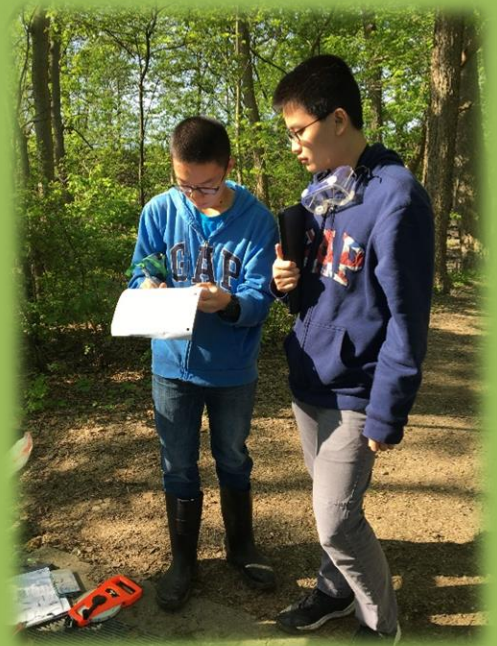


2018-2019

# Rouge Education Project: Survey Results



**Friends  
of  
the ROUGE**

Friends of the Rouge

Plymouth, Michigan

[www.therouge.org](http://www.therouge.org)

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## Introduction

Pre- and post-Rouge Education Project (REP) student evaluations, designed to reflect the program's impact, are distributed to each participating teacher and are written for different grade level groups: 4-6, and 7-12. Schools in the program that have numerous grade levels participating are given the appropriate mix so that each student has the ability to take the proper survey. Pre-REP surveys that do not have a matching post-REP survey (and vice-versa) are not included in overall calculations. This ensures that the assessments are balanced and accurate, though it also can mean some schools' data reflect more/less students who actually participated in the program than in the surveys because they missed either the sampling day or the survey distribution. Below is the compiled assessment of the survey for both fall and spring monitoring.

As of fall 2013, REP pre- and post-sampling surveys have been modified and are adapted (with permission) from similar surveys created and distributed by Friends of the Chicago River.

## How Data are Used

Survey results are used in program development and grant writing to estimate a measurable impact from those students that participate. Quantitatively, the program will be considered a success for 2018-2019 if the following are observed from student pre- and post- surveys:

- An increase in the percentage of students correctly answering multiple choice questions based on general watershed science and/or the Rouge River specifically
- An increase in the percentage of students who can identify specific water quality issues in the Rouge River
- An increase in the percentage of students who can correctly identify potential solutions to local and/or regional water quality issues

## Fall 2018 and Spring 2019 Results

### All Grades

Sample Size	
4 <sup>th</sup>	3
5 <sup>th</sup>	61
6 <sup>th</sup>	139
<b>subtotal</b>	<b>203</b>
6 <sup>th</sup>	2
7 <sup>th</sup>	129
8 <sup>th</sup>	1
9 <sup>th</sup>	56
10 <sup>th</sup>	156
11 <sup>th</sup>	73
12 <sup>th</sup>	74
<b>subtotal</b>	<b>491</b>
<b>TOTAL</b>	<b>694</b>

Have you ever been on a Rouge River field trip?

No. of times to the Rouge River	4th-6th		7th-12th	
	Pre	Post	Pre	Post
Never	137	44	330	155
Once before	45	109	122	191
Twice before	12	38	27	91
Three times before	3	7	5	31
Four times before	1	2	1	5
Five times before	1	0	0	3
More than five times before	4	3	3	14
Blanks	0	0	3	1

68% of participants had never been on a Rouge River field trip before.

### Interest in science

There was a 3.65% increase in the number of students very interested in science.

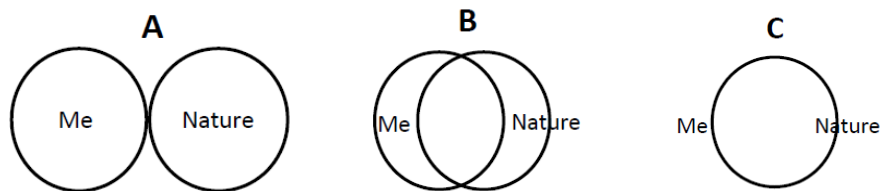
### Interest in nature

There was a 4.16% increase in the number of students very interested in nature.

### Interest in school

There was a 3.24% increase in the number of students interested and very interested in school.

### Relationship with nature



There was a 4.56% decrease in the number of students that chose “A”, a 0.91% increase in the number of students that chose “B” and a 3.65% increase in the number of students that chose “C” to represent their connection to nature.

### Q: All macroinvertebrates are equally tolerant of pollution

There was a 6.16% increase in the number of students indicating the correct answer (*false*).

### Number of students correctly identifying ALL macroinvertebrates from list (i.e., insects, mammals, crustaceans, molluscs (snails, clams, etc.), birds, fish)

There was a 13.26% increase in the number of students able to correctly identify these macroinvertebrates (from 142 students to 234 students).

## Pollution in the Rouge

### Number of students (4<sup>th</sup>-6<sup>th</sup>) able to list a source of pollution in the Rouge

There was a 10.47% increase.

### Number of students (7<sup>th</sup>-12<sup>th</sup>) able to list a problem affecting the Rouge

There was an 11.77% increase.

### Number of students able to list a corrective action to limit pollution

There was a 13.29% increase (463 students to 569 students).

**Number of students (4<sup>th</sup>-6<sup>th</sup>) that know where to look to find out more about the pollution problem they listed**

There was a 3.86% increase in the number of students able to find out more about the pollution problem they listed.

**Number of students (7<sup>th</sup>-12<sup>th</sup>) that know where to look to find resources to fix the problem**

	<b>Strongly agree</b>	<b>Agree</b>	<b>Neither agree nor disagree</b>	<b>Disagree</b>	<b>Strongly disagree</b>
Pre	49	114	178	108	39
Post	104	147	160	60	15

There was a 11.36% increase in the number of students that “strongly agreed” with this statement, and a 6.89% increase in the number of students that “agreed.”

**Students (7<sup>th</sup>-12<sup>th</sup>) able to research the problem listed**

	<b>Strongly agree</b>	<b>Agree</b>	<b>Neither agree nor disagree</b>	<b>Disagree</b>	<b>Strongly disagree</b>
Pre	94	156	162	53	25
Post	140	172	134	25	16

There was a 9.56% increase in students that “strongly agreed” with this statement, and a 3.48% increase in the number of students that “agreed.”

**Students (7<sup>th</sup>-12<sup>th</sup>) able to explain the problem listed**

	<b>Strongly agree</b>	<b>Agree</b>	<b>Neither agree nor disagree</b>	<b>Disagree</b>	<b>Strongly disagree</b>
Pre	88	138	152	70	39
Post	161	164	96	49	17

There was a 14.99% increase in students that “strongly agreed” with this statement, and a 5.34% increase in students that “agreed”.

**Technical scientific questions (grades 7th-12th)**

**Q: Imagine you are at the river testing for the presence of dissolved oxygen in the water. If you want to get the most accurate result, you should repeat the test more than once.**

97.14% of students answered this question correctly in the pre-survey (*true*), and 96.30% of students answered correctly in the post-survey.

### Students able to list a source of high nitrates in the Rouge

There was a 45.91% increase in the number of students able to list a source of high nitrates in the Rouge (64 students to 283 students).

### Students able to list a corrective action to limit nitrates

There was a 50.87% increase in the number of students able to list a corrective action to limit nitrates (47 students to 285 students).

## Feelings regarding the Rouge Education Project

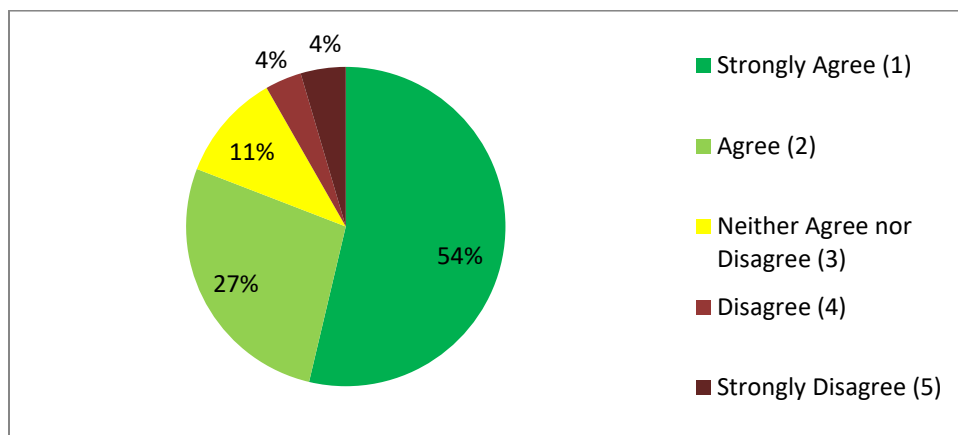
92.68% of all students were able to list a way participating in the Rouge Education Project helps the Rouge River.

### 4th-6th grade responses

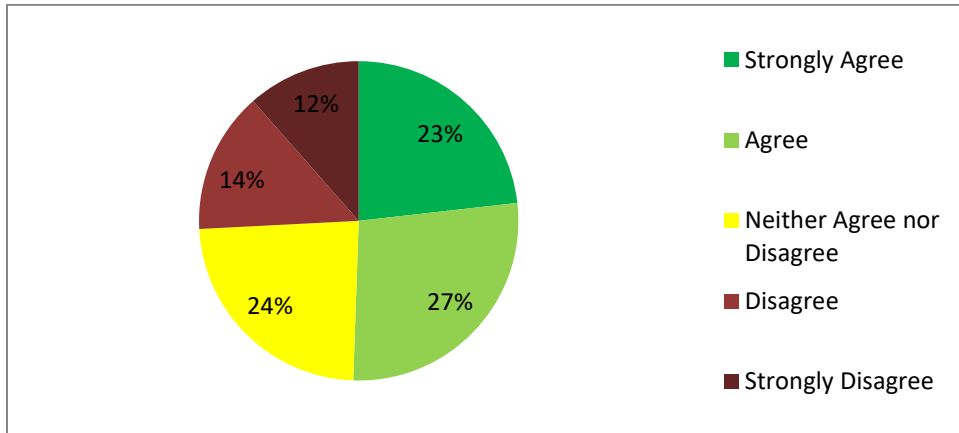
Question	Percent of students
Learned something new about the Rouge	89%
Learned how to make the Rouge healthier	88%
Participating in the REP made me feel like I could make a difference in protecting the environment	87%
Participating in the REP helped me to think like a scientist	78%
Participating in the REP helped me understand classroom material better	73%
Plan to talk to family/friends about the REP	73%

### 7th-12th grade responses

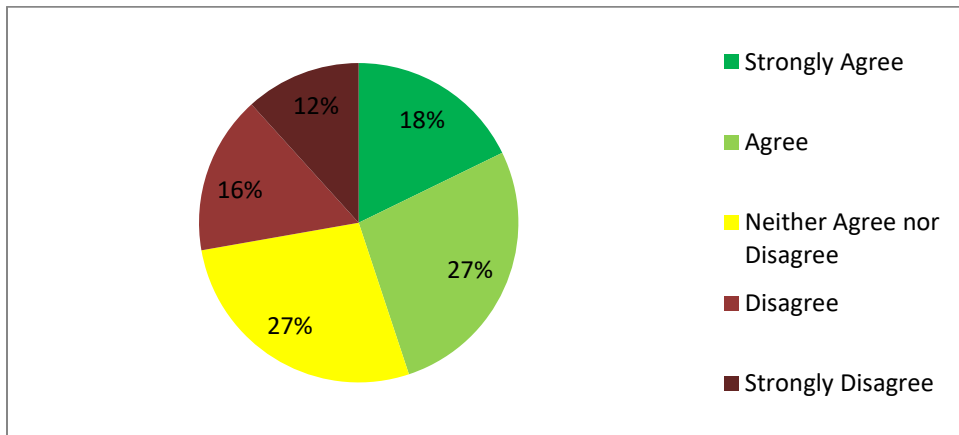
I learned something new about the Rouge River.



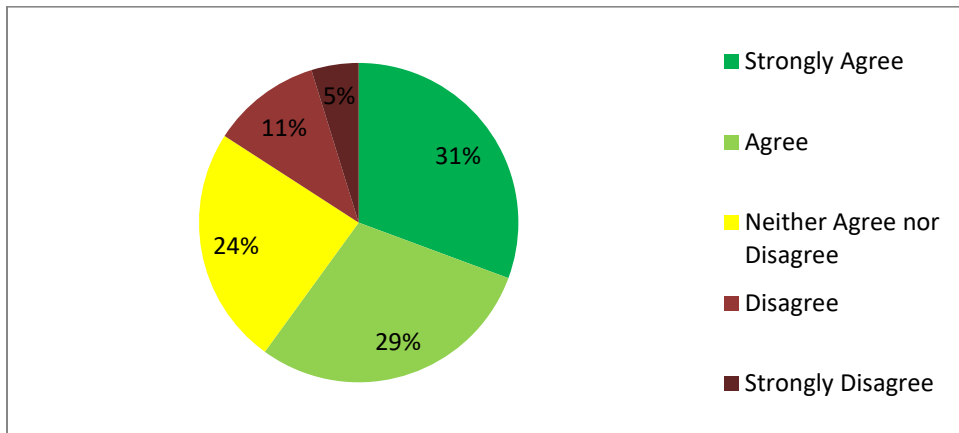
**I plan to talk to family and/or friends about the information I learned.**



**I experienced a feeling of connectedness to the Rouge River.**

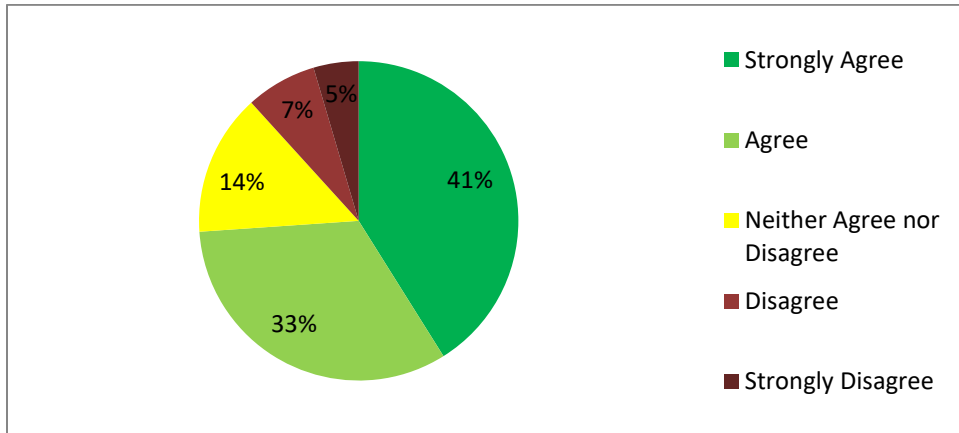


**I found myself reflecting on new ideas about how my actions affect the river.**

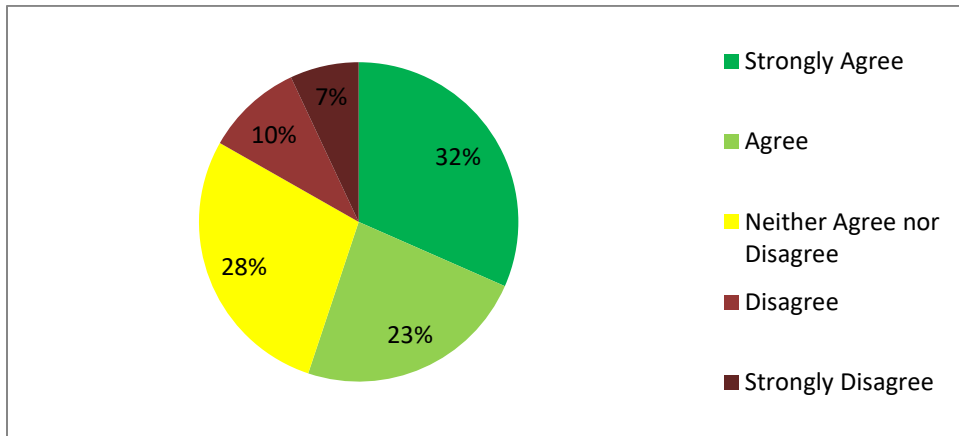




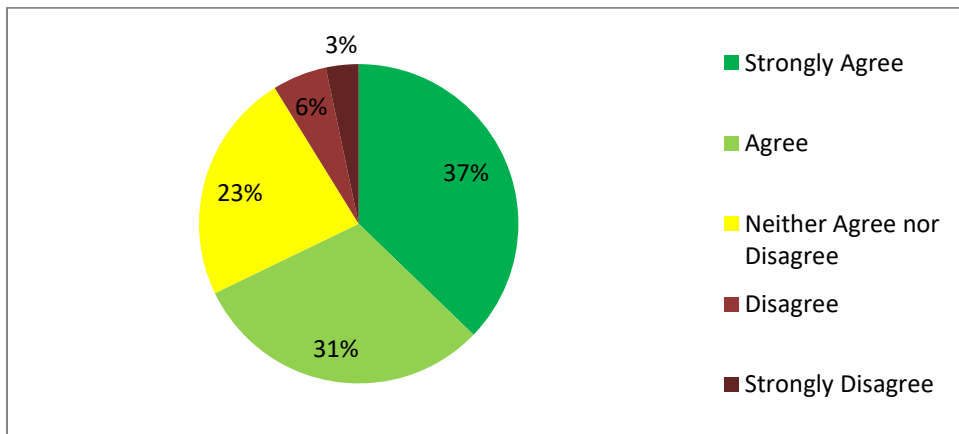
**I learned about actions I could take to make the Rouge River healthier.**



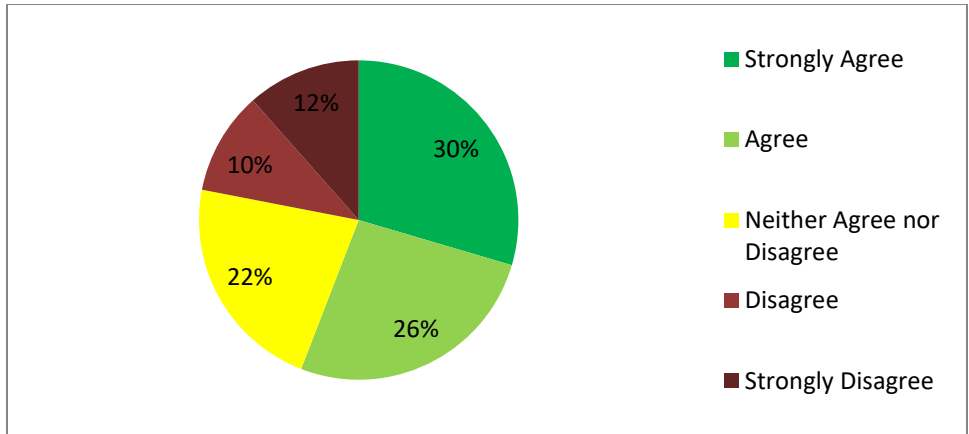
**If given the opportunity, I would choose to participate in more projects that would help the Rouge River.**



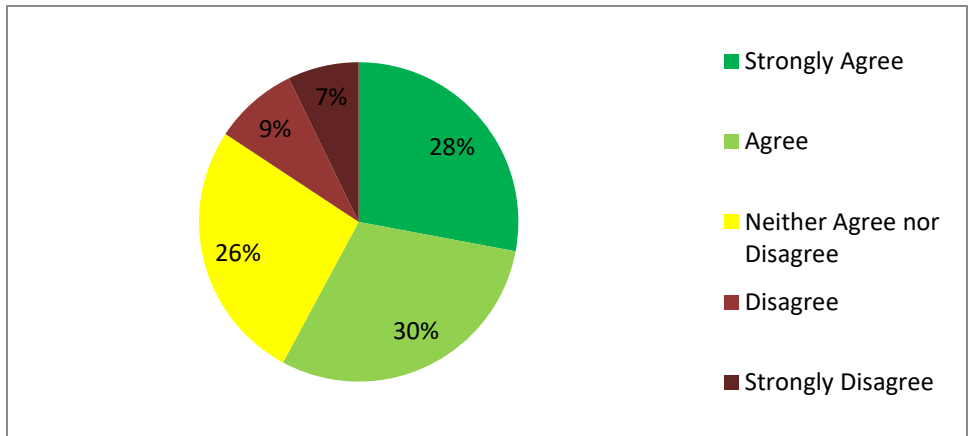
**Our class' REP river monitoring made (or could make) a difference in the health of the Rouge River.**



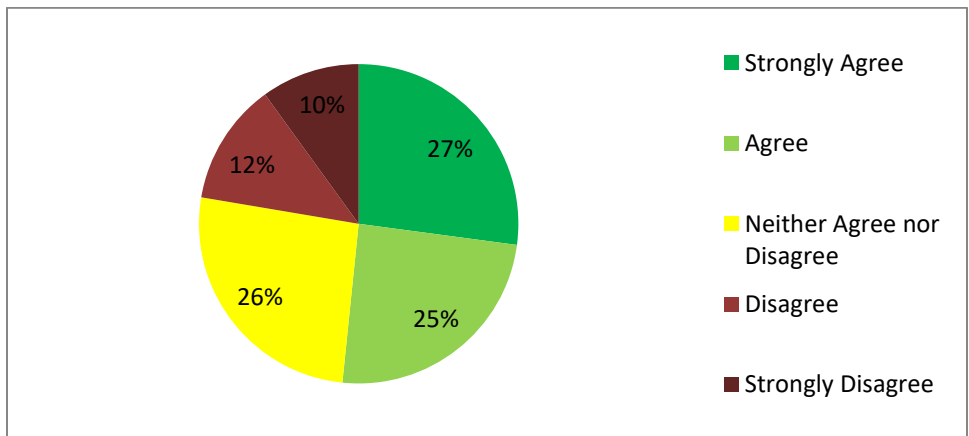
**Our class' REP river monitoring involved people and/or organizations from the community (other than school staff/faculty.)**



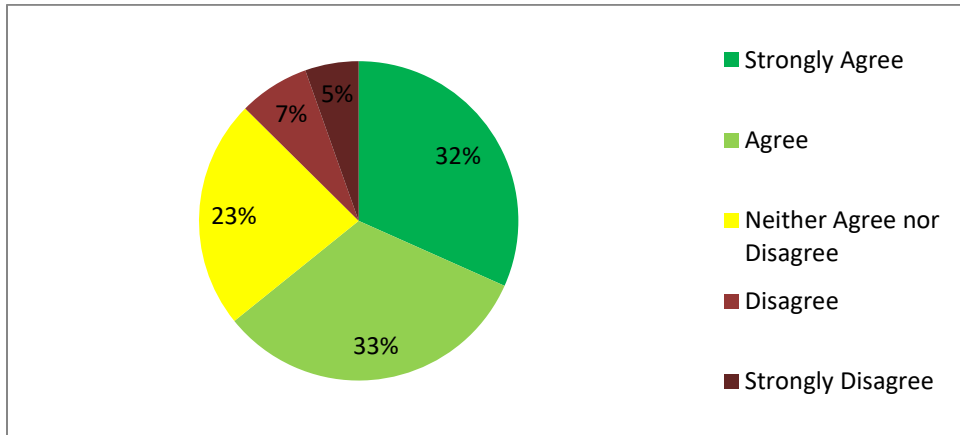
**The REP helped me feel that I could make a difference in society.**



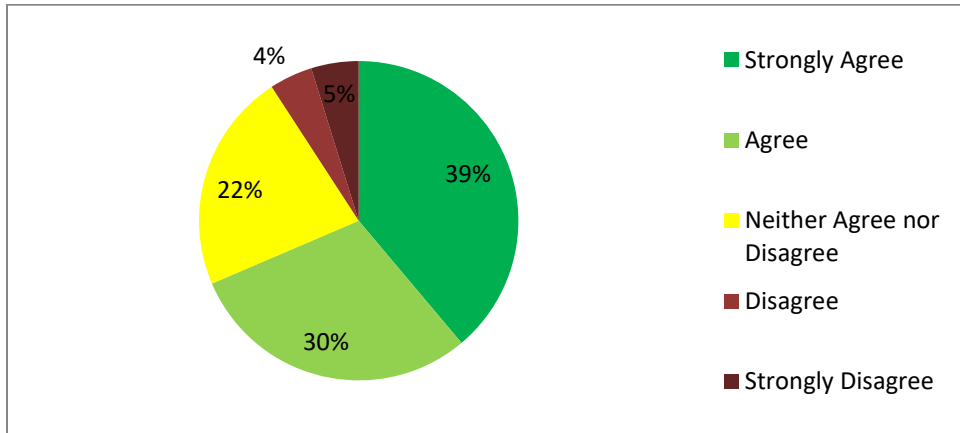
**I met people/encountered things I normally wouldn't have during the REP.**



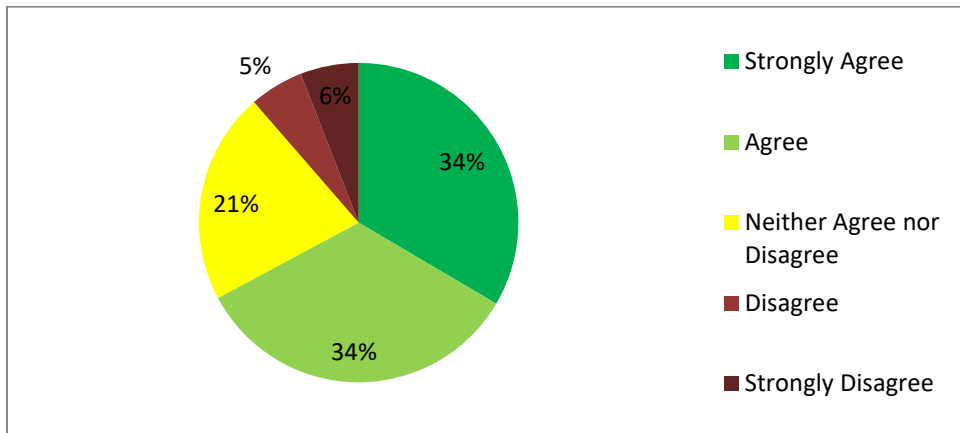
**The REP challenged me to think like a scientist.**



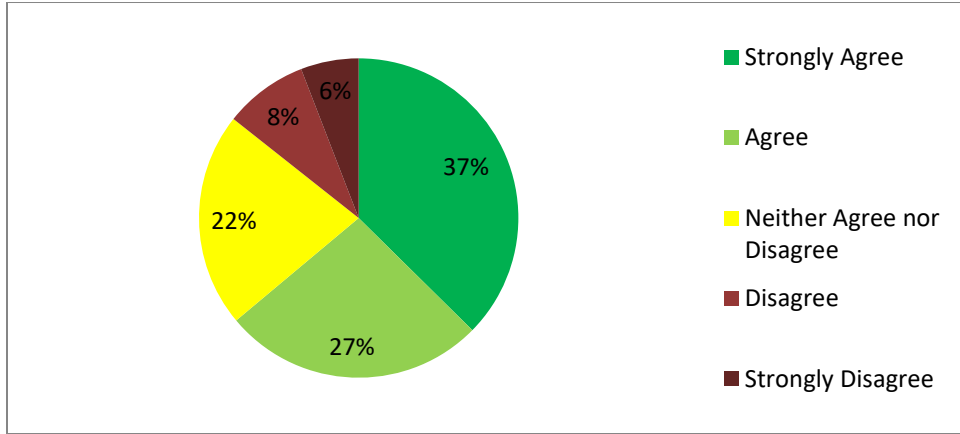
**The REP was directly related to my classroom work.**



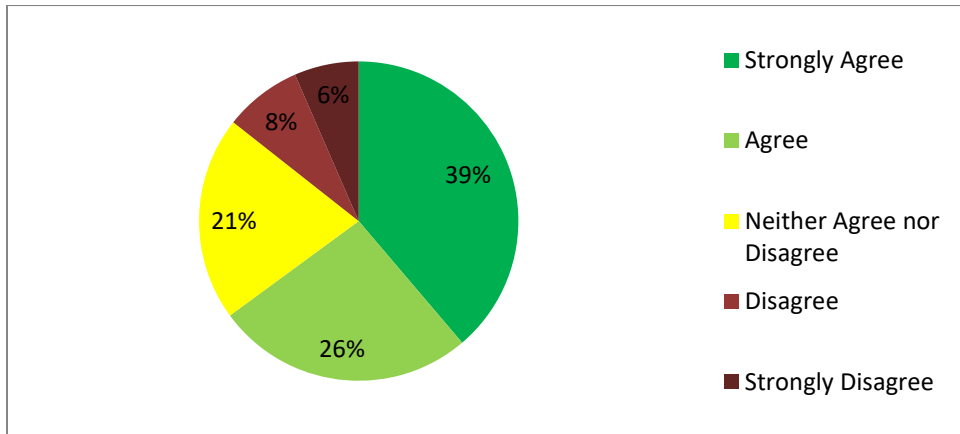
**The REP helped me understand the classroom material better.**



**I had the opportunity to participate in river-related discussions and/or activities before our river field trip.**



**I had the opportunity to participate in river-related discussions and/or activities after our river field trip.**



## Open-ended Responses

When you think about the Rouge River, what is the first word that comes to mind?

4th - 6th Pre-		4th - 6th Post-		7th - 12th Pre-		7th - 12th Post-	
Word(s)	#	Word(s)	#	Word(s)	#	Word(s)	#
Water	63	water	57	Water	136	Water	113
river	25	river	18	river	41	River	32
Fish	7	dirty	9	dirty	35	Dirty	24
Dirty	6	nature	6	Pollution	21	nature	18
Polluted	5	Red	6	Nature	12	Pollution	18
pollution	5	POLLUTION	5	Red	11	watershed	17
Red	5	Cold	4	Detroit	7	Red	10
nature	4	Pollute	4	Dirty water	6	Polluted	5
Fishing	3	Bugs	3	Michigan	6	Rouge	5
red river	3	fish	3	Polluted	6	Fish	4
Wet	3	Fishing	3	Science	6	Green	4
Boring	2	fun	3	I don't know	5	Oxygen	4
cool	2	Mud	3	Fish	4	turbid	4
Crayfish	2	wet	3	Rouge	4	Turbidity	4
Ford	2	benthic macroinvertebrates	2	Trash	4	unclean	4
nater	2	BMI	2	Big	3	big river	3
Rivers	2	boring	2	Brown	3	Contamination	3
Science	2	Fire	2	Troy	3	Crayfish	3
Art	1	Ford	2	watershed	3	Detroit	3
awsome	1	getting wet	2	wild life.	3	dirty water	3
beautiful river that gives us many things to survive such as climate change, climate, and us	1	litter	2	Algae	2	Dissolved Oxygen	3
Big	1	trash	2	animals	2	Fecal coliform	3
bugs	1	trees	2	big river	2	Flooded	3
Canoe	1	advenchers	1	Ecosystem	2	flooding	3
Cars???? IDK	1	Algae	1	Henry Ford	2	habitat	3
Cold and wet	1	amazing	1	Home	2	Michigan	3
Cold water	1	Animal	1	Important	2	muddy	3
corn dogs	1	Animals/ creatures	1	Large	2	PH	3
Creek or	1	Basketball	1	Large river	2	science	3

4th - 6th Pre-		4th - 6th Post-		7th - 12th Pre-		7th - 12th Post-	
Word(s)	#	Word(s)	#	Word(s)	#	Word(s)	#
water							
Dirt.	1	Beautiful	1	Life	2	Water quality	3
dragonfly nymph	1	beautiful river	1	Long	2	animals	2
Farmington Hills River	1	boring waste of time	1	macroinvertebrates	2	Bacteria	2
Field Trip	1	buttieful sounds	1	Microorganisms	2	Brown	2
Flowing water	1	Clean Water	1	Mud	2	Clean	2
ford (F150)	1	Cold and muddy	1	Nitrate	2	Fire	2
Ford Rouge Factory	1	cool	1	Not clean	2	Help	2
Forest	1	crawfish	1	Resource	2	highschool	2
French	1	Cray Fish	1	Rogue	2	Hope	2
getting wet	1	creak	1	Rouge River	2	Improvement	2
going in with the waders	1	drinking water	1	Rouge!	2	Life	2
green water	1	Ecosystem	1	Rough	2	Macro invertebrates	2
Henry Ford.	1	F-150 factory	1	Woods	2	Nitrates	2
Herring	1	fast	1	backbones	1	Organisms	2
Is it clean?	1	FILTH	1	bad now but could get better	1	polluted water	2
liberal	1	Ford Rouge River Factory	1	Bad water	1	Runoff	2
life	1	Forests	1	basketball team	1	9 sample tests we did	1
little and big creatures.	1	France	1	Baton Rouge	1	Algae	1
Michigan	1	garbage packet and going into the water	1	Beautiful	1	aquatic life	1
muddy	1	gas	1	beautiful nature	1	Baton Rouge	1
My backyard	1	glass	1	big area of water	1	Beautiful	1
Nature and Animals	1	glass bottle	1	Bridge	1	beauty	1
Nature and River	1	helping	1	Calm	1	Big	1
nice river	1	leeches	1	Care	1	BOD	1
our main river and I see it every time i cross our school bridge.	1	Life	1	Cars	1	Bridge	1
Our water	1	Long	1	chemical	1	Bugs	1

4th - 6th Pre-		4th - 6th Post-		7th - 12th Pre-		7th - 12th Post-	
Word(s)	#	Word(s)	#	Word(s)	#	Word(s)	#
plastic	1	midge fly larva	1	Chemical water	1	Cars	1
pretty	1	Mucky and water	1	Cleanup	1	Cars factory	1
red in French	1	muddy	1	close by	1	catching on fire	1
River (water)	1	My backyard	1	Cold	1	Clear	1
River Rouge Factory F-150	1	Observations	1	Cold water	1	Cloudy/foggy mud-water	1
river surrounded by nature	1	Our school and our Rouge River water testing day.	1	color red	1	Contaminated	1
River that flows through our school	1	pH or Turbidity tests	1	Community	1	Coolidge and longlake	1
river that is by my house	1	Red place of water	1	Complicated	1	Crawfish	1
river with nature	1	Red River	1	Conservation	1	Curvy river	1
Rouge River	1	river and animals	1	contamination	1	Damaged	1
Salmon	1	river nature	1	Crazy	1	Dcads	1
stream	1	river that is by my house	1	Crooks	1	Development	1
Strong River	1	Rivers	1	Dearborn Heights river route	1	Dirt, bad stuff	1
Swimming	1	rivers,forest,nature	1	dearborn/Ford	1	Dirty, Fire	1
trash	1	salmon	1	detrit river	1	Dirtyness	1
Trash-filled	1	Science	1	Dirt/polluted river	1	Dissolved Oxygen and BOD	1
Water Quality	1	swimming	1	Dirtiness	1	Ecosystem	1
water shed	1	Water and Fish	1	dirty river with lots of animals.	1	endangered	1
water, littering	1	Water shed	1	Disgusting	1	Eutrophic	1
watershed	1	water source	1	Ducks	1	eutrophication	1
Watersheds.	1	water/river	1	environment	1	Flood	1
watery	1	Waterway	1	fence	1	flooded due to how often weve been to wallaceville and saw the water high up because of how much it rained.	1
		Waves	1	Field trip	1	floods	1
		Wet and muddy.	1	Filthy	1	Flowing	1
		Waterway	1	Flint, and metal.	1	football );	1

4th - 6th Pre-		4th - 6th Post-		7th - 12th Pre-		7th - 12th Post-	
Word(s)	#	Word(s)	#	Word(s)	#	Word(s)	#
		Waves	1	Flood.	1	Ford	1
		Wet and muddy.	1	Flooding	1	Ford Factory	1
				Ford car plant	1	Ford Rouge Plant	1
				Ford Field	1	Good	1
				france	1	gravel	1
				french	1	Gross	1
				Fun	1	Henry Ford	1
				great	1	High turbidity	1
				Gross	1	Highly polluted	1
				Hines Drive floods almost every time in rains.	1	Home	1
				Hope	1	Hopeful	1
				Industry	1	how many fish is there	1
				Invasive species.	1	Important	1
				is it safe	1	Improved	1
				Lake	1	Improving	1
				large body of water	1	Industry	1
				led posion	1	Insects	1
				long river	1	Invasive species	1
				Marine life	1	Leaders	1
				micro invertabrates	1	Long	1
				Moist	1	long river	1
				Moving Water	1	long river . It reminds me of the lazy river at a water park.	1
				Muddy	1	Love	1
				Mustard plants	1	microinvertebrates	1
				Nature center	1	Moisture	1
				nice river, maybe.	1	Moving	1
				Not clean or unsafe	1	Mr Zynda	1
				Not sure	1	Mr. Grosinske	1
				Nothing	1	Murky	1
				our saliman reaeshing trip	1	murky water and trash surrounding the water	1
				park	1	My backyard	1
				Peaceful	1	nasty	1



4th - 6th Pre-		4th - 6th Post-		7th - 12th Pre-		7th - 12th Post-	
Word(s)	#	Word(s)	#	Word(s)	#	Word(s)	#
				picture of a yon of tall grass and this slightly res/brown river, very rippling.	1	Nature flooding polluted	1
				Polluted water.	1	Need work	1
				Red water	1	Neglected	1
				relatively clean river, but with minor, usually unseen environmental problems	1	Oakland county	1
				river in America	1	Oil Spill	1
				river in my school	1	our field trip last year	1
				River Watershed	1	Overflowing	1
				river with many BMI's in it.	1	Overflows now.	1
				river with people on boats	1	Paris	1
				river, a long body of water	1	Park	1
				river, water	1	Peaceful	1
				River/Stream	1	People	1
				rivers	1	PH and DO	1
				Riverside	1	pH levels	1
				Rocks	1	pollutants	1
				Rouch Ford Performance	1	POOP	1
				Rouge Plant	1	Progression	1
				Rougeon fire	1	projects we do to test it.	1
				running river	1	Promising	1
				runoff	1	Pulluted	1
				school	1	red river	1
				seems fun	1	Resources	1
				Sewer system	1	River and water flowing.	1
				Small frogs	1	river near my school	1
				Small River that flows down our area.	1	River or Rouge	1

4th - 6th Pre-		4th - 6th Post-		7th - 12th Pre-		7th - 12th Post-	
Word(s)	#	Word(s)	#	Word(s)	#	Word(s)	#
				smells bad because of the sewage	1	river that i want to learn more about.	1
				Smelly	1	river that runs through an industrial area	1
				sounds like there is an issue there.	1	river where our water comes from.(I think)	1
				Sparkling	1	rivers	1
				Sword	1	Riverside middle school	1
				Trail	1	rocks	1
				Tree	1	Rouge Factory	1
				trees	1	Rough waters (turbidity)	1
				uncleanly	1	Runoffs	1
				Under	1	Salmon	1
				Water and dirt	1	School Project	1
				water shed that is near my school	1	slightly clean	1
				Wayne city	1	Small	1
				Wet	1	small opening to the river under the bridge, with the rocks at the bottom and the echoing under the bridge	1
				What	1	Smelly	1
				where a big pond of water and trees and bugs	1	Socks	1
				Where it is	1	space	1
				work	1	Stench	1
						string of water	1
						Swimable	1
						System	1
						Tarabusi Creek	1
						Their river.	1
						Toxic	1
						Trents paper	1
						Tributaries	1
						Turbid water	1

4th - 6th Pre-		4th - 6th Post-		7th - 12th Pre-		7th - 12th Post-	
Word(s)	#	Word(s)	#	Word(s)	#	Word(s)	#
						unhealthy river	1
						Unnoticeable	1
						Unsanitary	1
						Vital	1
						Wate	1
						Water Area	1
						Water flow	1
						water retention basin	1
						water shed	1
						Water streams	1
						Water testing	1
						Water, forest	1
						water/river	1
						wet	1
						wetlands	1
						wilderness	1
						Wildlife	1
						WQI (water quality index)	1

## Notable Results & Discussion

### Fall 2018 and Spring 2019 Monitoring

Matching pre- and post- surveys were found for 694 students.

Schools that submitted usable pre- and post- survey data: Birmingham Covington School, Chandler Park Academy High School, Crescent Academy International, Crestwood High School, Detroit Country Day Middle School, Farmington STEAM Academy, Fordson High School, Garden City High School, Hamtramck High School, Huron Valley Lutheran High School, Inter-City Baptist School, Lincoln Park High School, Lincoln Senior High School, O.L. Smith Middle School, Power Middle School, Steppingstone School, Thurston High School, Tonda Elementary School, Troy College & Career High School, Troy High School. Only one pre- and post- survey was included for each student, therefore some students may have completed both fall and spring sampling and were given the pre-survey before fall monitoring and the post- survey after spring monitoring. No matching pre- or post- surveys were received from Clippert Multicultural Honors Academy, Plymouth High School, Roosevelt High School, or Salem Elementary School. A few schools that submitted usable pre- and post- survey data did not have many entries from their class(es).

There was a large subsection of 7<sup>th</sup> – 12<sup>th</sup> grade students that indicated they had never been on a Rouge River field trip, even in the post-survey. This could be due to the large number of students that were from Crestwood High School's AP Environmental Science class that did not attend the field trip (only a smaller group of students from that school are able to visit the river), but went over the background information, procedure and results. A couple other schools had quite a few students also indicate they had never been – but some were from schools that walk to their site because it is on their property, or near-by, which might not be considered a 'field trip' to the students. This is also likely the explanation for the 4<sup>th</sup> – 6<sup>th</sup> grade students indicating they had 'never' been in the post- survey.

While over two-thirds of students had never been on a Rouge River field trip before, the large number of students that had attended a field trip previously were from Birmingham Covington School, Detroit Country Day Middle School, and Steppingstone School, where students participate through multiple grades.

Analyzing a student's interest in science, nature, and school, is to gauge the receptiveness of that student to a project like the REP. These results are not used for analysis currently, but may provide an interesting benchmark for comparison in the future, i.e. running analysis based on students that are and are not interested in science and nature, respectively. While increasing these interests is not a goal of the Project, it appears that students became more interested in these activities as a result of the trip. Students also felt closer to nature.

Students saw an increase in correct answers for both scientific questions related to macroinvertebrates, listing sources of pollution and problems in the Rouge, as well as corrective action to limit pollution. Responses listing corrective actions to limit pollution became much more specific and action-oriented in

the post survey. More students knew where to look to find out more about the pollution problem they listed, where to find resources to fix the problem, and how to research and explain it.

The survey question referring to conducting multiple trials of the same test to get the most accurate result may be too simple for students in grades 7<sup>th</sup>-12<sup>th</sup>. This must be a concept covered heavily in science classes before students reach 7<sup>th</sup> grade. There was an insignificant decrease in the percentage of students answering that question correctly from the pre- to post survey, further emphasizing that this question may not provide meaningful analysis.

There was a very large increase in the percentage of students able to list a source of high nitrates and a corrective action to limit nitrates – indicating this was not a concept they had covered in class prior to the watershed unit, and demonstrating they took specific scientific knowledge away with them upon completion.

Almost all students (92.68%) were able to list a way participating in the Rouge Education Project helps the Rouge River.

In general, most students agreed with the statement that they learned something new about the Rouge River (85%). They learned actions to make the river healthier (81%), and felt like they could make a difference in protecting the environment and society (71%). Students were challenged to think like a scientist (72%), and it helped them understand classroom material better (71%). Over half of students planned to talk to family/friends about what they learned (62%).

Less than half (45%) of 7<sup>th</sup> – 12<sup>th</sup> grade students felt connected to the Rouge River. They reflected on new ideas about how their actions affect the river (60%), and (55%) would participate in projects that would help the Rouge River. A little over half (56%) of students recognized that their monitoring involved people and/or organizations from the community, and felt like their monitoring would make a difference in society (58%). The project was related to their classroom work (69%). They participated in river discussions before and after their trip (64% / 65% respectively).

Open-ended questions such as “When you think about the Rouge River, what is the first word that comes to mind?” rendered these top responses: water, river, dirty, pollution, and nature in the pre-survey, and the same top responses in the post- survey. The word “dirty” was more popular with the 7<sup>th</sup> – 12<sup>th</sup> grade bracket, while younger students seemed to have a more positive vision of the river overall.

## Teacher Evaluation Results

Rouge Education Project teachers are also given a program evaluation at the end of the school year to give them the opportunity to share their feelings about project execution. Nine teachers responded.

Most teachers felt comfortable teaching the chemical, physical, and biological assessments of the river.

Level of comfort	Chemical	Physical	Biological
Completely comfortable	2	2	3
Very comfortable	6	4	3
Moderately comfortable	1	3	3
Uncomfortable	0	0	0
Very uncomfortable	0	0	0
N/A	0	0	0
Blank	0	0	0

Some teachers that responded were able to attend training events, whereas others didn't feel they needed to because they had been doing the program for a long time. Barriers to attending training events were that they did not fit into their busy schedules, or they were ill.

All nine teachers felt that they were completely satisfied with the level of support received from REP staff.

The REP is a good outlet for schools that may not be able to implement a water quality monitoring project on their own.

Likelihood of implementing water quality monitoring program if the REP did not exist	# respondents
Very unlikely	4
Unlikely	2
Doubtful	0
Likely	3
Very likely	0

Five teachers were completely satisfied with their participation in the REP this year, and four teachers were very satisfied.

Some suggestions for additional training events or resources included being paired with teachers on different branches of the river they could compare results with via Skype or Google Hangout, and the production of videos that (1) introduce each test – why we are testing and what the results mean, and (2) show footage of different locations of the Rouge so students can see the diversity, and there was another request for videos on sampling methods.

Very few responding teachers were able to **incorporate an environmental action component** following their participation in the REP, but one noted that students researched and cleaned up parts of the watershed that are in the neighborhood of their school. Some classes had their students complete a lab report.

Some students are encouraged to take their project further and take **environmental action in their community**:

- They began to take personal steps, like teaching their grandparents about too much fertilizer.
- They have been cleaning up litter and spreading awareness.

**Barriers to action:** Not enough time since the REP is so close to the end of the school year, the teacher was unsure on what type of action they could take, it takes too much time to implement vs. the goals of the curriculum at school, and one teacher got “normal/good” results so students don’t see an urgency to change anything – it is also difficult to get students to participate in activities outside school hours.

The only suggestion to **improve communication** was to maybe create a “Remind” via text message, all other comments were very positive.

Teachers noted the following needs in terms of **resources**: stipends for teacher training, funding for student-led projects, bus funding, substitute teacher funding, teacher stipends for training events. Stipends for Professional Development should be in the amount of the training or a 50% match of fee. Some teachers provided suggested amounts.

#### **REP Strengths:**

- “Love that it went to Google and that there are training videos.”
- “The REP staff is very helpful all along the way, from beginning to end. The REP Program Manager is very knowledgeable & will do whatever is needed to make sure each school, teacher & student has the best experience possible with the REP.”
- “Getting students to connect with the natural world around them”
- “Allowing students to experience ‘real-world’ science”
- “Getting students to realize there are resources in their backyards that need to be protected and they can go and do it themselves. It gets them doing a science ‘experiment’ that they could turn into a career. It shows them how scientists and the community can work together. It fits excellently within my larger goals for my student’s learning.”
- “The strengths are the thoroughness of the training, materials and testing.”
- “The REP is a great hands-on component of our Earth Science curriculum. It covers a number of state &

national standards & is popular with the students.”

-“Students seeing their own neighborhoods with new eyes. Students learning how the actions of people in the suburbs affect wildlife and nature areas. Bringing students out of the classroom into nature areas that they did not know existed.”

-“Great real world learning opportunities!”

-“Everything is good!”

-“I like the Google forms/sheets/folders.”

-“I think you guys do a great job with this”

-“Great communication.”

-“Email is great!”

-“Thanks for this opportunity. You are a great resources to both me and my students.”

-“Great program”

**REP Weaknesses:**

-“Students used to love getting the T-shirts. Any possibility of bringing those back?”

All teachers planned to participate in the REP in the future.



## Overall Summary & Conclusion

Previous survey evaluations were analyzed by grade level. In an attempt to conduct meaningful analysis of the project's impact overall (rather than by grade level), some questions included all student responses to provide a larger sample size. This method of analysis began in spring of 2015. Additionally, fall and spring survey results were combined as of spring 2017 to include those students that complete two monitoring events throughout the school year and to not duplicate pre- and post- monitoring efforts within a single school year.

All submitted surveys this year were electronic.

Pre- and post- survey analysis rendered the program a success based on the following criteria: an increase in the percentage of students correctly answering multiple choice questions based on general watershed science and/or the Rouge River specifically, an increase in the percentage of students who could identify specific water quality issues in the Rouge River, and an increase in the percentage of students who could identify potential solutions to local and/or regional water quality issues.

The REP did not receive a pre- and post- student survey from every student participating in the program. There were the usual issues with survey distribution this year, with a few schools forgetting to have their students complete the post- survey before the end of the year – or they simply ran out of time.

In addition, students that have already participated in the REP may receive the survey multiple times. Ensuring the surveys are only given to those students that participate in the full program (including the field trip) and are not given repeat surveys would help give a more accurate picture of the student's first exposure to the Rouge Education Project and field science, if measuring that is a goal.

While more than half of students were agreeable to the survey questions, 7<sup>th</sup> – 12<sup>th</sup> grade students were not feeling connected to the river, or planning to talk to family/friends about what they learned. They did not feel a link or affiliation to it. This may be due to the increase in the number of students that don't spend much time outdoors in general. Connectedness is built through prolonged exposure and memories. Students approach the river from a scientific standpoint – not necessarily with an emotional connection. They were viewing it as a test subject rather than a part of their community and home. Young people in urban environments may not even see the river very often, opposed to some that have the river in their backyard or school and see it on an almost daily basis. This is understandable. If we want to change these perceptions and feelings as a goal, perhaps incorporating an action component would prolong their exposure with the river and this project, which will ultimately increase their feelings of connectedness and make them more excited to talk to others about it.

The past few years have rendered rather similar answers to the open-ended question of 'when you think about the Rouge River, what is the first word that comes to mind'? While this is a good benchmark and may show trends over time, perhaps there is a different way to ask this question since results such as "water" and "river" don't provide insight into the student's feelings and perception of the river. Perhaps in addition to this question, inquiring about their favorite part of the experience would gauge what

stands out to them – whether it be getting out of the classroom, finding results they weren't expecting, or having fun with their friends and getting muddy – which is a memory they will never forget.

The survey reached students across many different demographics and backgrounds; some may already have environmental knowledge, and some may not have much of an interest due to lack of exposure. The open-ended responses may reflect the site along the Rouge that each school visits, some may be considered “dirtier,” while others are more natural and scenic. Their impression of the local river can vary greatly due to the stretch of river in which they are exposed.

Teacher evaluations were very positive, with helpful comments. The teachers that responded felt comfortable participating in the Project, but there still seemed to be significant barriers to tend to student-led action. This is an area of the Project that continues to grow and develop, and the reintroduction of a Student Symposium in the fall of 2019 will help provide insight into what is or isn't working for schools regarding action, and will shine a light on issues young people care about.

Chemical instruction videos were produced two years ago which have been helpful for many, but others might not be aware of them and/or are looking for different information in video-format. The reintroduction of a Student Symposium in 2019-2020 will also begin the process of connecting teachers and students across schools. Following that event, the program plans to explore ways to further connect classrooms with each other throughout the year.

Evaluations clearly illustrated a positive impact on the students (and teachers) participating. This long withstanding program will continue to operate with the same program framework that has proved successful since 1987, although survey results help to shape modifications to the program moving forward. This will ensure that the Rouge Education Project remains relevant and meaningful to its participants.

The Rouge Education Project would like to extend a heartfelt thank you to all of the teachers and students that participated in 2018-2019. Thank you for your commitment to this program and your river.