. I have no improvements to share, but I definitely want to see this programs in our school next year. This is a silly story, but the kids and I ate lunch outside this week to enjoy the beautiful weather. One of my students accidentally spilled his chocolate milk and another student said, "Well next time it rains it is going to rain chocolate milk! The water cycle at work!" He was thinking! I would encourage the City of Bothell - KCD to continue to sponsor this program next year. It is great!

██████████, Westhill Elementary

The program was engaging and age appropriate. The children had fun and it was well-orchestrated. Additionally, Mr. Mike was excellent. His time spent addressing the class was personable, engaging, and clear enough for kindergarteners to understand. He was well organized. It was a great additional supplement to what we are already doing regarding science and the environment. This program helped give students a visual example of what the water cycle is and helped us to start thinking about water awareness and how we can be more conservative. It was an informative and engaging experience and the kids loved it.

██████████, Crystal Springs Elementary

Mike was amazing and worked so well with our Kindergarteners. Mike did an especially great job of connecting with the students and using the classroom to know how to call on students by name and groups without teacher assistance. We would definitely like this program at our school next year!

██████████, Crystal Springs Elementary

Are there any improvements you would like to suggest? *No*

Would you like to see these programs in your school next year? *Yes*

Also, we would like to hear any special stories or examples of how this program helped your students gain awareness, understanding, or appreciation of ecological concepts. *This presenter*

did an excellent job of classroom management and the students were very engaged. I am happy that the learnings were incorporated with the science we are currently learning.

██████████, Shelton View Elementary

Discussion

This ninth year of evaluating the City of Bothell Water Quality Education Programs has shown the programs to be effective in helping students learn about and understand stormwater quality, pollution prevention, how natural water systems work, and human interactions with these water systems. Additionally, students have learned best management practices to help keep our watershed healthy alongside their families and friends.

The short term retention of the key messages and concepts is on par with previous results. Students are showing an excellent points spread between pre and post surveys, indicating significant short term retention. We did not receive any 60 days data back due to the timing of the classes surveyed.

Exposure to key messages in schools each year is helping students to develop the desired culture of sustainability in our watersheds. We believe this is a result of students taking classes with us year to year as they progress through grade levels, and schools being willing to integrate standard-supportive environmental education programming into their curriculum. Students that participate in these classes as they progress through elementary and secondary education have a strong knowledge base so we can take them much further in their learning, and thus willingness to take action.

Appendix: Surveys

Water Cycles Round 4-5 | Bothell | Date | School | Teacher - Grade

- 1) The water cycle is a process where:
 - a) People clean and recycle water in treatment plants
 - b) Nature cleans and recycles water over and over again
 - c) People take water out of the environment to use
- 2) Water is a finite resource, which means:
 - a) There is enough water for all living things to survive comfortably
 - b) There is a limited amount of water on the planet for all to use
 - c) It goes through the water cycle
- 3) Water conservation means:
 - a) Protecting the environment so that it does not change
 - b) Holding more water for people and less for wildlife
 - c) A careful preservation and protection of water supply
- 4) Since almost 75% of Earth is covered in water, we do not need to worry about running out of water we can use.
 - a) True
 - b) False
- 5) List 5 ways you can help keep water in our rivers, lakes, streams and Puget Sound healthy.

Watershed Ecosystems 6-8 | Bothell | Date | School | Teacher - Grade

- 1) A watershed is:
 - a) A building where water is stored and treated
 - b) An area of land where water drains and collects at the lowest spot
 - c) An area set aside to protect wildlife
- 2) A wetland is:
 - a) An area of land that is always covered in water
 - b) A unique ecosystem that has hydric soil and water-loving plants
 - c) An area of land that has quick sand
- 3) Water is a(an):
 - a) Finite Resource
 - b) Infinite Resource
- 4) Roads and parking lots are also part of our watershed.
 - a) True
 - b) False
- 5) List 5 ways you can help keep water in our rivers, lakes, streams and Puget Sound healthy.