

Program Report

Redbud Educational Programs

Wilkerson Center for Colorado River Education
at the LCRA Redbud Center

School Year 2015-2016



Presented by

Colorado River Alliance

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Table of Contents

	Page Number:
1. Executive Summary	3
2. Background	3
3. Program Statistics	4
4. Program Evaluation	6
5. Student Knowledge Gains	6
6. Water Conservation Pledges	8
7. Volunteers	8
8. Discussion	9
9. Appendix	12

Redbud Center Program Report School Year 2015-2016

Executive Summary

The Redbud Center programs hosted the largest number of attendees in program history during School Year 2015-2016. We served a total of 4,110 attendees; a 3.5% increase over the previous year. Additional program achievements include:

- Recruitment of a record number of Volunteer Educators (48), a 37% increase over last year
- Students demonstrated statistically significant knowledge gains about their drinking water source, the Water Cycle, and watershed pollution
- Staff and volunteers provided the first bilingual field trips in program history

Focus Areas in SY 2016-2017 include:

- Increase bilingual programming and reach for Spanish-speakers to serve 300 students
- Identify and execute a marketing outreach plan for:
 - Educators serving ESL students in AISD and other Austin-area schools
 - Bilingual volunteer environmental educators and Interns
- Develop and evaluate new volunteer training procedures and teaching curriculum for Spanish-speakers

Background

The mission of the Colorado River Alliance (the Alliance) is to secure the vitality of the Texas Colorado River through education and advocacy for all generations. The Alliance is a 501(c)3 organization, established in 1994. The Alliance works to increase community awareness of the Colorado River's economic and environmental importance.

The Alliance's Redbud Educational Programs are held at the Wilkerson Center for Colorado River Education at the LCRA Redbud Center. The Redbud Program's educational goals are:

- 1) Increase awareness and conservation of the Texas Colorado River by inspiring students to become river stewards through hands-on learning.
- 2) Reach all segments of Austin's population, including people from underserved and underrepresented backgrounds.
- 3) Support formal learning inside classrooms by improving student knowledge of relevant topics covered by the Texas Essential Knowledge and Skills (TEKS) and State of Texas Assessment of Academic Readiness (STAAR) tests.

Redbud programming is comprised of three distinct field trips:

- 1) **Youth Experience Stewardship (YES):** Launched in 2009 with collaboration between LCRA, the Alliance, and Austin Independent School District (AISD), YES is a four hour outdoor experience (see Table 2, Appendix) developed for grades 3-5 school children. YES program curriculum covers four core topics during each field trip: the Texas Colorado River & Highland Lakes, watersheds and watershed pollution, water conservation, and the water cycle. Additional topics include water sources, healthy aquatic systems, rainwater harvesting, wildlife, water resource protection and river ecology. The YES program supports educator efforts in the classroom, aligns with grade level Texas Essential Knowledge and Skills (TEKS) (See Table 1, Appendix), and supports the missions of both the Alliance and LCRA.
- 2) **Afterschool and summer programming:** Afterschool and summer programming expanded this year with support from a Time Warner Cable grant. These programs are two hours long, delivering customized YES program content that is adapted towards various student age groups and visitor requests.
- 3) **Public group tours for adult audiences:** Tours educate the general public about the importance of the Texas Colorado River and eco-friendly building design. Visitors have the option of exploring our river's geography and its dams, the Redbud Center's, eco-friendly features, and water quality.

All programs are provided free of charge and are supported by volunteers from the Austin public. Alliance staff recruit, train, and reward volunteers as part of program operations. We deliver consistent messaging across all three Redbud programs through detailed volunteer training, co-teaching, field trip observation, and ongoing support.

Program Statistics – School Year 2015-2016

Redbud programming has served 22,375 people through 565 field trips and tours since service began in spring 2009. In School Year (SY) 2015-2016 (June 2015 – May 2016), **Redbud programs achieved record numbers: 4,110 people participated in 115 field trips** (see Table 1, below). During each field trip, the number of participants, grade levels, type of school or organization, and ethnicity are recorded. To assess the program's progress towards reaching all racial segments of Austin's population, we collect demographic data. Over 52% of attendees were an ethnic minority; the largest portion was Hispanic at 34%.

Table 1: Redbud Program Statistics

SY 2015-2016 Totals	Participants	Field Trips	
	4,110	115	
By Type of Program	Number of Participants	Number of Trips	Percent of Participants
YES: Youth Experience Stewardship	3,525	80	85%
Afterschool/Summer Program	464	29	11%
Adult Group Tours	121	6	3%
By Type of School/Group	Number of Participants	Number of Trips	Percent of Participants
Public school Total *	3,060	64	74%
Public school – AISD	1,635	34	40%
Public school – Non AISD**	1,425	30	35%
Private schools	465	16	11%
Afterschool/Summer 2014 Programs	464	29	11%
School Programs	161	12	4%
Nonprofits	294	16	7%
Girl & Boy Scouts	9	1	<1%
Homeschool	6	1	<1%
Adult Group Tours	121	6	3%
Title I Status***			
Title I Public Schools	1,737	42	42%
Non-Title I Public Schools	1,676	36	41%

*Inclusive of charter schools

** We served public schools non-AISD districts including: Del Valle ISD, Dripping Springs ISD, Elgin ISD, Manor ISD, Round Rock ISD, and Pflugerville ISD.

*** Title I schools are designated by the State of Texas and serve a larger percentage of students from underrepresented and underserved racial backgrounds.

Table 2: Redbud Student Participant Ethnicity

SY 2015-2016				
Student Ethnicity	Title I Schools	Percent of Students	Non-Title I Schools	Percent of Students
White	326	19%	1,094	65%
Hispanic	1,135	66%	287	17%
African American	209	12%	87	6%
Asian	22	2%	98	7%
Other	16	1%	66	5%
Total	1,676	100%	1,737	100%

Program Evaluation

Program staff collect client feedback in both qualitative and quantitative form to help evaluate our program's effectiveness (see Figure 1, Appendix for example). Teachers and chaperones that accompany students on field trips rate the overall quality of the YES program, as well as docent instruction on the four topic stations (see "Youth Experience Stewardship (YES)" on Page 4). Adults completed 202 evaluations during YES field trips in SY 2015-2016. Feedback scores (summarized below) were favorable across all four evaluation dimensions, and were consistent with the YES program's average evaluation rating since program inception:

OVERALL PROGRAM EVALUATION	Average Rating
	Scale: 1 (not at all) to 5 (very much)
1. The staff was knowledgeable, friendly and helpful.	4.97
2. Today's program is what I expected	4.98
3. I plan to bring future classes to Redbud Programs.	4.99

Ratings of all four topic station questions were averaged to provide a measure of client satisfaction with our curriculum and educators, and they were assessed individually:

Table 2: Redbud Core Topic Instruction Evaluations

AVERAGED STATION RATINGS	Average Rating
	Scale: 1 (not at all) to 5 (very much)
Q1: The presenter was knowledgeable, friendly and helpful.	4.93
Q2: The information was presented in an appropriate manner.	4.92
Q3: The materials and activities were grade level appropriate.	4.93
Q4: This station covered important TEKS and/or science content.	4.94

Individual Station Ratings

Rating Dimension	Water Conservation	Colorado River & Lakes	Water Cycle	Watersheds & Pollution
Q1	4.94	4.91	4.95	4.92
Q2	4.92	4.89	4.93	4.93
Q3	4.94	4.94	4.92	4.93
Q4	4.93	4.92	4.97	4.92

Student Knowledge Gains

To ensure that the YES program is successfully achieving our second and third educational goals (see Background), we conduct pre- and post-visit knowledge tests to AISD students. The tests are identical and include three questions (see Figures 2a and 2b, Appendix for examples), assessing student knowledge of important concepts covered during the field trip and recorded in their Field Journals (see Figure 10, Appendix).

During the SY 2015-2016, 952 students completed the pre-visit knowledge test (pre-test) and 988 students completed the post-visit knowledge test (post-test). Across Program

Years 4-8 (the years when knowledge tests were administered), 3,177 students (70 classes) completed the pre-test, and 2,840 students (63 classes) completed the post-test, and all of these records were included in analyses presented in this report.

Pre-test and post-test scores were anonymously collected and analyzed using a Matched Subjects design. The matched subjects in the analysis were 3rd, 4th and 5th grade classes from Austin-area schools (AISD, Del Valle, Elgin, Leander, and Lake Travis) In this design, only one test type (pre-test or post-test) was administered to students during a given field trip. The average class size was 45 students. Children from Title I schools (serving students from predominantly low-income households) and Non-Title I schools (serving students from middle-class and affluent households) were tested. An Analysis of Variance (ANOVA) was used to assess class mean percent of correct responses to each of three questions on the Test. Test type (pre-test, post-test), school Title I status (yes or no) were fixed factors in the ANOVA. The ANOVA was configured to account for minor differences in sample size (number of classes) per condition, so that they did not unduly influence the test results.

Classes from both Title I and Non-Title I schools scored significantly higher on post-tests than pre-tests ($p < .01$; See Table 3 below, and Figures 4a-4c, Appendix). Classes from Title I schools scored lower than classes from Non-Title I schools on both pre-tests and post-tests for Questions Two and Three, but one Question One ($p < .01$; See Table 3 below, and Figures 4a – 4c, Appendix). No significant interactions between the effects of Title I status and Test type (Pre-test, Post-Test) on mean class score were observed for any test question. Class performance on individual test questions is addressed in the Discussion section of this report.

Table 3: Mean Class Pre- and Post-Test Scores, Program Years 4-8:

			Title I		Non-Title I	
			Pre-Test	Post-Test	Pre-Test	Post-Test
Overall Test Score (Class Mean):			62.4	81.6	73.0	90.0
	Question Type	Question	Mean % Correct Responses in each Class			
Q1	Multiple Choice	Where does your drinking water come from?	78.9	91.6	83.1	93.4
Q2	Multiple Choice	Do humans reuse the same water over time?	55.9	74.4	69.8	89.3
Q3	Open	What are 3 examples of pollution that impact our waterways?	52.6	78.7	66.1	87.4

In Table 3, mean class post-test scores **in bold** are significantly higher than pre-test scores ($p < .01$). Mean scores in **red** indicate class averages from Title 1 schools were significantly lower than classes from non-Title 1 schools ($p < .01$).

Water Conservation Pledges

Water conservation pledge cards were distributed to students in order to assess the impact YES programming may have on student water-use behavior. Students viewed a list of ways in which they could reduce water use at home and then selected water conservation actions they promised to undertake (see Figure 3, Appendix for example).

Pledge cards were collected from 3,024 students during the field trips for SY 2015-2016, and from 11,191 students across Program Years 4-8. Data from the Pledge cards are summarized in Table 4 below, and addressed further in the Discussion section of this report.

Table 4: Student Conservation Pledge Responses, Program Years 4-8:

Student Affiliation:	Title I Schools		Non-Title I Schools	
Mean Pledge Score	81.9%		82.1%	
Conservation Habit	# Pledges	% of Students*	# Pledges	% of Students*
Turn tap off when brushing teeth	4967	93.4	5419	92.2
Take 5 minute showers	4346	80.4	4663	80.7
Only fill bath tub half full	4210	79.5	4611	78.1
Use leftover water for plants	4334	79.2	4597	80.4
Remind family to do full loads of laundry	4480	83.0	4818	83.1
Remind family to water lawn when sun is down	4143	77.1	4474	76.9

*Students can pledge to adopt more than one Conservation Habit; they are not mutually exclusive

Volunteers

Volunteers are essential to the Redbud YES Program. **During SY 2015-2016, a record number of environmental education docents were involved in Redbud programs, and they contributed the most volunteer hours in program history.** Volunteer environmental educators (docents) teach all four of the YES program stations, and administer pre-tests, post-tests and pledges. During YES program field trips for grades 3-5 schoolchildren, four instructors are needed to staff the stations each day. Alternative programs require one to three instructors depending on the size of the group. Adult public tours require one instructor. Volunteers, plus one part-time environmental educator staff member, and the Redbud program coordinator fill these needs.

The number of docents and cumulative hours they contribute to Redbud programming are summarized in Table 5 below. Hours contributed by paid staff are not included.

Table 5: Volunteer Participation by School Year

School Year	# Volunteers	# Hours	Avg. Hours/Volunteer
Fall 2009	24	354.5	14.77
2009-2010	27	495	18.33
2010-2011	No data	No data	No data
2011-2012	17	355.5	20.91
2012-2013	33	911.5	27.62
2013-2014	33	897.5	23.61
2014-2015	35	1,175	33.57
2015-2016	48	1,493	31.10

Discussion

Program Participation

The Alliance's Redbud YES program achieved a record attendance level (4,110 students) in SY 2015-2016, and 42% were from Title I schools. Forty percent of field trips were attended by AISD schools this past year. The Alliance has reached the limit of the Redbud Program's operational capacity during the school year. We've long pursued the goal of engaging students from under-represented and under-served populations, and the Austin Independent School District (AISD) has expressed the need for bi-lingual programming to engage students who are learning English as a second language (ESL). In order to drive progress in this outreach area, the Alliance recruited three bi-lingual volunteers this spring, who taught our curriculum in Spanish for the first time in program history. We also had an opportunity this summer to hire a new Program Coordinator that is fluent in Spanish. This staff member, along with support from bilingual interns, will be charged with *the strategic goal of providing field trips to 3,000 students in SY 2016-2017, 10% of which will be bi-lingual*. This 30% reduction in overall capacity is largely associated with the training requirements and strategic focus of our incoming Program Coordinator, who will also be charged with overseeing the development of our teaching curriculum and volunteer training for Spanish-speakers. Once these program goals are achieved, capacity-building efforts will be re-introduced to seasonal operations.

Strategic Goal Action Items for SY 2016-2017 include:

1. Identify and execute a marketing outreach plan for:
 - o Educators serving ESL students in AISD and other Austin-area schools
 - o Bi-lingual volunteer environmental educators and interns
2. Develop and evaluate new volunteer training procedures and teaching curriculum for Spanish-speakers

Student Knowledge Gains

Classes from both Title I and Non-Title I schools demonstrate having significantly more environmental knowledge after Redbud field trips than before going on them (Table 3 above, and Figures 4a-4c, Appendix). Classes from Title I schools had lower average scores than students from Non-Title I schools for Questions #2 and #3, but not for

Question #1. Question #1 asks students to identify the source of their drinking water from among four options (Figure 7a & 7b, Appendix). Mean class scores on this question were higher than other questions; the lowest mean class score was calculated to be 78.1% for pre-tests completed by students from Title I schools. This average suggests that pre-existing student knowledge regarding drinking water source may be fairly high among public school students in the Austin area, with less room for differentiation. Caution is warranted in drawing conclusions presently, because in fall 2016 we eliminated language in the Field Trip's introductory video that names the Texas Colorado River as Austin's drinking water source. This video appears to have unduly influenced student performance on pre-tests, as is shown in Figure 5 in the Appendix. Further data collection will help clarify what students' pre-existing knowledge of drinking water source is.

The degree of difference between lower average pre-test and higher post-test class scores is similar for classes from Title I schools and those from Non-Title I schools, regardless of the question type (Figures 4a-4c, Appendix). This score pattern suggests that **classes from under-represented and under-served populations make similar amounts of knowledge gains as classes from more affluent backgrounds in our program.**

Class performance on Question #2 ("Do humans reuse water over time?") has improved consistently over the past few years (Figure 6, Appendix) due to directed changes to how the Water Cycle is taught (see SY 2014-2015 Redbud Annual Report). Volunteer educators have also been coached to improve teaching about watershed pollution; specifically in identifying different types of pollution and their sources. Classes from Title I schools score significantly lower on Questions #2 and #3 than students from Non-Title I schools (see Table 3, Page 7). Test performance by students from underserved backgrounds may be influenced by language barriers and differences in reading and writing skills, since Question #3 requires students to write down three examples of watershed pollution. However, these factors do not explain why no significant difference in overall student performance was detected between these class categories on Question #1. Therefore, we propose that **there may be meaningful differences in the amount of pre-existing environmental knowledge that classes from under-served backgrounds and more affluent students have in Austin.**

Important differences in the *qualities* of environmental knowledge were associated with observed differences in the *amount* of knowledge classes showed. This past spring, larger proportions of students in classes from Non-Title I schools tended to misidentify their drinking water source as the Edwards Aquifer (approximately 53%) on pre-tests than classes from Title-I schools (approximately 15%). This counter-intuitive pattern suggests **there may be public awareness or educational initiatives that cause many affluent students in Austin to assume the Edwards Aquifer stores their drinking water.** Although students from under-served populations appear to be less familiar with the impacts of the Water Cycle on humans, **classes make progress learning that humans reuse the same water over time in Redbud field trips, regardless of socio-economic background.**

Substantial qualitative differences exist between the examples of pollution students name before field trips versus after them. We collated class responses across all four program years; their students provided 27 different response categories (see Figure 9, Appendix). Among these, the following patterns were notable:

1. Students name more “hard-to-see” pollution types after Redbud field trips than before them:
 - a. Fertilizer, chemicals, and pet waste, were well-represented in post-tests, but very little so or absent in pre-tests.
 - b. Car oil is mentioned to a greater degree in post-tests than pre-tests
2. Students name more “easy-to-see” pollution types before Redbud field trips rather than after them:
 - a. Beverage containers are well-represented in pre-tests, but very little in post-tests
 - b. Plastic was mentioned in pre-tests and not in post-tests.
3. The number and relative representation of different pollution types identified is similar between students from under-served backgrounds and more affluent students.
4. Students mention dirt more after field trips than before them, but dirt is substantially under-represented among other pollution categories.

Students who have gone on Redbud field trips not only know several examples of watershed pollution, they often identify the less-visible ones that are considered to be the largest threats in our watershed. Still, further progress is required to further student awareness of sediment pollution in the Austin area.

Student Conservation Pledges

At the conclusion of field trips, students indicate they are willing to adopt water conservation behaviors at home (see “Water Conservation Pledges”, above). **If all participating students honor their Water Conservation Pledge elections for one year, they will have saved over 94 million gallons of water the past 4 years** (see Table 3, Appendix). **This conservation amount is approximately 288 acre-feet.**

Volunteer Recruitment

As program capacity increases, we must recruit more docents, which are categorized into the following groups:

- “Seasonal”- Volunteers that stay for one-two semesters and attend field trips once per month. We aim to recruit and train **20** per year moving forward (**10** per season).
- “Intern”- Volunteers who contribute an average of 15 hours per week. Previous to fall 2015, we have recruited three interns per semester. Moving forward, we will aim to recruit **four** interns per semester (**three** of them bi-lingual) to support the Program’s strategic direction.
- “Long Term Occasional”- Docents have volunteered for more than one year, and attend field trips 2-3 times per semester, totaling 5-6 trips per year. We aim to have **two** active docents of this kind per year
- “Long Term Active”- Docents have volunteered for more than one year, and participate in field trips at least once per month. These volunteers are more difficult to recruit and we aim to have **two** active docents per year.

Appendix

Table 1: Texas Essential Knowledge and Skills Alignment

	Science	Social Studies
3rd Grade	1B, 2A, 2F, 3C, 3D, 5B, 6A, 6C, 7B, 7C, 7D, 8B, 9A, 9C	1A, 2B, 4A, 4B, 4C, 4D, 5A, 11A, 11C, 12B, 12C
4th Grade	1B, 2D, 3C, 3D, 5A, 5B, 7B, 7C, 8B, 9B	2E, 5A, 6A, 8C, 7A, 7B, 7C, 9A, 9B, 9C, 20B, 20C
5th Grade	1B, 3A, 3D, 5A, 5D, 7B, 7C, 8B, 9A, 9C	6A, 7B, 8B, 9A, 9B, 9C

Table 2: YES Program Core Topic Stations

<u>Colorado River Station</u>	This station aims to provide students with a background on the importance of the Colorado River, the geology and geography of the river, and the purposes of the Highland Lakes and Dams system. Students view a detailed map of the dam and lake locations, then explore a stream table to discover firsthand the use of dams to manage flood waters. Then, students tour the Wilkerson Center's interactive water feature exhibit and replicas of the Highland Lakes and Dams. At each dam along the feature, there is stopping point with a teachable moment.
<u>Watershed Station</u>	The Watershed Station allows students to identify attributes of a watershed and locate their school's watershed. Students learn that water is collected from both surface water and groundwater sources, and that Austin drinking water is pumped from the Colorado River. Students then move to an interactive model town to see how nonpoint-source pollution affects the health of the Colorado River Watershed. Students then brainstorm ways in which their daily lives, whether at home or at school, impact the river's health.
<u>Water Cycle Station</u>	Students discuss the amount of freshwater on Earth and how water is reused by humans over time. After a review on prior water cycle knowledge, they play a game in which they become drops of water in the water cycle to ultimately realize that water moves in many ways through the cycle. The second part of the game introduces pollution to see how human pollution ends up affecting water sources. The stations end with a group discussion on how drought can impact the water cycle, and that during drought conditions some of the water cycle processes will change.
<u>Conservation Station</u>	The Conservation Station begins with students brainstorming ways we use water in and around the home and the amount used. The docent reveals that, on average, a family of four uses about 410 gallons a day which totals 150,000 gallons a year. Students participate in a game in which they estimate how much water can

	<p>be wasted by using water carelessly during daily tasks. Students then brainstorm ways water consumption can be reduced during these daily tasks. After discussing the significant amount of water used for lawns, the Wilkerson Center's native plant gardens become a teaching tool. The scavenger hunt shows how families can drastically reduce the amount of water used in landscaping by having drought tolerant and native plants and grasses. Finally, students are issued 'Pledge Cards' to promise ways they plan to conserve water.</p>
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Table 3: Potential Water Savings from Student Pledges, Program Years 4-8

Conservation Habit	Students	Gallons Saved	Times per year	Cumulative Water Savings (gals.)
Turn tap off when brushing teeth	10,386	3.5	365	13,268,115
Take 5 minute showers	9,009	25	313	70,495,425
Only fill bath tub half full	8,821	10	5	441,501
Use leftover water for plants	8,931	Unknown		
Remind family to do full loads of laundry	9,298	20.5	52	9,911,668
Remind family to water lawn when sun is down	8,617	Unknown		
Total				94,116,258

Figure 1: Teacher Evaluation Sample

**YES Program
Evaluation Form**

Name (optional) _____

Group Name _____

Date _____ What is your zip code? _____

On a scale from 1 to 5, please rate the following:

5-----4-----3-----2-----1
Very much Somewhat Not at all

Colorado River Station

1. The presenter was knowledgeable in his/her field. 5 4 3 2 1

2. The information was presented in an appropriate manner. 5 4 3 2 1

3. This material and activities were grade level appropriate. 5 4 3 2 1

4. The presenter was useful and helpful. 5 4 3 2 1

Comments about this station: _____

Conservation Station

1. The presenter was knowledgeable in his/her field. 5 4 3 2 1

2. The information was presented in an appropriate manner. 5 4 3 2 1

3. This material and activities were grade level appropriate. 5 4 3 2 1

4. The presenter was useful and helpful. 5 4 3 2 1

Comments about this station: _____

Please continue on the other side

On a scale from 1 to 5, please rate the following:

5-----4-----3-----2-----1
Very much Somewhat Not at all

Water Sources and Watersheds Station

5. The presenter was knowledgeable in his/her field. 5 4 3 2 1

6. The information was presented in an appropriate manner. 5 4 3 2 1

7. This material and activities were grade level appropriate. 5 4 3 2 1

8. The presenter was useful and helpful. 5 4 3 2 1

Comments about this station: _____

Water Cycle Station

1. The presenter was knowledgeable in his/her field. 5 4 3 2 1

2. The information was presented in an appropriate manner. 5 4 3 2 1

3. This material and activities were grade level appropriate. 5 4 3 2 1

4. The presenter was useful and helpful. 5 4 3 2 1

Comments about this station: _____

Overall Program Evaluation

1. The staff was knowledgeable friendly and helpful. 5 4 3 2 1

2. Today's program was what I expected. 5 4 3 2 1

3. I plan to bring future classes to Redbud programs. 5 4 3 2 1

Comments about this program: _____

Figure 2a: Pre-Test Sample

What do YOU know?

1. Where does your drinking water come from?

a. Edwards Aquifer

b. Colorado River

c. Brazos River

d. I don't know

2. Do humans reuse the same water over time?

a. Yes

b. No

c. I don't know

3. What are 3 examples of pollution that impact our waterways?

cans in water

bottles in water

Not good water



PRE **334**

Figure 2b: Post-Test Sample

What do YOU know?

1. Where does your drinking water come from?

a. Edwards Aquifer

b. Colorado River

c. Brazos River

d. I don't know

2. Do humans reuse the same water over time?

a. Yes

b. No

c. I don't know

3. What are 3 examples of pollution that impact our waterways?

oil

trash

chimneys



POST **517**

Figure 3: Pledge Card Sample

Colorado River Pledge

I pledge to reduce water use at home by:

- Turning the tap off when brushing my teeth.
- Taking 5 minute showers.
- Only filling the bath tub half way for baths.
- Using left over water for plants instead of pouring it down the sink.
- Reminding my family to only do full loads of laundry.
- Reminding my family to only water the lawn when the sun is down.
- Other: to only use water for important use

Ana _____ Signature Roder Springs E _____ School

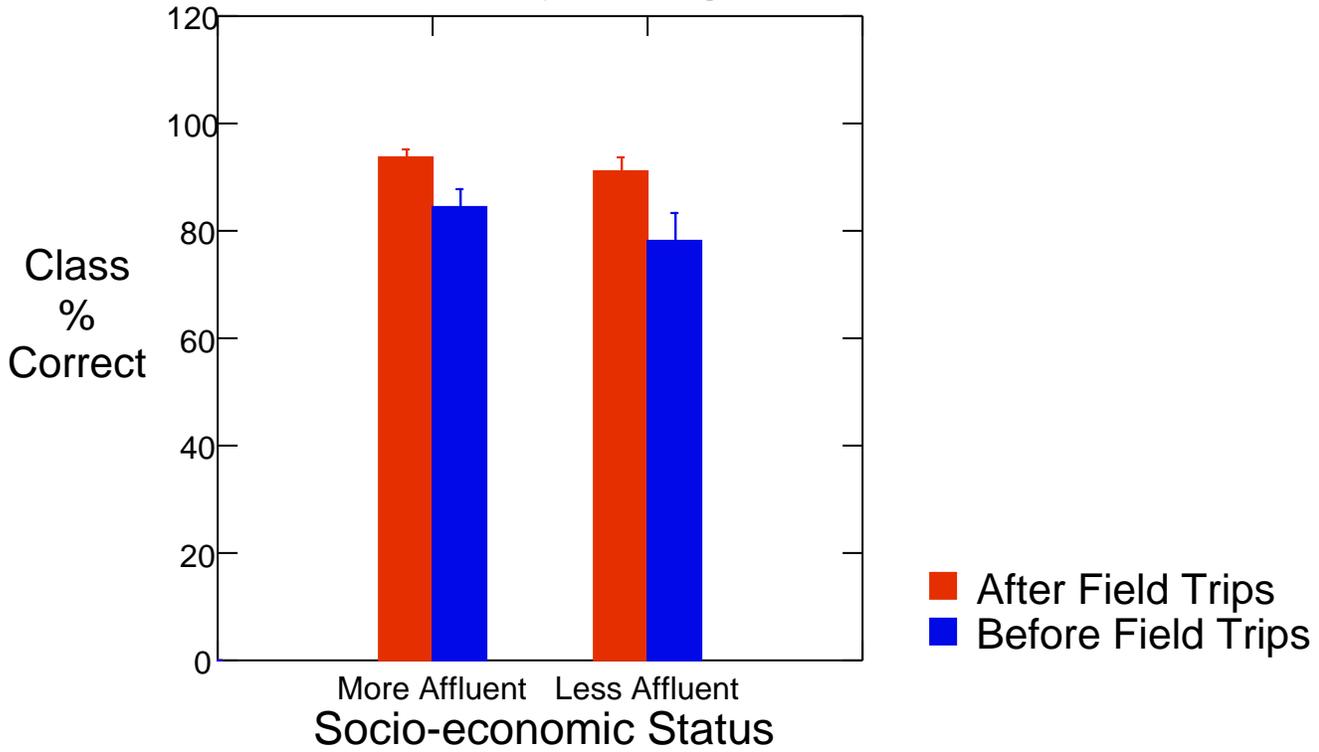
2123

We Love the Colorado River!

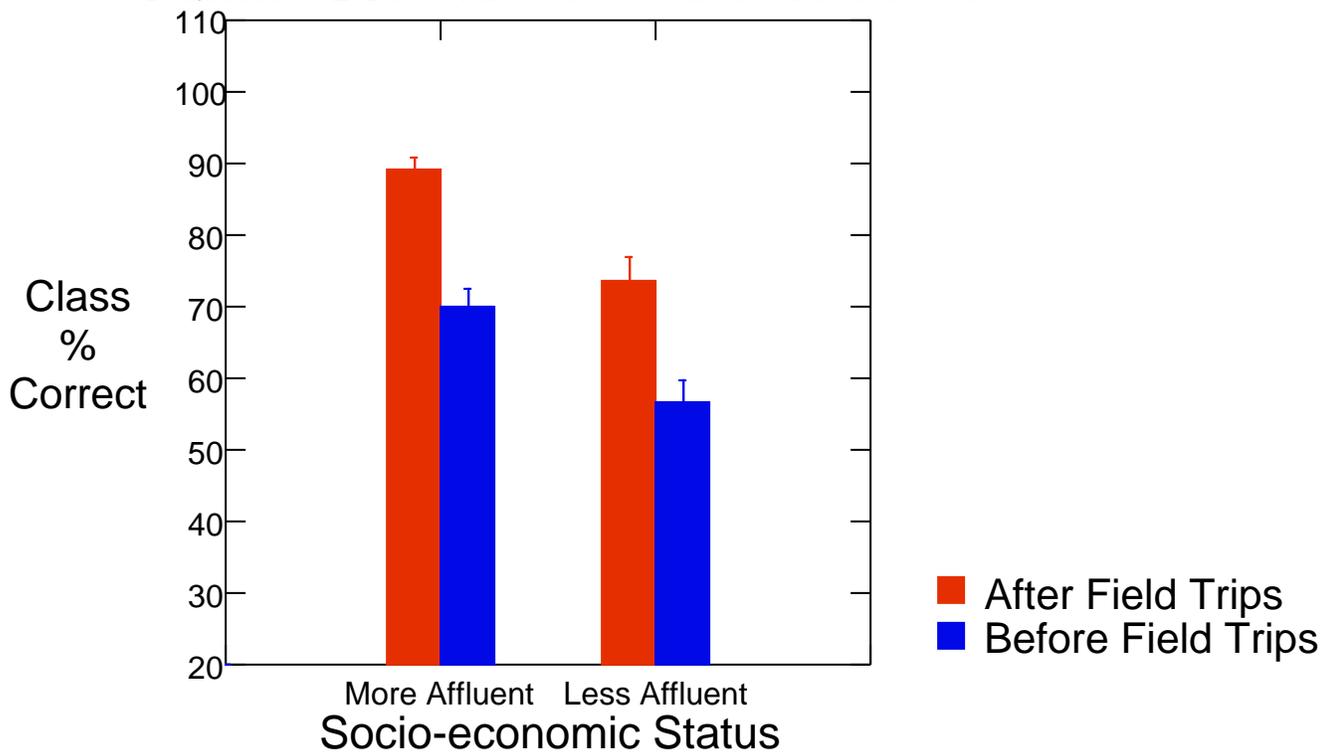


Figures 4a – 4c: Mean (Class Average) Pre-Test and Post-Test Scores

4A: Question #1: Where does your drinking water come from?



4B: Question #2: Do humans reuse the same water over time?



4C: Question #3: What are 3 examples of pollution that impact our waterways?

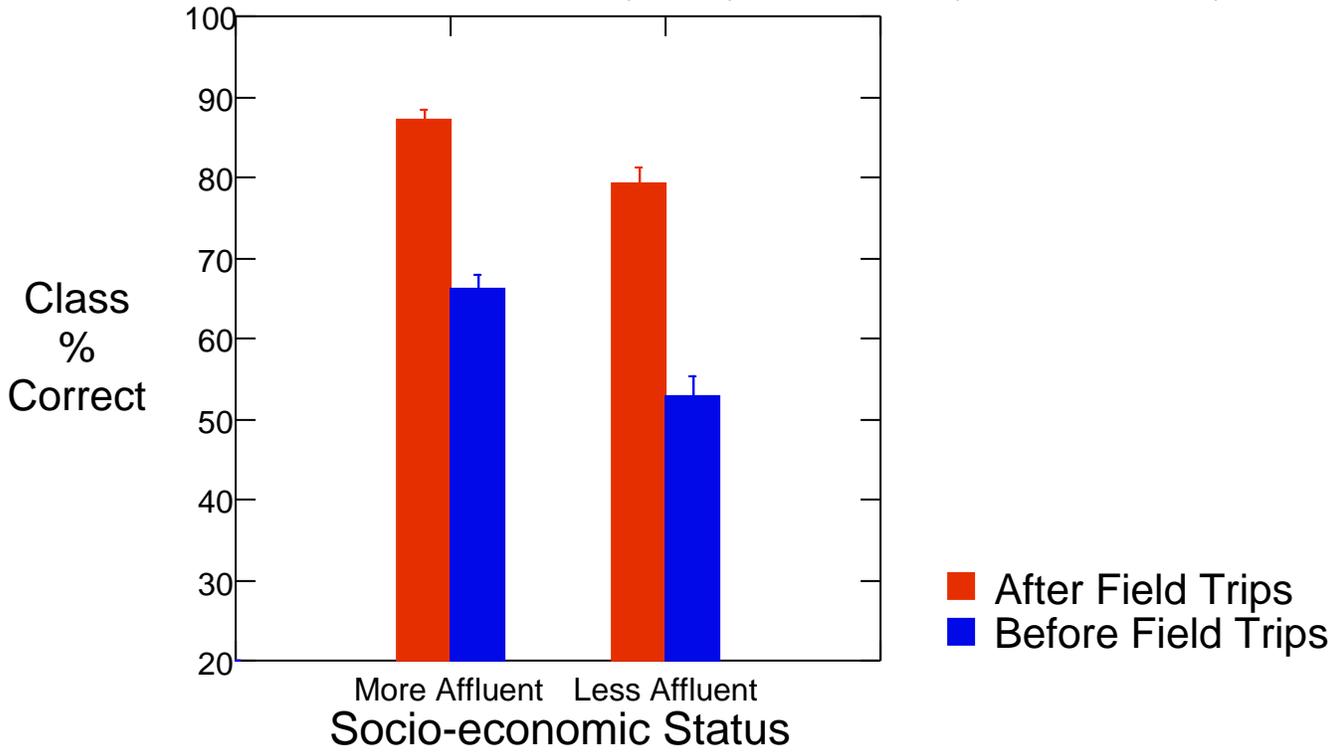


Figure 5: Mean Pre/Post Test Scores, Question #1, Program Years 4-8

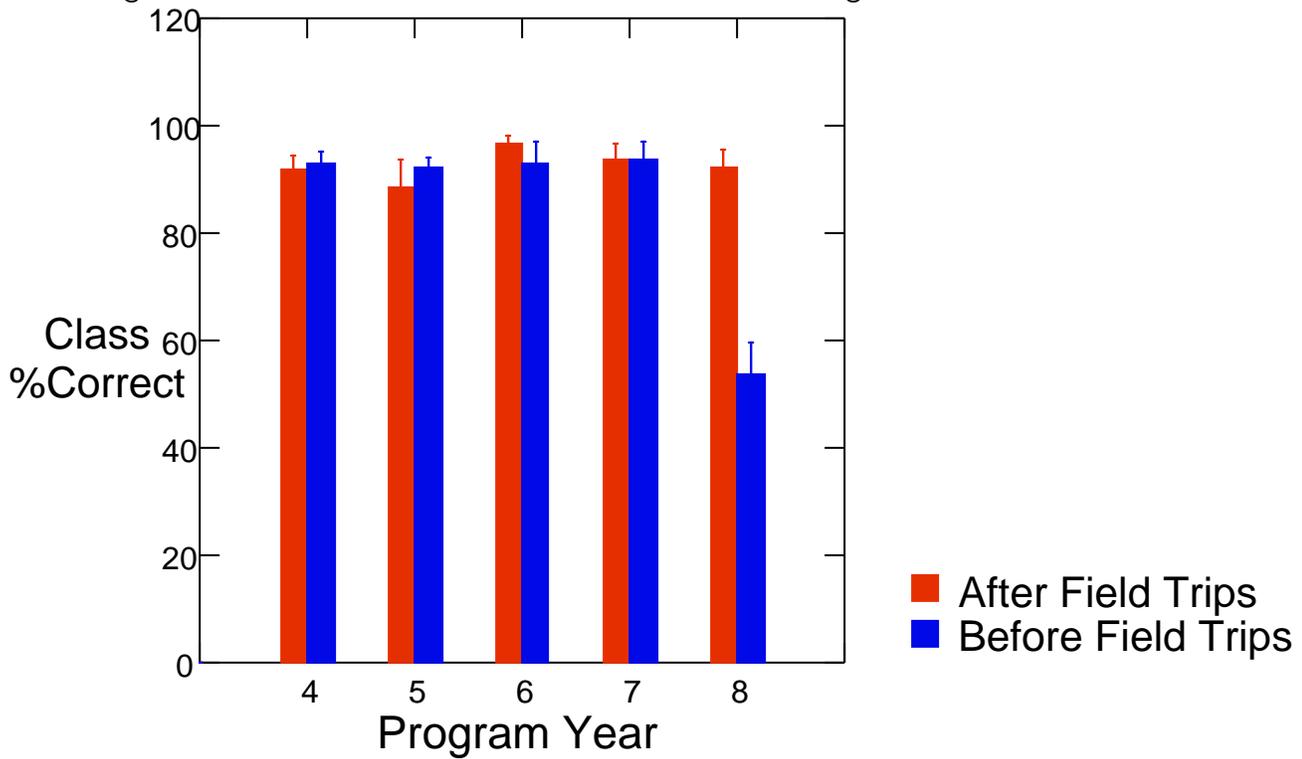


Figure 6: Mean Pre/Post Test Scores, Question #2, Program Years 4-8

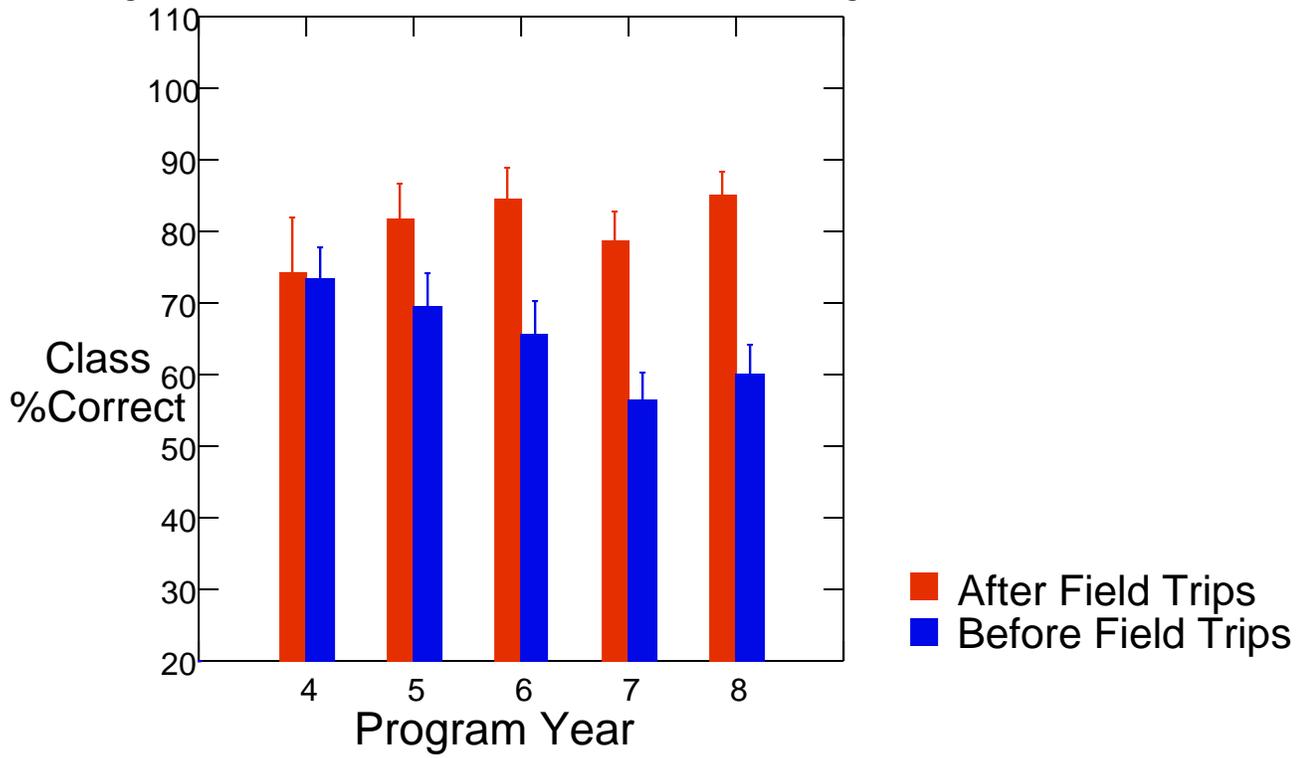
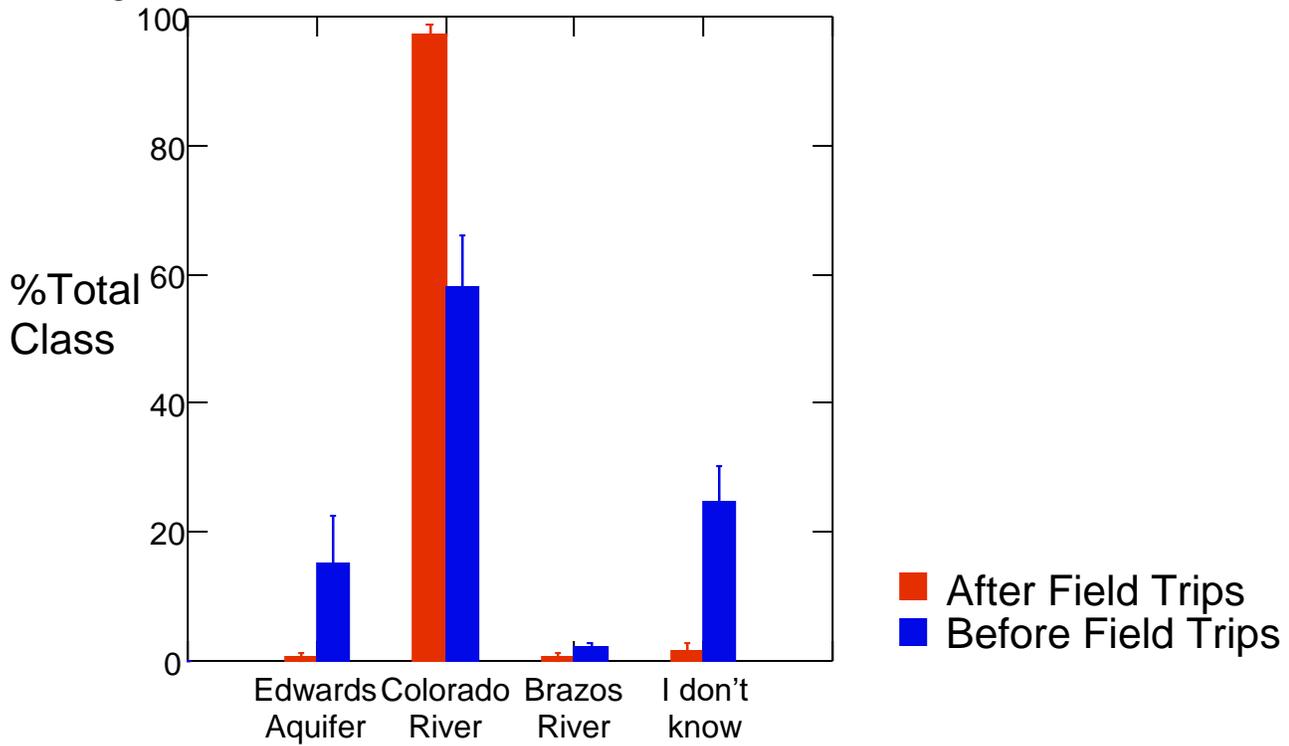
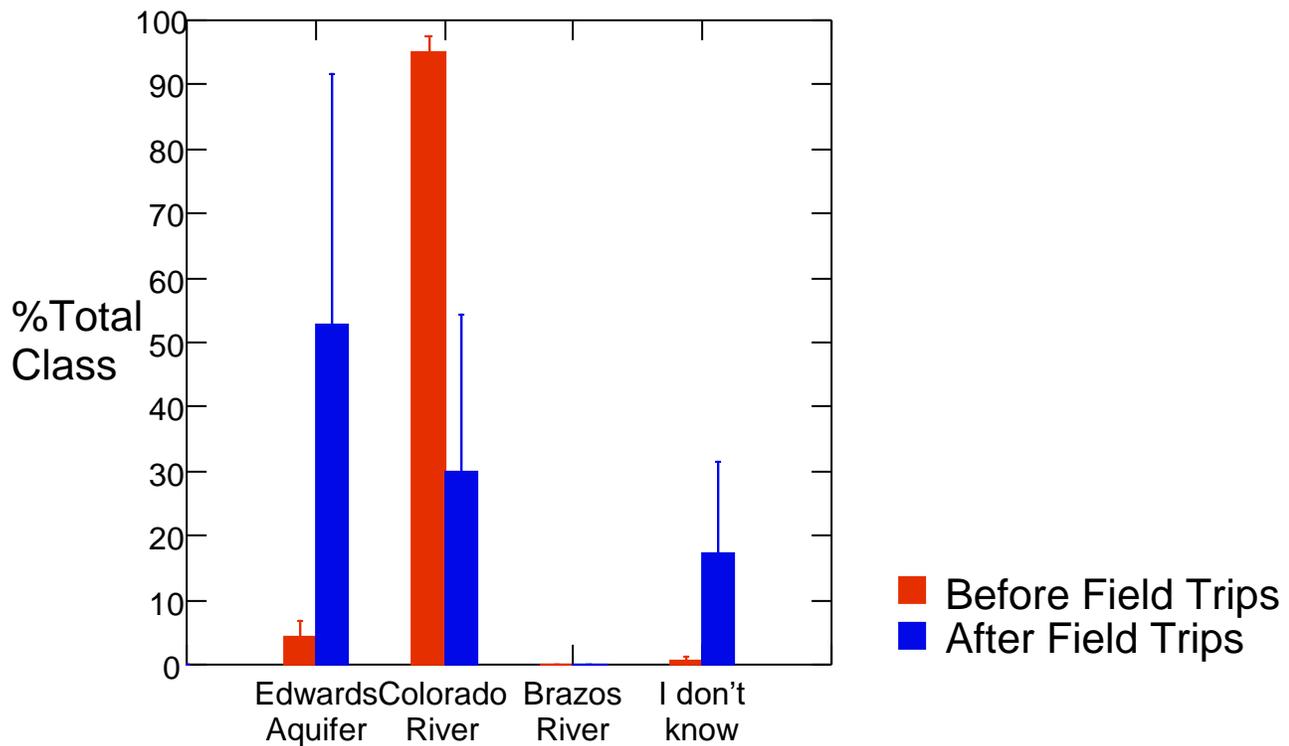


Figure 7a: Mean Pre/Post Test Scores Question #1 Answer Choices for Title-I Classes



“Where does your drinking water come from?”

Figure 7b: Mean Pre/Post Question #1 Answer Choices for Non-Title I Classes



“Where does your drinking water come from?”

Figure 8a: Mean Pre/Post Question #2 Answer Elections for Title I Classes

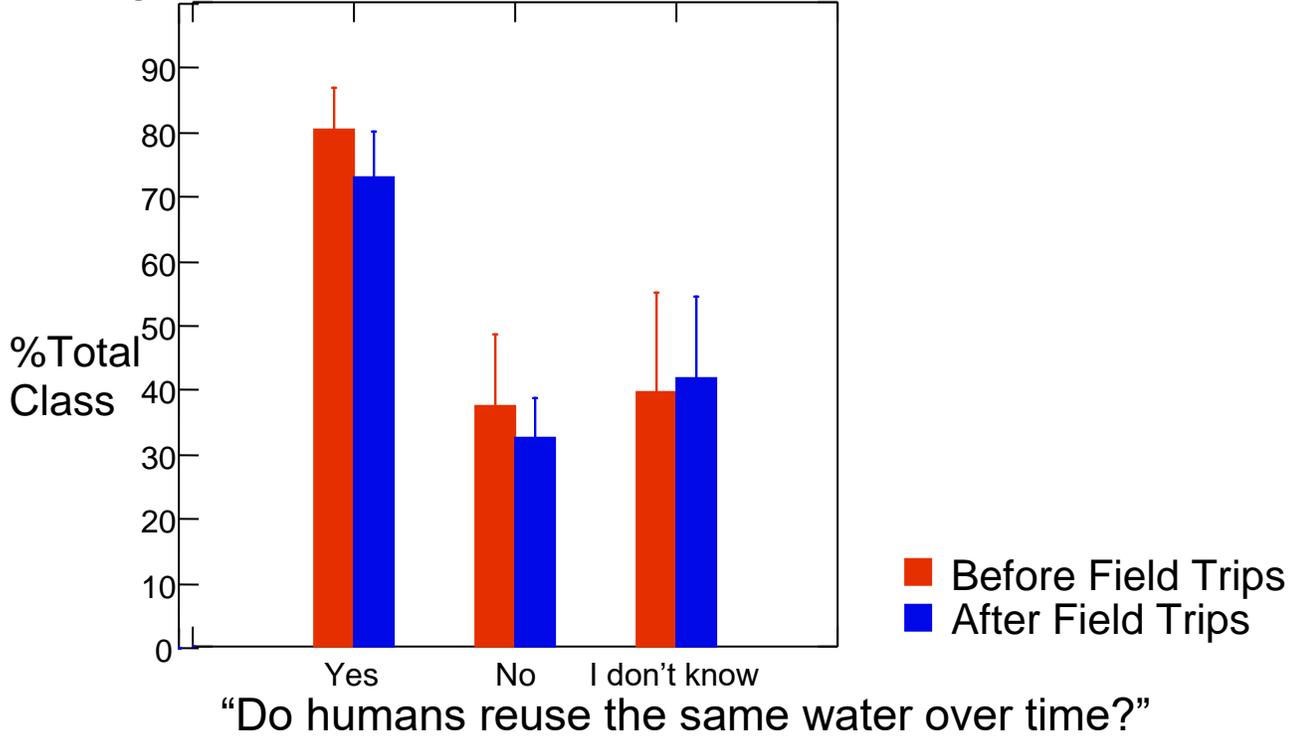


Figure 8b: Pre/Post Question #2 Answer Elections for Non-Title I Classes

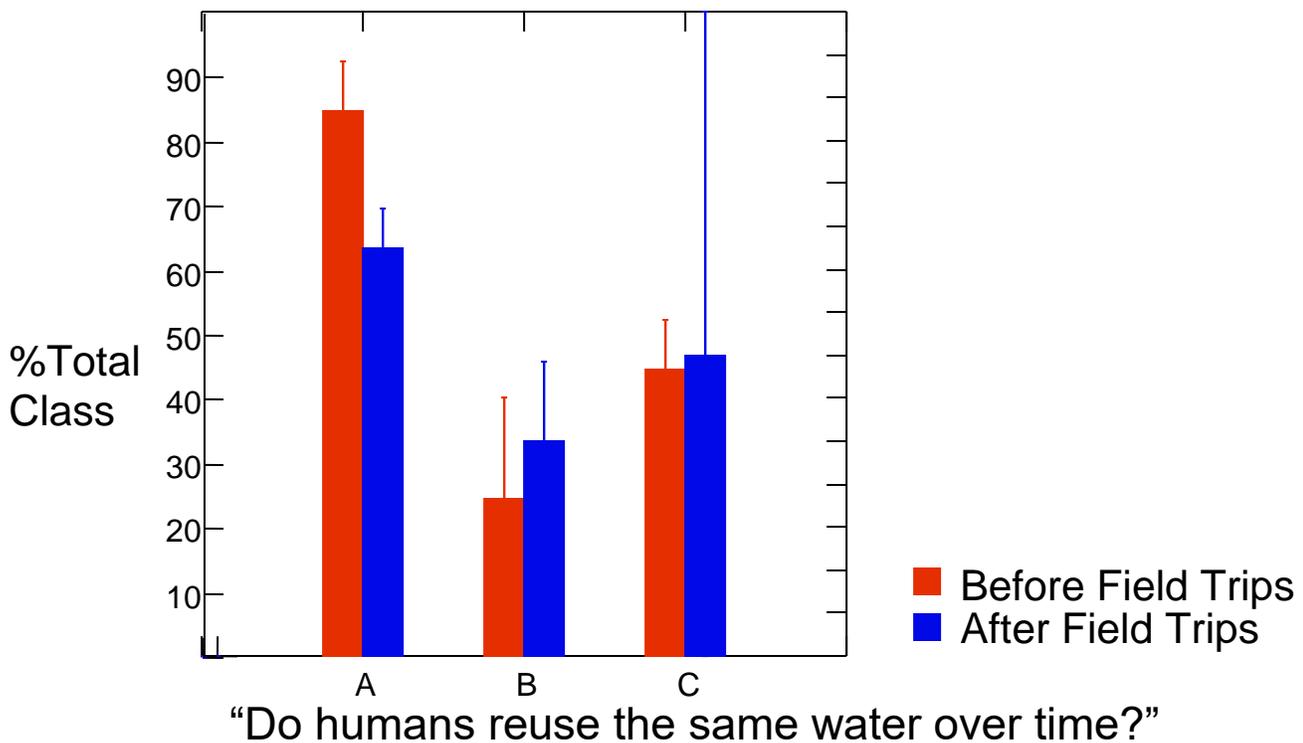


Figure 9: Collated Question #3 Answer Elections (3 choices per student), Years 4-8:

