2023-2024

Rouge Education Project: Survey Results

Friends of the Rouge
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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.

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 2023-2024 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 2023 and Spring 2024 Results

All Grades

Sample Size	
4th	4
5th	8
6th	141
subtotal	**153**
7th	18
8th	1
9th	2
10th	50
11th	33
12th	49
subtotal	**153**
TOTAL	**306**

Have you ever been on a Rouge River field trip?

	4th-6th		7th-12th	
No. of times to the Rouge River	Pre	Post	Pre	Post
Never	83	13	112	39
Once before	48	100	23	38
Twice before	6	17	5	54
Three times before	5	8	5	7
Four times before	0	0	3	4
Five times before	0	0	2	3
More than five times before	10	13	2	7
Blanks	1	2	1	1

64% of participants had never been on a Rouge River field trip before.

Interest in science

There was a 5.32% increase in the number of students interested and very interested in science.

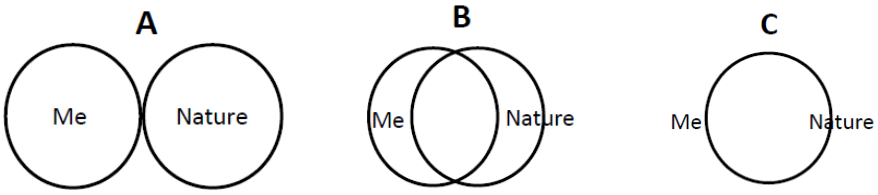
Interest in nature

There was a 6.42% increase in the number of students interested in nature.

Interest in school

There was a 4.53% shift from students very interested or interested in school to neither interested nor disinterested, not very interested, and not interested.

Relationship with nature



There was a 3.99% decrease in the number of students that chose "A", a 4.38% increase in the number of students that chose "B" and a 0.39% decrease in the number of students that chose "C" to represent their connection to nature.

Q: All macoinvertebrates are equally tolerant of pollution

There was a 2.37% increase in the number of students indicating the correct answer (*false*).

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

There was a 9.15% increase in the number of students able to correctly identify these macroinvetebrates (from 80 students to 108 students).

Pollution in the Rouge

Number of students (4th-6th) able to list a source of pollution in the Rouge

There was a 21.56% increase.

Number of students (7th-12th) able to list a problem affecting the Rouge

There was a 6.66% increase.

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

There was a 15.26% increase (226 students to 278 students).

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

There was a 17.16% increase in the number of students able to find out more about the pollution problem they listed.

Number of students (7th-12th) that know where to look to find resources to fix the problem

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Pre	14	43	50	32	13
Post	30	52	48	14	9

There was a 10.40% increase in the number of students that "strongly agreed" with this statement, and a 5.70% increase in the number of students that "agreed."

Students (7th-12th) able to research the problem listed

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Pre	33	51	47	15	6
Post	44	50	37	17	4

There was a 7.24% increase in students that "strongly agreed" with this statement.

Students (7th-12th) able to explain the problem listed

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Pre	29	48	41	26	8
Post	43	53	38	11	7

There was a 9.21% increase in students that "strongly agreed" with this statement, and a 3.29% 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.

96.73% of students answered this question correctly in the pre-survey (*true)*, and 99.34% of students answered correctly in the post-survey.

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

There was a 56.14% increase in the number of students able to list a source of high nitrates in the Rouge (25 students to 108 students).

Students able to list a corrective action to limit nitrates

There was a 61.60% increase in the number of students able to list a corrective action to limit nitrates (23 students to 110 students).

Feelings regarding the Rouge Education Project

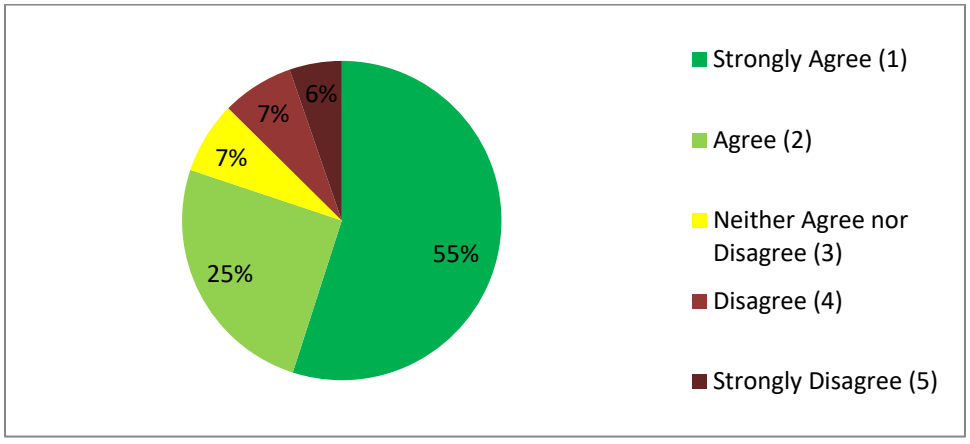
91.43% of all students were able to list a way participating in the Rouge Education Project helps the Rouge River.

4th-6th grade responses

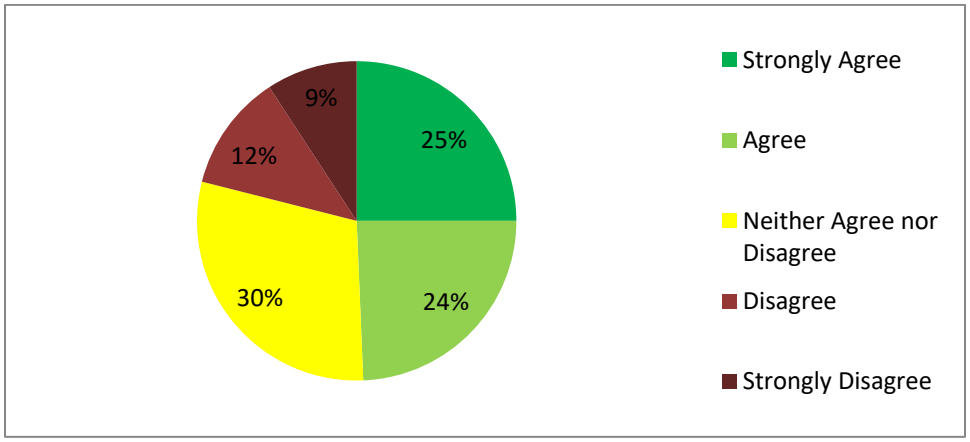
Question	Percent of students
Learned how to make the Rouge healthier	89%
Learned something new about the Rouge	89%
Participating in the REP made me feel like I could make a difference in protecting the environment	87%
Participating in the REP helped me understand classroom material better	81%
Participating in the REP helped me to think like a scientist	76%
Plan to talk to family/friends about the REP	65%

7th-12th grade responses

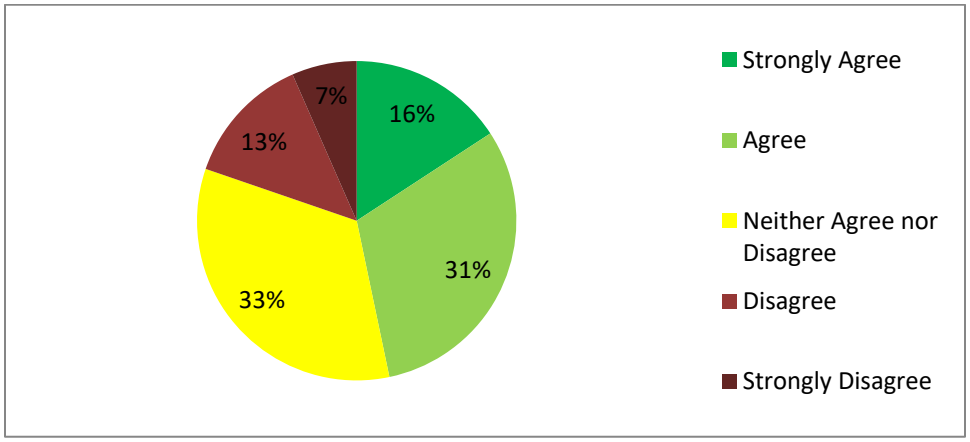
I learned something new about the Rouge River.



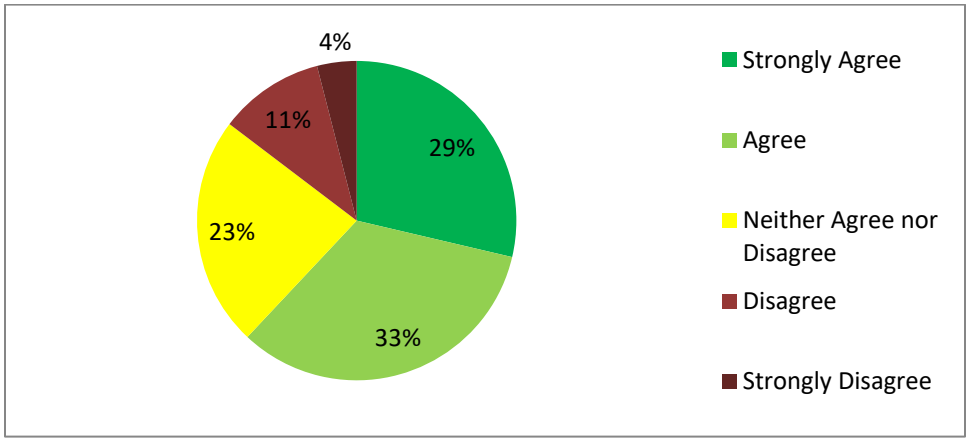
I plan to talk to family and/or friends about the information I learned.



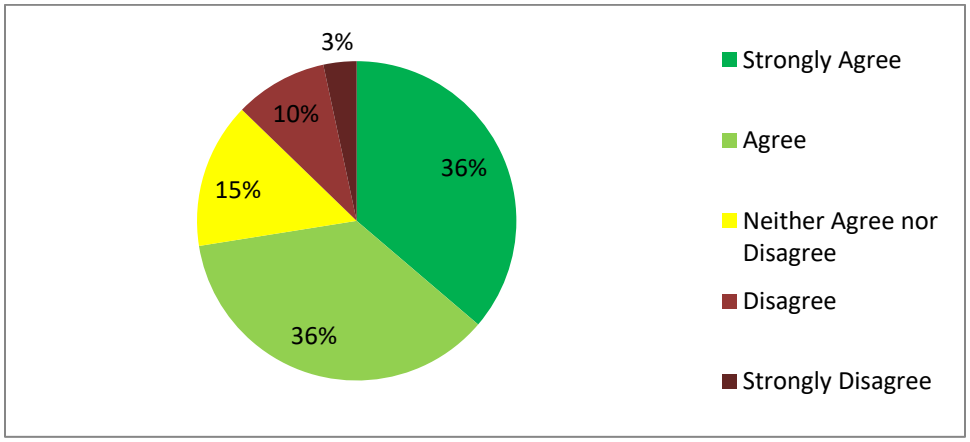
I experienced a feeling of connectedness to the Rouge River.



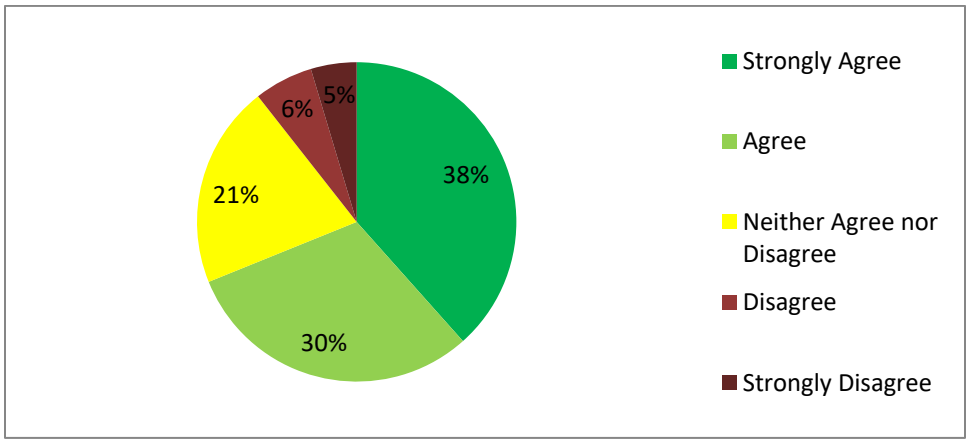
I found myself reflecting on new ideas about how my actions affect the river.



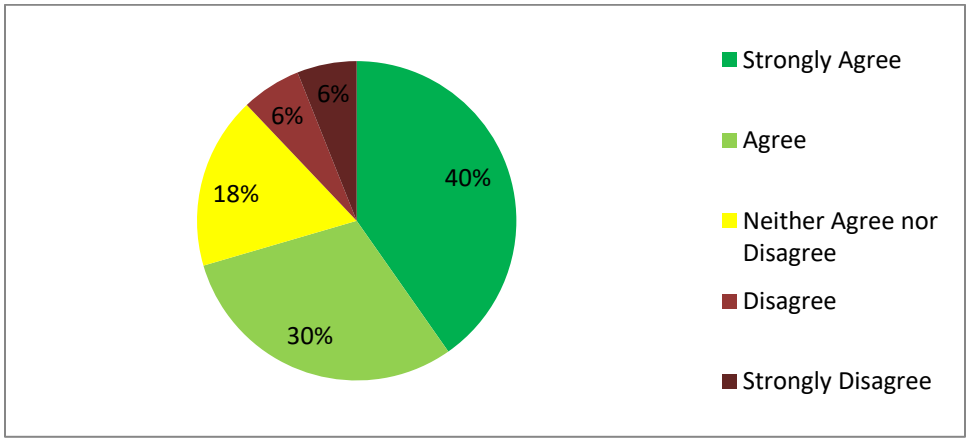
I learned about actions I could take to make the Rouge River healthier.



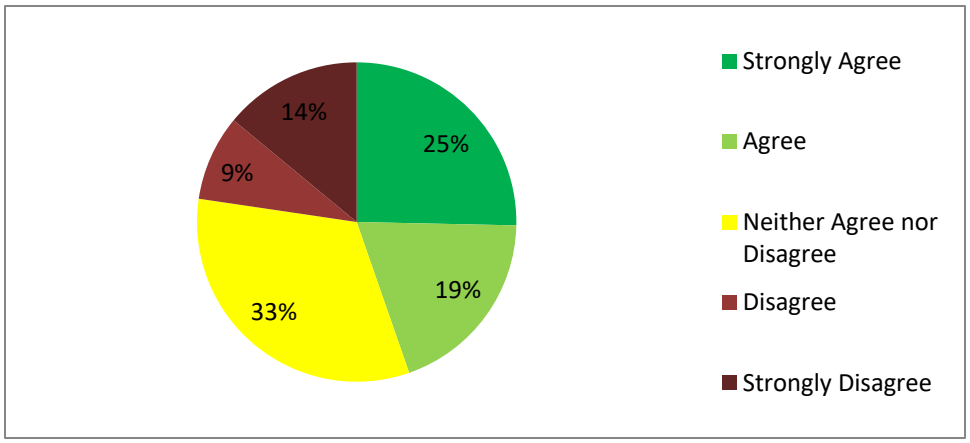
If given the opportunity, I would choose to participate in more projects that would help the Rouge River.



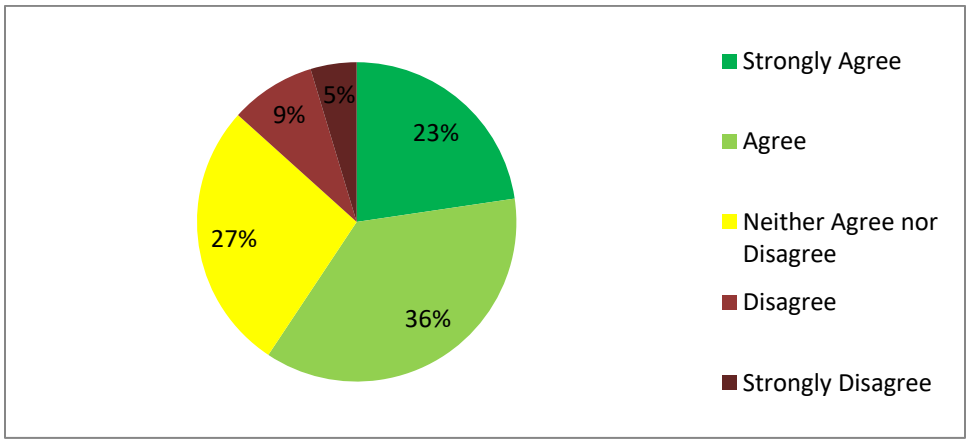
Our class' REP river monitoring made (or could make) a difference in the health of the Rouge River.



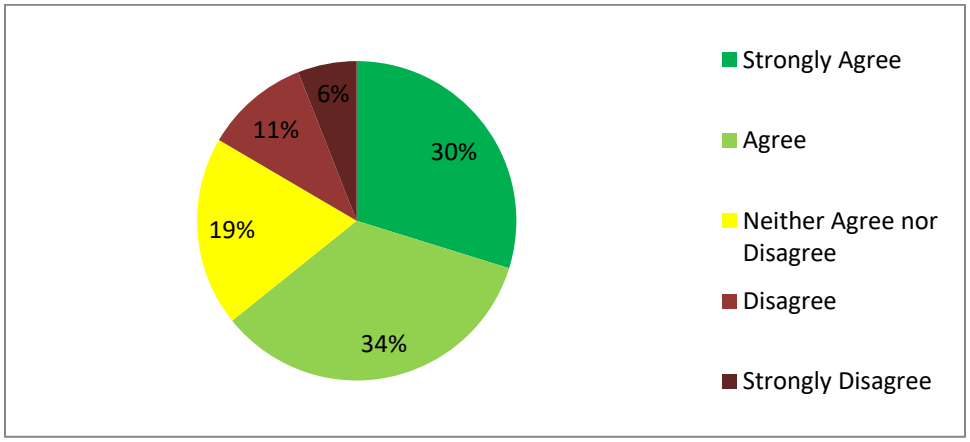
Our class' REP river monitoring involved people and/or organizations from the community (other than school staff/faculty.)



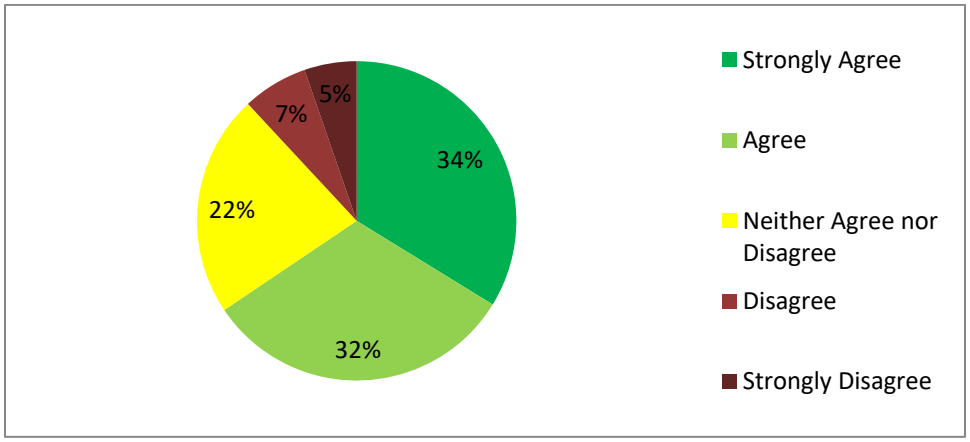
The REP helped me feel that I could make a difference in society.



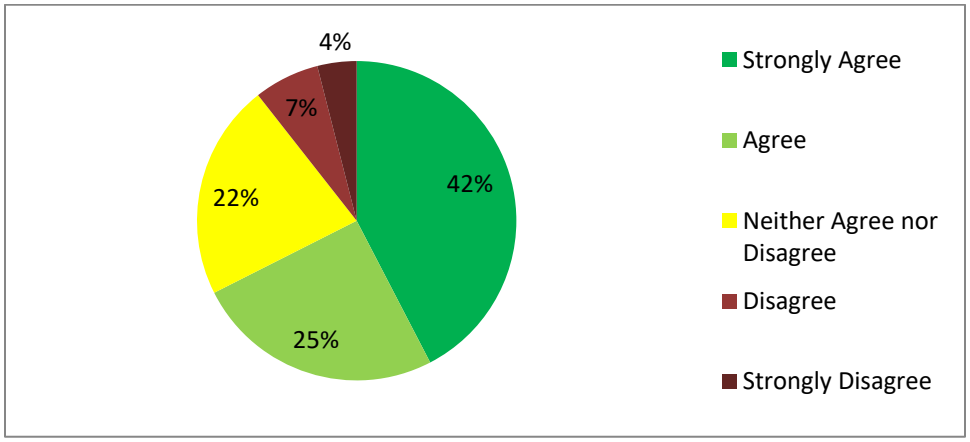
I met people/encountered things I normally wouldn't have during the REP.



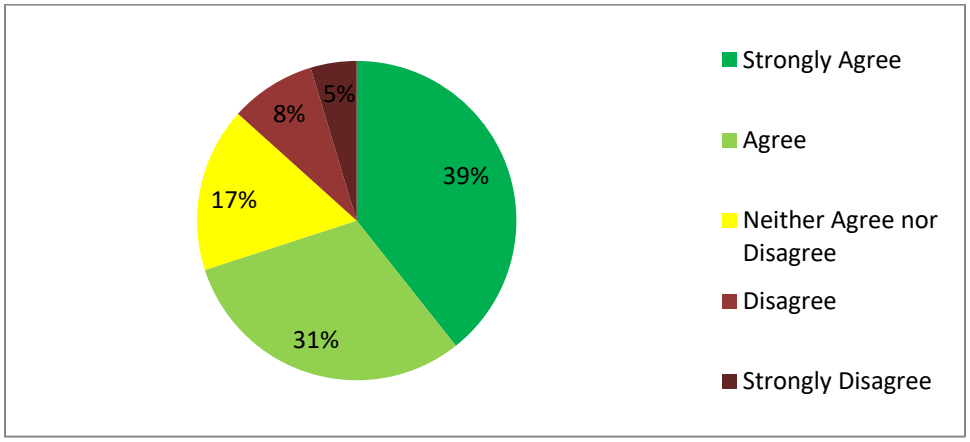
The REP challenged me to think like a scientist.



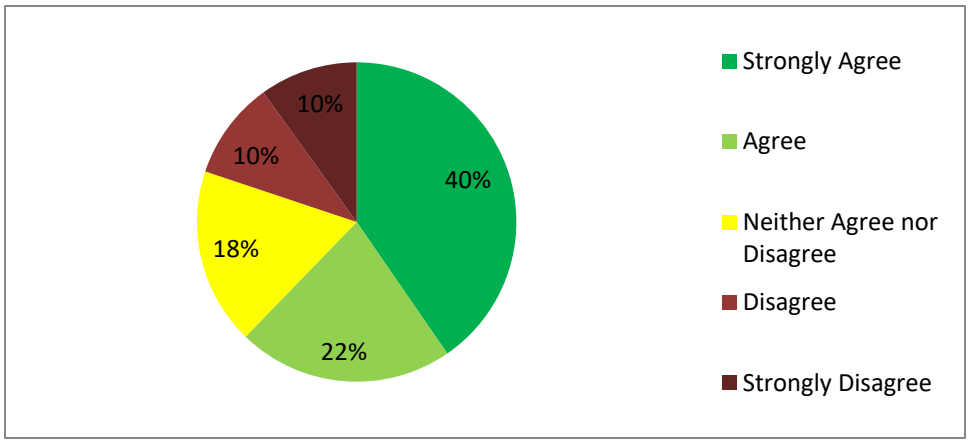
The REP was directly related to my classroom work.



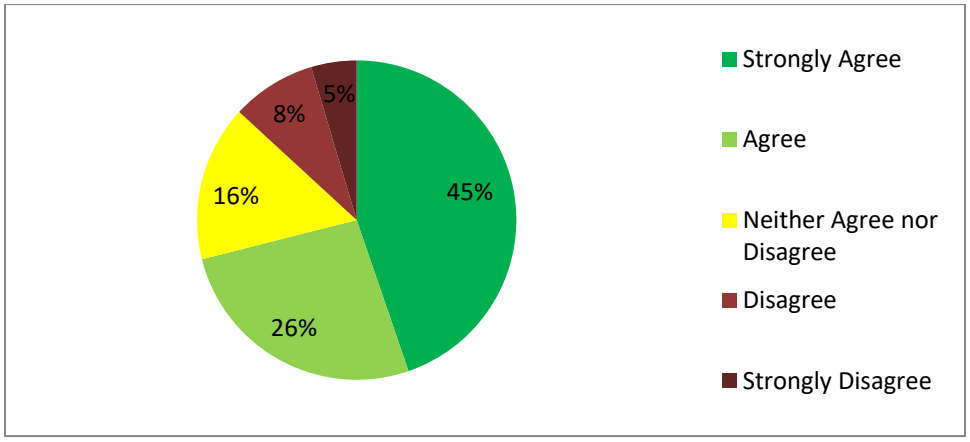
The REP helped me understand the classroom material better.



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	26	water	31	Water	90	water	74
water	44	Water	35	Water	51	Water	42
river	15	river	17	river	14	Dirty	9
Red	4	Nature	9	Dirty	7	Watershed	6
Nature	3	watershed	5	Fish	6	life	5
watershed	3	Red	4	Polluted	6	Eacosystem	4
Boring	2	dirty	3	Local	3	impoundment	4
Creek	2	Macroinvertebrates	3	Red	3	river	4
fish	2	Rouge	3	Red River	3	water quality	4
long river	2	Cool	2	Rouge	3	Fish	3
Pretty	2	Fun	2	Biodiversity	2	Nature	3
red river	2	Pollution	2	Important	2	Polluted	3
Rouge River	2	Pretty	2	long	2	Red	3
Aquatic	1	Algae	1	Nature	2	Algae	2
aquatic insects and mud/muck	1	Beautiful	1	Species	2	biodiversity	2
beautiful water and nature.	1	Beautiful river and very cool to be around	1	Troy	2	Crayfish	2
beautiful, freezing cold river that shines in the sun with fish swimming in it, the banks surrounded in lush shrubbery. (in one word to describe, I would choose the word LIVELY)	1	Benthic	1	watershed	2	Diverse	2
Behind my school	1	benthic macroinvertebrates	1	Wildlife	2	Fecal Coliforms	2
Big River	1	Big river	1	Bacteria	1	goose	2
Big water system.	1	Boring	1	Beautiful	1	rough	2
bridge	1	bugs	1	Beneficial	1	AP Enviormntal science	1
calm	1	By my School	1	Border	1	APES	1

clean	1	cider mill	1	bridge	1	Awesome	1
cleaning	1	cleaning	1	detroit	1	Backyard	1
cool	1	crayfish	1	Detroit River	1	Bass	1
Detroit	1	Creek	1	Dirty flooding river	1	BOD	1
Dirty.	1	Detroit	1	dirty river	1	body of water that is very important to creating a better environment.	1
ecoli	1	Detroit River	1	Diseases	1	Brown	1
Ecosystem	1	ecoli	1	ecosytem	1	contaminated	1
Fench	1	Environment	1	Elementary school	1	Crawfish	1
fire river	1	fire that happened	1	Fishing	1	crayfish we caught as a class.	1
Fish forests and creeks	1	fish	1	Flood	1	Dirty river	1
Fornite Skin	1	Flower	1	Flooding	1	Dissolved Oxygen	1
France	1	flowing river	1	Ford Plant	1	flood	1
Franklin cider mill	1	forests	1	Fresh water source, some tiny fishes, maybe some aquatic plants	1	Ford	1
French	1	friends and fun	1	Goose	1	green	1
Green	1	going in the river	1	How beautiful it is.	1	How big it seems to be	1
Henry Ford	1	going inside the river	1	Industrial/ polluted	1	Interesting	1
I have never been to it.	1	Henry Ford (Green Field Village)	1	long river that is is around my school.	1	Large water source	1
Lake	1	house	1	Michigan River.	1	Local	1
Long	1	Incests	1	Mosquitoes.	1	long river thats around my school.	1
long river through out detriot	1	long river	1	murky	1	lonley	1
macroinvertebrates	1	Macaroni and Cheese Invertebrates.	1	Mushroom	1	Macro invertebrates	1
my grandma's backyard. This is because the Rouge River runs through my grandma's backyard.	1	Michigan	1	Nearby	1	Microorganisms	1
Nature incests and trash/	1	Nature, And Water	1	Not clean	1	Moist	1

pollution							
Nature or outdoors	1	nature/living creatures	1	Pretty	1	Nature, water, bugs	1
nature or water	1	no thank you	1	river,trees, and birds	1	Organisms	1
Nature or Water	1	oil fire	1	Riverside	1	ours	1
Nature, pretty	1	Our watershed	1	rogue. Maybe it often floods.	1	PH testing	1
No	1	Outdoors	1	Rough	1	Pollution.	1
our watershed	1	Peaceful	1	runoff.	1	Recovering	1
Peaceful	1	Polluted.	1	Shroo	1	Red River	1
Plant	1	river and going as a class to help it.	1	small	1	Renovation	1
pollution. I think about how all of us need to take care of the river.	1	River by school	1	small polluted river	1	river and all the tests we did with the river water	1
Pollution?	1	river in michigan	1	Stage Nature Center	1	river with animals	1
poo	1	river that burned b/c of pollution	1	swim	1	Rouge	1
poop	1	river that i live next to.	1	Unfiltered	1	School	1
red mucky river	1	river that is redish/brownish	1	waste	1	Science	1
river dyed the color of red	1	RIver/Water	1	Wetland	1	small	1
river or school	1	rivers	1			Stream	1
river that caught on fire	1	Rouge river	1			tiny fish	1
river that is close to my school.	1	school	1			Troy	1
river thats cold dirty and lives in michigan	1	Sea lamprey	1			unclean	1
river water	1	select area of river that goes around an area?	1			water body	1
River with Rocks in it.	1	short river	1			Water shed	1
river, outside, woods	1	Small creck	1			Water-Quality	1
River/Moss	1	SOO FUN!!!	1			watr	1

river?	1	sound of the river.	1			Wet	1
rivers	1	stong	1				
roud	1	swimming	1				
Rouge	1	Water ,pollution	1				
Rouge River Watershed and Heritage park field trip	1	water because during the Rouge River field trip we went in the water.	1				
school	1	Watershed and a river	1				
science	1	watter	1				
small river across MI.	1	wet	1				
that 2023 Nissan rouge	1	whatershed	1				
very long river	1						
wild river	1						
wild rough river with crazy water	1						
Wildlife	1						

Notable Results & Discussion

Fall 2023 and Spring 2024 Monitoring

Matching pre- and post- surveys were found for 306 students.

Schools that submitted usable pre- and post- survey data: Crestwood High School, Detroit Country Day Middle School, Farmington STEAM Academy, The Roeper School, Roosevelt High School, Star International Academy – Canton, Steppingstone School, and 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, Coolidge Elementary School, Hope Christian Academy, or Hamtramck High School. A few schools that submitted usable pre- and post- survey data did not have entries from all participating class(es).

There was a large subsection of 7^{th} – 12^{th} 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.

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 Detroit Country Day Middle School, Farmington STEAM Academy, The Roeper School, and Roosevelt High 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 science and nature as a result of the trip. Students also felt closer to nature. Students became slightly less interested in school, but could have possibly been a result of distribution of pre- surveys at the beginning of the school year, and post-surveys nearer to the end of the school year when kids are feeling more ready for summer break.

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^{th}-12^{th}. This must be a concept covered heavily in

science classes before students reach 7th grade. There was an insignificant increase 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 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 (91.43%) 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 (89%). They learned actions to make the river healthier (89%), and felt like they could make a difference in protecting the environment and society (87%). Students were challenged to think like a scientist (76%), and it helped them understand classroom material better (81%). Over half of students planned to talk to family/friends about what they learned (65%).

Less than half (47%) of 7th – 12th grade students felt connected to the Rouge River. They reflected on new ideas about how their actions affect the river (62%), and (68%) would participate in projects that would help the Rouge River. A little less than half (44%) 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 (59%). The project was related to their classroom work (67%). They participated in river discussions before and after their trip (62% / 71% 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, red in the pre-survey, and similar top responses in the post- survey. The word “dirty” was more popular with the 7th – 12th 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 usually given a program evaluation at the end of the school year to give them the opportunity to share their feelings about project execution. This evaluation was not able to be distributed prior to the end of the 2023-2024 year. Previous teacher evaluation results are included in the 2019-2020 survey report. Many changes since COVID have impacted teacher ability to participate in the Rouge Education Project, and we continue to support our teachers in ways that work best for them.

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^{th} – 12^{th} grade students were not feeling connected to the river, and only half planned 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 other 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.

Evaluations clearly illustrated a quantitative positive impact on the students 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 2023-2024. Thank you for your commitment to this program and your river.