



**2021-2022**  
**WATER ROCKS!**  
EVALUATION REPORT

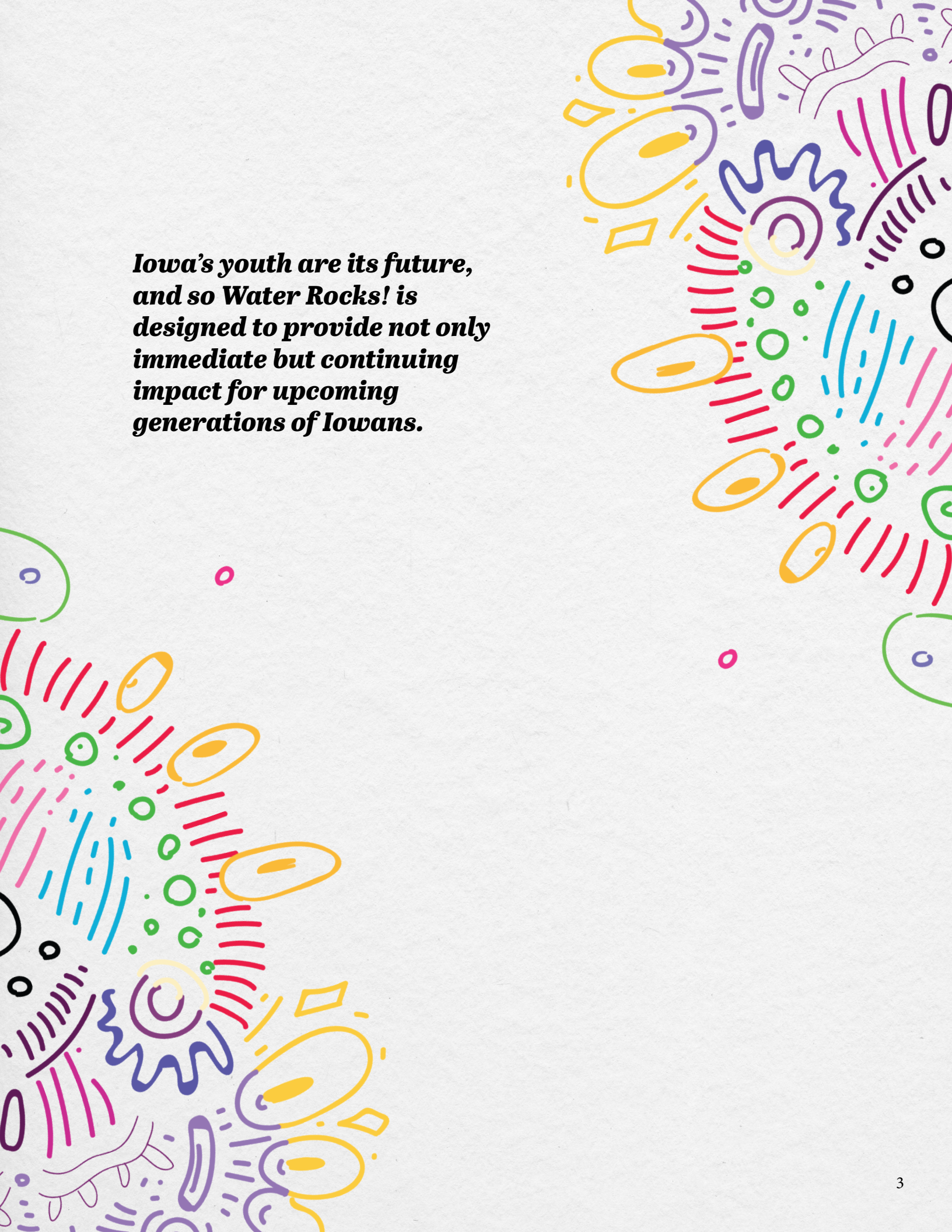
# CONTENTS

- **Executive Summary..... 4-5**
- **Introduction: 10 Years of Water Rocks!..... 6-7**
- **2021-22 School Year Background..... 8-9**
- **Water Rocks! Classroom Presentations..... 10-15**
- **Water Rocks! Live Streaming Virtual Presentations..... 16-21**
- **Water Rocks! Spoken Earth Workshops..... 22-24**
- **Water Rocks! Summits..... 25-26**
- **Student and Teacher Thank-You Notes..... 27-46**

Funding for Water Rocks! comes from the Iowa Department of Natural Resources (United States Environmental Protection Agency/ Section 319 of the Clean Water Act), Leopold Center for Sustainable Agriculture, and Iowa State University Extension and Outreach.

Supplemental support comes from Iowa Learning Farms (collaboration on Conservation Station trailers), Des Moines Water Works, and contributions from ISU County Extension Councils and Soil and Water Conservation Districts statewide.

***Iowa's youth are its future,  
and so Water Rocks! is  
designed to provide not only  
immediate but continuing  
impact for upcoming  
generations of Iowans.***





## EXECUTIVE SUMMARY

Water Rocks! (WR!) continues to make waves statewide as it celebrates 10 years of inspiring young Iowans toward thought, care, and action for the environment around them! Combining sound science with music and the arts, WR! leads the way in providing the next generation with high-energy, high-impact environmental outreach.

During the 2021–22 school year, WR! delivered 148 total school visits, offering 437 total interactive presentations across multiple delivery mechanisms, including classroom presentations (both indoor and outdoor), live streaming virtual presentations, and experimental Spoken Earth workshops. The WR! team engaged with a total of 9,702 students during the 2021–22 school year, all while facing a dramatically altered educational landscape compared to pre-pandemic years.

Even as the 2021–22 school year has posed significant challenges for educators statewide and worldwide, it has inspired further innovation and experimentation in WR! programming. In addition to affirming the continued viability of classroom visits, the school year has shown live streaming to be a strong and lively component of WR!'s educational model—not as a substitute for the in-person learning experiences at the program's heart, but rather as a strategy for further educational opportunities unlimited by weather, pandemic safety concerns, or even geographic distance. Especially when guided by an actively participating teacher, students embrace the experience of a WR! virtual visit, engaging intelligently and creatively with its lesson, its activities, and its crucial action items for continuing conservation impact.

Across multiple interactive and engaging delivery mechanisms, Water Rocks! presentations are making an impact with Iowa's youth. Students' understanding of watersheds (and other similar learning objectives for each topic) has shown substantial improvement after engaging with Water Rocks!, in-person or virtually. At the start of in-person WR! classroom presentations, 48% of students in Grades 3–8 correctly answered a key learning objective question, while that number rose to 89% following the WR! classroom presentation (50% pre-lesson and 91% post-lesson, respectively, for WR! virtual presentations).

Teacher evaluations suggest that Water Rocks! presentations serve as a springboard for deeper discussion of natural resources—and teachers are key partners in engaging youth on issues related to Iowa's water, land, and wildlife. Following WR! classroom presentations, 93% of teachers reported that their students discussed the visit in class afterwards, with discussions primarily centered around the lesson, games and activities. Following WR! virtual presentations, 95% of teachers reported that their students discussed the visit in class afterwards, especially the lesson specifics and crucial action items.

**Iowa's youth are its future, and so WR! is designed to provide not only immediate but continuing impact for upcoming generations of Iowans.** The enthusiastic reception of 2021–22 WR! programming among teachers and students—including strong evaluation improvement rates, warmly worded thank-you notes, and teacher reports of further student discussion and action—indicate that WR! is making a notable impact as it continues to evolve and innovate. More than that, however, the enthusiastic reception also suggests that Iowa's current K–12 students form a generation keenly aware of and interested in their environment, welcoming insights on how natural resources and conservation interact with their lives, and willing and eager to use all branches of STEM and of the arts to better understand the world around them.



***The wider goal of WR! is to foster long-term multigenerational transformation, inspiring all Iowans toward further appreciation of, caring for, and engagement with their world.***

With its varied educational outreach offerings, including signature classroom visits, virtual presentations, experimental workshops, teacher summits, and other events, the WR! team works as part of a ripple effect to spread environmental engagement still further across Iowa, reaching many more Iowans than any one team could directly and inspiring Iowans of all ages to see themselves as citizen scientists and lifelong learners. As it has done for the past 10 years, the WR! team aims to help encourage the further spread of this positive transformation, over the next decade and for generations to come.



## INTRODUCTION: 10 YEARS OF WATER ROCKS!


Water Rocks! (WR!), Iowa State University's award-winning youth water education program, is celebrating ten years of high-energy, high-impact outreach across the state in 2022! The WR! team fosters the interplay of knowledge, caring and engagement among Iowa's youth through a wide array of educational experiences, all designed to inspire long-term multigenerational growth, challenging and inspiring Iowans towards a greater appreciation of our water resources.


Sound science is the foundation of all WR! outreach, delivered in interdisciplinary learning experiences in which music and the arts are strongly involved. This signature combination of STEM (science, technology, engineering, mathematics) and the arts has shaped WR!'s style and guided its approach from the very start.


While the present report focuses on the WR! team's work with schools during the 2021–22 school year, it seems appropriate to begin with a bigger-picture view of this work in context. Included below are key statistics and milestones being celebrated this year as part of WR!'s ten-year anniversary!

### TEN YEARS OF SCHOOL VISITS

---

**163,000**   
students reached via  
Water Rocks! classroom  
presentations and school  
assemblies

**1,388**   
school visits completed  
by Water Rocks! in the  
last ten years

**85%**   
(278 out of 327) of public  
school districts in Iowa  
have been visited by Water  
Rocks!

### COMMUNITY OUTREACH

---

**830**   
visits to community  
events with Conservation  
Station trailers since 2010  
(collaboration with Iowa  
Learning Farms)

**108,000**   
people reached with  
Conservation Station  
trailers since 2010

**100%**   
of Iowa's counties have  
been visited by the  
Conservation Station  
trailers

## OUTREACH TO TEACHERS: THE MULTIPLIER EFFECT

---



**15**

Water Rocks! Summit workshops conducted



**282**

K-12 educators trained via Water Rocks! Summits



**62**

naturalists, conservation and extension educators (from 6 states) trained via Water Rocks! Summits

## VIDEO AND DIGITAL OUTREACH

---

**474,000**



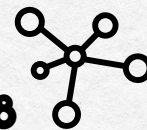
views of educational videos on Water Rocks! YouTube channel

**179,000**



plays of Rock Your Watershed! computer game

**10,948**



subscribers to Water Rocks! e-news

## CELEBRATING TEN YEARS OF WATER ROCKS!

---



Water Rocks! Earth Day Poetry Slam

**WATCH THE HIGHLIGHTS**



Water Rocks!: The Musical

**EXPERIENCE THE SHOW**





## 2021–22 SCHOOL YEAR OVERVIEW

During the 2021–22 school year, the WR! team faced a dramatically altered educational landscape compared to pre-pandemic years. The pandemic has necessarily raised many challenges, but for the WR! team it has also meant many opportunities to refine programming and experiment with new delivery systems. While in-person outreach is the heart of Water Rocks!, virtual delivery methods have also proven to be fruitful and effective for connecting with students. The WR! program has been at the forefront of leading youth water education into a new, varied environment of teaching and learning situations, running the gamut from traditional in-person presentations to virtual events with students tuning in remotely.

All told, over the 2021–22 school year, the WR! team delivered 148 total school visits, giving 437 total interactive presentations across three broad categories: indoor and outdoor **classroom presentations**, live streaming **virtual presentations**, and experimental **Spoken Earth workshops**. The team reached 9,702 total students directly with these presentations.

Reaching K–12 students means reaching a diversity of Iowans. Iowa's youth population is 60+% more diverse than the overall statewide population, with people of color representing 14.9% of the students served by Water Rocks! statewide, compared to 9% of the state's overall population. Thus, WR! presentations are well positioned to interact with a diverse range of Iowans in schools across the state.

In addition, the WR! team conducted an internal assessment this year to better understand the extent to which they have served different schools across the state. As WR! programming is available to schools by request, some schools have been served repeatedly over 10 years of visits, while others have not yet been served directly by WR!. The team therefore launched a concerted effort to reach out to these underserved districts—sending numerous personal emails to teachers and administrators letting them know about WR!'s different outreach opportunities, and prioritizing these underserved schools when scheduling visits in the spring. This targeted outreach was very successful, resulting in spring WR! school visits to 8 public school districts across Iowa which WR! had not previously served. **This brought overall numbers up to having served 278 of the 327 public school districts statewide.** The team will continue targeted outreach to underserved districts in the 2022–23 school year ahead.

Through its varied outreach delivery mechanisms, the WR! team continues to raise awareness statewide on watersheds, water quality, and ways to protect water, land, and wildlife for years to come!





# 2021-22

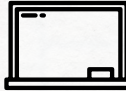
## SCHOOL YEAR NUMBERS AT A GLANCE



### CLASSROOM PRESENTATIONS

Jump to [page 10](#) for Classroom Presentations

**68**   
school visits


**227**   
total classroom presentations

**5,144**   
total students participated


### VIRTUAL PRESENTATIONS



Jump to [page 16](#) for Virtual Presentations

**68**   
virtual school visits  
(including 2 visits  
streaming to 16  
schools out-of-state)

**178**   
live streaming presentations


**3,919**   
total students participated



### SPOKEN EARTH WORKSHOPS

Jump to [page 22](#) for Spoken Earth Workshops

**12**   
school visits

**32**   
workshop presentations (mix  
of virtual and in-  
person workshops)

**639**   
total students participated

## WATER ROCKS! CLASSROOM PRESENTATIONS

The WR! team travels to schools across Iowa to offer its signature in-classroom presentations. In the 2021–22 school year, **WR! completed 68 school visits, offering 227 classroom presentations and engaging 5,144 total students.**

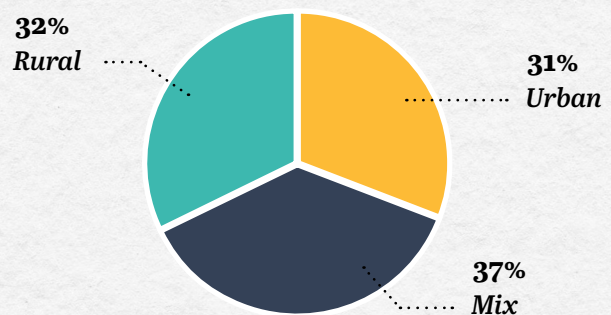
To accommodate varied pandemic-safety requirements across the state’s school districts, presentations were hosted at outdoor school locations in Fall 2021, moving indoors to classrooms and gyms in Spring 2022. During the winter months, the WR! team offered exclusively virtual presentations; see page 16 for further information on virtual presentations.

### Presentation Format

Water Rocks!’ signature classroom presentations are designed to bring high-energy, high-impact science lessons to schools and individual classrooms statewide. Schools visited cover a wide sample of Iowa’s urban, rural, and mixed communities. (The WR! team uses general population thresholds of <1000 for rural communities and >3000 for urban communities, making judgement calls as needed to control for increasing consolidation of school districts.)

*Presentations per community type*

*n=227*



Each WR! school visit is led by a team of two to three Iowa State University staff and/or student interns, presenting to one class of K–8 students at a time. (Classes are limited to a maximum of 30 students to ensure the greatest opportunity for hands-on learning, interaction, and dialogue.) The team often gives several presentations back-to-back in order to reach multiple classes and grades. Each presentation runs approximately 45 minutes, and features:



**a science-based lesson on a topic related to water quality and natural resources**



**high-energy, hands-on, interactive student activities reinforcing the lesson topics**



**practical, immediately accessible action items for continuing conservation impact**

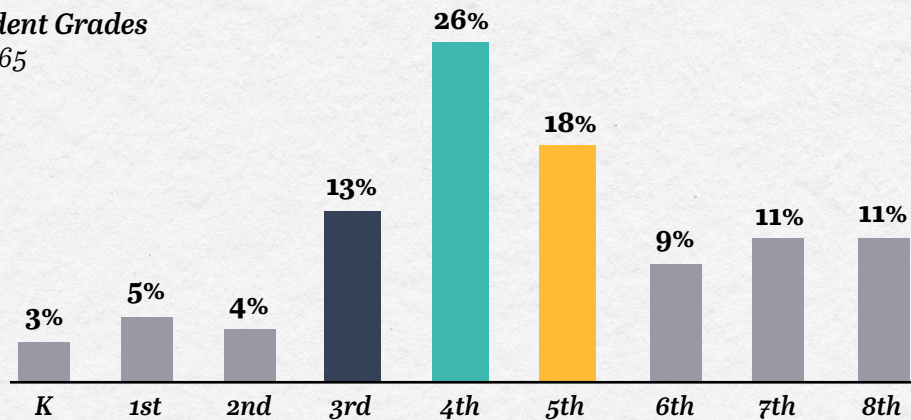


**on-the-ground student evaluation and an invitation for teacher evaluation**

## Presentation Offerings

The WR! team offers multiple learning modules, and works with teachers to determine which module(s) best fit the audience and the time constraints for the event. Each lesson is adapted for grade level appropriateness and is scaled up or down when visiting multiple grades in the same school.

**Student Grades**  
n=265



Note: n value reflects that some presentations reached multiple grades

For students in Grades 3–8, the primary target for WR! outreach, three modules were offered this year, all following the format described above:

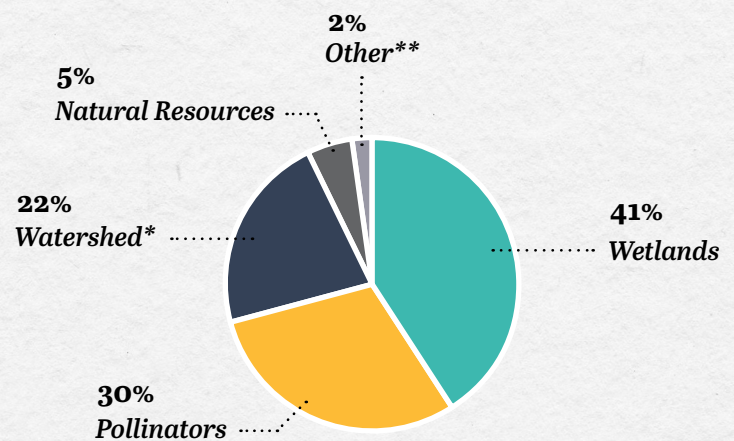
- We All Live in a Watershed
- The Wonderful World of Wetlands
- The Power of Pollinators

These three educational modules for Grades 3–8 were utilized strategically for the versatility of their interactive activities and adaptability to indoor, outdoor, and virtual settings.

Students in Grades K–2 were offered their own module, Exploring Natural Resources, which introduces the concepts of natural resources and conservation using storytelling, games, and songs performed live, all interwoven with the canine mascots of the Conservation Pack.

All modules are aligned with the Next Generation Science Standards, and all are accompanied by pre-visit lesson suggestions for teachers. Teachers are also given additional print and video resources for later classroom use (e.g. Wetlands Bingo game package, activity book linked to WR!’s Harmony Brook Watershed video series, activity book linked to WR!’s Conservation Pack video series, etc.).

**Modules Presented**  
n=227



\*We All Live in a Watershed module was offered in Spring 2022 only (indoor visits), as this module’s games and activities are not conducive to outdoor use.

\*\*“Other” includes a one-off revival of WR!’s Biodiversity module taught in previous years, and 4 special “Emerging Farmers” presentations for Grades 9–12.

## Evaluation Methodology

To gauge effectiveness in delivering learning objectives, the WR! team collects student evaluation data during every presentation for Grades 3–8. (No student evaluations are administered for Grades K–2.) Over the last several years, the team has evolved an evaluation method that does not require parental permission and that can be administered in the limited time available for a single presentation.

For these student evaluations, a multiple-choice “trivia question” is asked both before and after the lesson is delivered. Student answers are collected by “secret vote,” with students closing their eyes, putting their heads down, and raising their hands for their chosen answer. This pre- and post-assessment question is fine-tuned to focus on one of the important learning objectives for each module:

### ***We All Live in a Watershed***

What is a watershed?

- A. A shed that holds water
- B. A tower with water inside that cycles through
- C. An area of land that drains to a common water body
- D. A manmade lake

### ***The Wonderful World of Wetlands***

What are the three main jobs of wetlands?

- A. Cleaning the air, filtering water, producing minerals
- B. Producing minerals, hydroelectricity, storing water
- C. Filtering water, storing water, habitat
- D. Growing vegetables, cleaning the air, habitat

### ***The Power of Pollinators***

What is mutualism?

- A. Saving and protecting bees and butterflies
- B. A relationship between living things where one is helped and one is harmed
- C. The process of sun and rain helping plants grow
- D. A relationship between living things where each one helps the other

The WR! team also asks for teacher feedback for every presentation. Each teacher is given a one-page evaluation questionnaire, a postage-paid envelope, and small tokens of appreciation (e.g., WR! stainless steel water bottle, WR! stocking hat during the cooler weather months, and/or WR!-branded sunglasses) as incentives for the evaluation questionnaire to be returned. The evaluation questions are predominately qualitative, open-ended questions, focused on student impacts:

1. *What was the most important thing students learned during the Water Rocks! visit?*
2. *Was this a new concept? If no, was this concept taught in an effective way that reinforced the prior lesson?*
3. *After the Water Rocks! visit, what was one thing that students discussed?*
4. *After the Water Rocks! visit, what question(s) did students ask?*
5. *What was your favorite part of the Water Rocks! visit?*
6. *Will you follow up the Water Rocks! visit with additional discussion of the concepts that were covered?*

## Student Evaluation Results

For the student evaluations, the WR! team measures success in delivering learning objectives by noting the rise in correct answers pre-lesson to post-lesson. (Note that the n values, counting final evaluation answers, are somewhat different than total students reached; K–2 students are not included, and some 3rd–8th graders opted out of evaluation by not raising their hands.)

Module	Pre-	Post-
We All Live in a Watershed (n=940)	53%	<b>96%</b>
The Wonderful World of Wetlands (n=1,636)	51%	<b>88%</b>
The Power of Pollinators (n=1,260)	42%	<b>88%</b>
All modules (n=3,836)	48%	<b>89%</b>

**Across all modules, 89% of students were able to correctly answer the learning objective question following the WR! presentation, up from 48% at the start of the presentation.**

Over the course of a short 45-minute interactive presentation, WR! is making an impact!

All three modules show marked success with student understanding of the learning objectives. The Pollinators module shows the most dramatic change, with the number of students recognizing mutualism more than doubling post-lesson—a sign that, even among classes where pollination has already been discussed, the idea of mutualism may be unfamiliar.

Improvement rates are strong for all types of community visited (urban, rural, or mixed), with urban students showing the least familiarity with learning objectives pre-lesson and the strongest improvement post-lesson.

Community	Pre-	Post-
Urban (n=1,272)	45%	<b>88%</b>
Mix (n=1,526)	53%	<b>91%</b>
Rural (n=1,038)	47%	<b>89%</b>

In addition, the “trivia question” methodology itself has proved notably popular with both students and teachers. Students have repeatedly asked for further trivia questions, both during the lesson and afterward; to fill this need, WR! now offers teachers additional multiple-choice questions on activity sheets for use post-lesson. Several teacher evaluations have cited the rounds of “trivia” as one of the favorite games in the lesson!

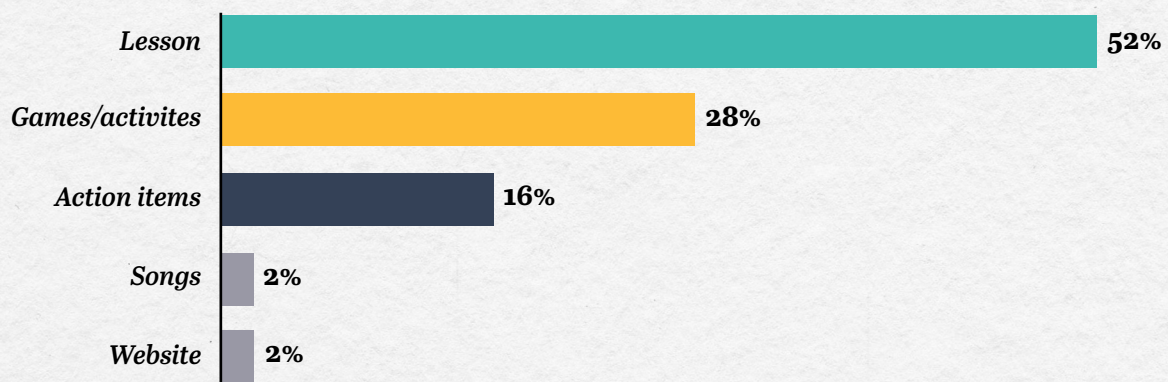
## Teacher Evaluation Results

For in-person visits this school year, WR! received 65 teacher evaluations from 41 schools, making up a school response rate of 61%. While the teacher evaluation is qualitative by design, here are some of the quantifiable take-home points (n=65):

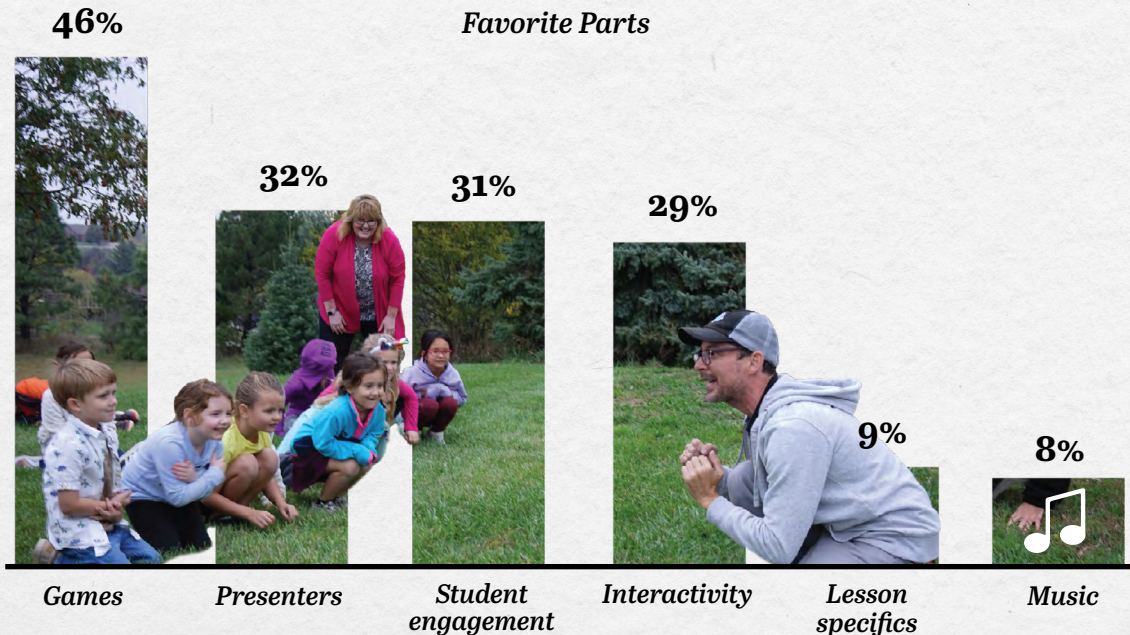
- 83% of teachers mentioned one or more of WR!'s key learning objectives for the module
- 65% said that this objective was a new concept
  - Of the 35% who said it wasn't new, 100% said it was taught effectively
- 91% said they would follow up with more discussion of the topic covered

In addition, 93% of teachers reported that their students discussed the visit in class afterwards, with the most salient points breaking down as follows.

### Student Discussions



97% of teachers also listed one or more personal favorite parts of the visit, as follows; note that multiple responses could be written in:



Several of the survey's open-ended questions allow teachers to give more detailed reports on student impact. Here are some excerpts from teacher evaluations received this year:



“*My favorite part was seeing my students have fun and learn at the same time. **They asked if you could come again!***

*(4th Grade Teacher, Grant Elementary, Muscatine)*



“*The interaction between presenters and students was **awesome!** A couple kids who are pretty quiet were very engaged so that was very exciting!*

*(5th Grade Teacher, Grundy Center Community School District)*



“*The instructors were very engaging and fun! **The kids could relate well to them and the activities and content were memorable.***

*(K–6th Grade TAG Teacher, Aldrich Elementary, Cedar Falls)*



“*Students learned that by taking care of our environment, we are keeping it safe for humans, but also Monarch butterflies and bees. **[After the visit,] students talked about plants they could plant around their house for the Monarch.** Students were asking each other about different plants. Thank you for your time. You gave an excellent presentation.*

*(4th Grade Teacher, Seton Catholic School, Peosta)*



“*They really enjoyed the activity, but were learning as well. **Adding that movement aspect really helped it to stick!***

*(5th Grade Teacher, St. Mary's Catholic School, Storm Lake)*



“*Students learned an **important word—watershed—and learned the importance of water to humans.** The presenters did a great job of presenting the material and keeping the students' attention. They kept the students active by asking questions and doing activities.*

*(4th Grade Teacher, Gehlen Catholic School, Le Mars)*



“*I loved the visuals, games, and the enthusiasm of the presenters. **[The class] loved hearing the facts about each living thing.***

*(4th Grade Teacher, North Mahaska Community School District)*



“*We will have a field trip to local watersheds next week. **They will apply this foundation and make that trip more meaningful.** The group had great enthusiasm!*

*(6th–8th Grade Teacher, St. Mary's Catholic School, Storm Lake)*



“*As a teacher, I loved seeing and hearing **[the presenters']** passion and appreciated their ability to adjust to the different age groups and current knowledge. I am currently getting connected with our local nature area to provide authentic in-person experiences now that **[the students]** have more background.*

*(4–8th Grade TAG Teacher, Rock Run Elementary School and Riverbend Middle School, Iowa Falls)*



“*I love how interactive the program was and **got all kids involved.***

*(5th Grade Teacher, Stanton Community School District)*



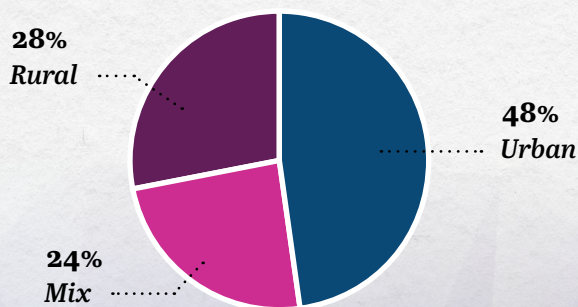
## WATER ROCKS! LIVE STREAMING VIRTUAL PRESENTATIONS

In early 2022, given the combination of pandemic safety considerations and winter weather conditions, in-person indoor school visits were not a viable option. Instead, the WR! team built on an approach successfully piloted in the 2020–21 school year, offering live streaming virtual presentations originating on-campus at ISU. This school year, WR! completed virtual school visits with 68 schools, offering 178 presentations and engaging with 3,919 total students.

### Presentation Format

WR! Live Streaming virtual presentations were available to schools across the state, with the WR! team reaching urban, rural, and mixed schools statewide. (Communities are designated using the same parameters as for in-person visits.) The virtual format has also allowed the WR! team to readily reach schools and students outside of Iowa, with the team completing out-of-state virtual presentations with students in Utah and South Dakota this academic year.

*Presentations per community type*  
n=178





Each WR! virtual presentation is offered by a team of two ISU staff and/or student interns; one of the team members presents to students on-camera, while the other controls the technology that allows the live feed to include pre-prepared material, including educational music videos, in-the-field interviews with topic experts, graphics and text for emphasis, and other relevant special features. To take full advantage of the virtual format, each presentation uses an attention-catching theme throughout (a news broadcast, game show, or spy mystery, depending on the module). Notably, the use of pre-recorded videos allows the students to be “transported” to different field sites—even in the winter months, when outdoor field trips in Iowa are far from feasible!

Since the virtual format is versatile, the team can accommodate multiple days of virtual presentations and group multiple classes together simultaneously. The team also often gives several presentations back-to-back in order to reach multiple classes and grades. Each presentation runs 30 minutes.

For Grades 3–8, the presentations are hosted on private YouTube links; the WR! team coordinates with teachers ahead of time to determine whether each participating student has access to their own device (a computer or tablet) or if the presentation will be projected on screen in the classroom. Interactivity is provided through “Virtual Scavenger Hunts” hosted on a Google Doc the students or teacher can edit; in the Virtual Scavenger Hunts, students are challenged to provide their own answers to open-ended, topic-specific questions. This format allows the presentation to have the same basic features as the live classroom visits:

- a science-based lesson on a topic related to water quality and natural resources classroom module)
- high-energy, interactive student activities reinforcing the lesson topics
- practical, immediately accessible action items for continuing conservation impact

For Grades K–2, it is stipulated that the teacher will project the presentation, and no direct interactivity is attempted with students; rather, the presenter provides engagement by personalizing the lesson for the students’ class and local area, and by featuring storytelling, video excerpts, and simple activities tailored to their age bracket.

***"It was effortless  
for the teacher.  
Lots of great  
information with  
effective visuals  
and presenters."***

---

5th Grade Teacher, Laura Ingalls Wilder  
Elementary, Indianola

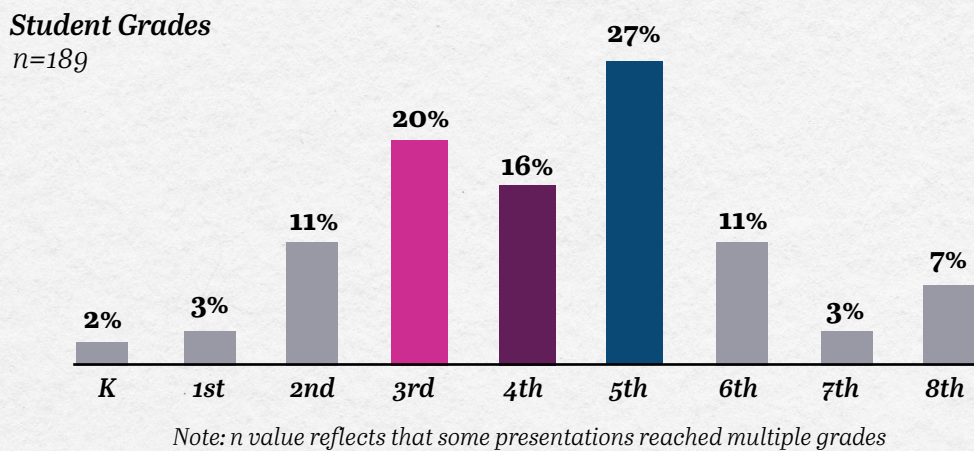


## Presentation Offerings

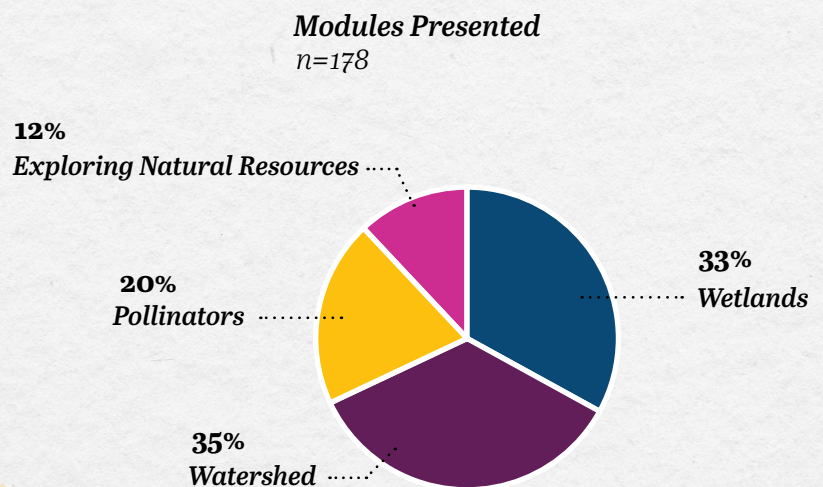
As with in-person visits, the WR! team works with teachers to determine which module(s) best fit the audience and the time constraints for the event. This school year, all three classroom topics for Grades 3–8 were adapted for virtual presentation:

- Watersheds: Unlocking the Secrets to Cleaner Water (equivalent to the We All Live in a Watershed classroom module)
- The Wonderful World of Wetlands
- The Power of Pollinators

Students in Grades K–2 were offered an Exploring Nature module, similar in concept to the Exploring Natural Resources classroom presentation and introducing students to the terms watershed, pollution, habitat, and conservation.



Like their in-person equivalents, all modules are aligned with the Next Generation Science Standards, and all are accompanied by pre-visit lesson suggestions for teachers.



## Evaluation Methodology

Student evaluation is based on the classroom approach for Grades 3–8, adapted for virtual platforms. (Again, no student evaluations are administered for Grades K–2.) The same module-specific “trivia questions” and pre- and post-lesson timings are used as for the classroom presentations. If teachers are projecting the presentation and editing the Google Doc, they record student answers there using the “secret vote” method of classroom presentations. If students are accessing the Google Doc from separate devices, they fill out the evaluation individually online via Qualtrics.

The WR! team also asks for teacher feedback evaluation for every virtual visit, sending the same one-page evaluation as is given for classroom presentations.

## Student Evaluation Results

As with the classroom evaluations, the WR! team measures success in delivering learning objectives by noting the change in correct answers pre-lesson to post-lesson. For the virtual modules, these changes are as follows:

Module	Pre-	Post-
Watersheds: Unlocking the Secrets to Cleaner Water (n=1,505)	54%	<b>95%</b>
The Wonderful World of Wetlands (n=845)	55%	<b>89%</b>
The Power of Pollinators (n=535)	34%	<b>85%</b>
All modules (n=2,885)	50%	<b>91%</b>

Results for virtual presentations are broadly comparable to those for in-person classroom visits, with **91% of students able to correctly answer the learning objective question following the WR! virtual presentation**, up from 50% at the start of the presentation. WR! Live Streaming virtual presentations are making an impact!

For the Watershed and Wetlands modules, pre-lesson familiarity was higher for virtual evaluations than for the equivalent classroom evaluations, perhaps suggesting strong science teaching and/or use of pre-lesson suggestions among the schools most eager to request streaming offerings. As with classroom visits, the Pollinators module shows the most dramatic change, with the number of students familiar with the term “mutualism” more than doubling post-lesson.

Improvement rates are strong for all types of community visited, albeit different than equivalent rates for classroom visits. Whether these differences imply a variety in virtual evaluation reception among community demographics, and/or again specific interest among the selection pool of schools interested in virtual offerings, may merit follow-up work.

Community	Pre-	Post-
Urban (n=1,574)	55%	<b>93%</b>
Mix (n=600)	44%	<b>91%</b>
Rural (n=711)	45%	<b>88%</b>

Finally, virtual evaluations can also be measured by whether the presentation was made to individual devices (each student providing their own answers) or streamed by the teacher (who would report student answers collectively). The individual devices format was initially offered out of necessity in the previous school year, when many schools were learning remotely with students physically dispersed. With state policy bringing students back to school fully in-person in the 2021–22 school year, the WR! team continued to offer both delivery mechanisms—individual devices and teacher streaming—to provide teachers with maximum flexibility.

While both formats show competent results, presentations streamed by teachers show markedly stronger post-lesson evaluations and overall improvement rates, suggesting that students benefit from the added focus provided by a teacher actively participating. For the upcoming 2022–23 winter season of virtual visits, the WR! team plans to offer the teacher-streaming format exclusively to ensure optimal learning.

Format	Pre-	Post-
Individual devices (n=906)	51%	<b>86%</b>
Teacher streaming (n=1,979)	50%	<b>94%</b>

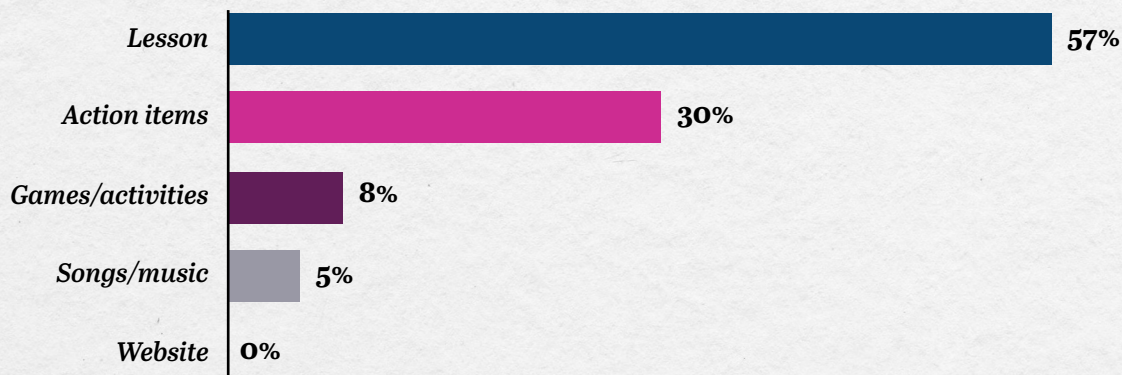
### Teacher Evaluation Results

For virtual visits this school year, WR! received 39 teacher evaluations from 24 different schools, making up a school response rate of 35%. As with the classroom presentation evaluations, several take-home points can be quantified (n=39):

- 80% of teachers mentioned one or more of WR!’s key learning objectives for the module
- 74% said that this objective was a new concept
  - Of the 26% who said it wasn’t new, 100% said it was taught effectively
- 95% said they would follow up with more discussion of the topic covered

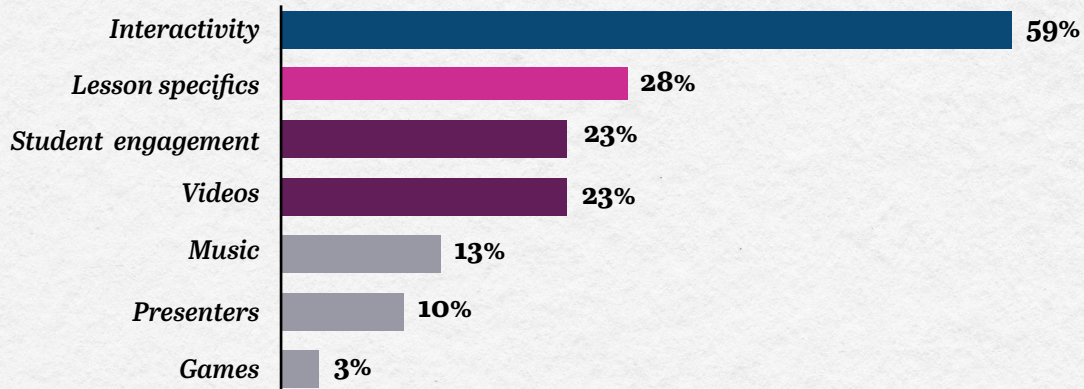
95% of teachers reported that their students discussed the visit in class afterwards; results follow. Compared with WR! classroom presentations, there was less discussion of games and activities, understandable given the screen-bound nature of the virtual presentations. However, **there was considerably more discussion of action items, suggesting that the virtual format puts this important component of WR! modules into strong focus.**

### Student Discussions



100% of teachers also listed one or more favorite parts of the visit (multiple elements could be listed). Results suggest that teachers found the format satisfactorily interactive as well as educational:

### Favorite Parts



“

**It was effortless for the teacher.** Lots of great information with effective visuals and presenters.

(5th Grade Teacher, Laura Ingalls Wilder Elementary, Indianola)



“

I liked how it fit so well with our third grade science standards. **After the visit, students talked about the need to plant plants around our school to attract pollinators.**

(3rd Grade Teacher, Colo-NESCO Community School District)



“

**The interactive nature of the presentation was great!** The students were VERY engaged!

(3rd Grade Teacher, Carpenter Elementary, Monticello)



“

The most important thing students learned was that many natural elements rely on each other for their mutual benefit and that as humans we rely on the work of pollinators for our food and the balance they bring to our natural environments. After the visit, students asked about planting milkweed for monarch butterflies in our area. **My favorite part was that it was interactive and kept the students actively involved rather than just observing a presentation.**

(4th Grade Teacher, Pella Christian Grade School, Pella)



“

**Afterward, students talked about how we can remediate the water pollution problem.** We looked up images of Dubuque's watershed to see where each of us lives.

(8th Grade Teacher, Eleanor Roosevelt Middle School, Dubuque)



“

I love that [the presenter] made it very personal by commenting about wetlands around Carroll. **I like how the presenters addressed comments right away. Very cool for the kids to see.**

(5th Grade Teacher, Kuemper Catholic School, Carroll)

## WATER ROCKS! SPOKEN EARTH WORKSHOPS


The WR! program's signature classroom presentations and Live Streaming virtual presentations were complemented this year by Water Rocks! Spoken Earth. These pilot workshops for Grades 5–12 combined solid scientific content with spoken word poetry, literature, art, popular culture, and advocacy. In the 2021–22 school year, WR! completed Spoken Earth workshops on 12 school visits, presenting 32 Spoken Earth workshops and engaging with 639 total students.

### Presentation Format

For maximum versatility in outreach, Spoken Earth workshops were offered both virtually over Zoom and in-person at schools. Each workshop lasted 40 minutes, with multiple presentations often offered back-to-back in order to reach multiple grades and/or multiple sections. Workshops were limited to a maximum of 30 students to provide the greatest opportunity for interaction, discussion, and sharing of students' original spoken word poetry.

The workshop format, co-led by WR! team members and a professional spoken word artist, interleaved arts and science in a fast-paced interactive session:

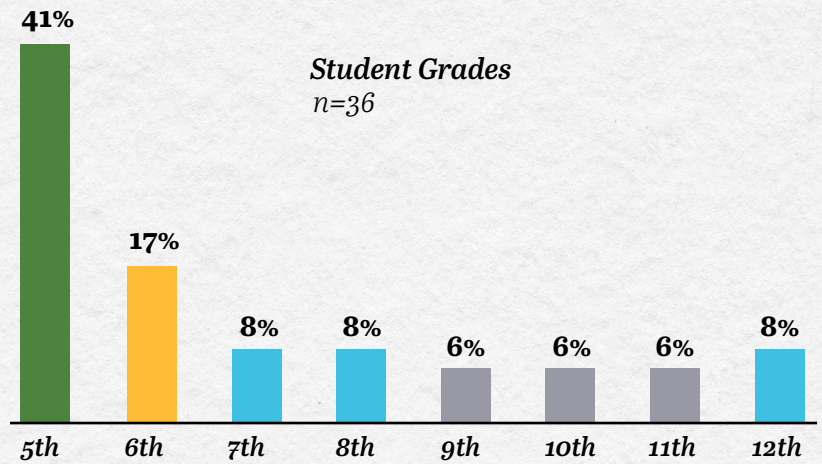
- introduction to the history and techniques of spoken word poetry
- lesson on water quality, pollution challenges, and conservation endeavors
- practical, immediately accessible action items for continuing conservation impact
- guidance for students to write poetry inspired by the lesson and action items
- poetry sharing session in which students perform their work as spoken word



**"We need to be doing more of this type of integration of art and science—and with Spoken Earth, the synthesis was already happening."**

Karen Downing, language arts teacher,  
Valley High School

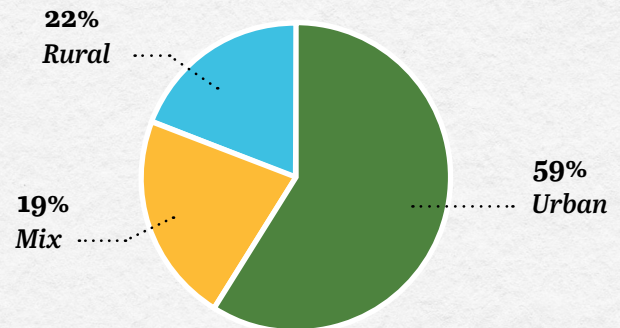
The Spoken Earth content was designed for a slightly older age bracket than WR!’s other presentations, aimed predominantly at middle school and high school students. (Note that the majority of visit requests and therefore visits were at the young end of the middle school range, for 5th graders, perhaps reflecting preexisting familiarity with WR! programming among teachers of that grade.) Each workshop was adapted live for grade level appropriateness, with workshop leaders scaling content up or down when visiting multiple grades in the same school.



Note: n value reflects that some workshops reached multiple grades

For this pilot program, the majority of visited schools were in urban communities. However, requests from mixed and rural communities were also welcomed, and several schools representing those communities were visited.

**Presentations per community type**  
n=32



### Student Impact

Due to the pilot-program nature of Spoken Earth, as well as to the necessary time constraints of the 40-minute workshop format, it was opted not to include a formal evaluation component. However, reports from teachers, as well as the quality of much student work, suggest a positive impact on student learning. Here are some comments from teachers at Valley High School in West Des Moines:



**“ We need to be doing more of this type of integration of art and science—and with Spoken Earth, the synthesis was already happening. Many of the kids who participated ... were science-oriented, and the structure of the workshop made it easy for them to quickly grasp the environmental content, but it also allowed them the freedom to apply their own creativity.**

(Karen Downing, language arts teacher, Valley High School)



**“ Each [10th–12th grade] student wrote an original poem on a theme of conservation or water use in Iowa. It was neat to see them get into it, and I was very pleased that so many of them were inspired to write and express their feelings.**

(Blythe Stanfel, creative writing teacher, Valley High School)

Here is an example of a student poem written during a Spoken Earth workshop:

### **HARMFUL WAYS OF HUMANS**

I inhabit the soil  
Slipping through each fiber of dirt  
It used to be beautiful  
Quiet and clean  
Breathable  
I can't move not one inch without being stopped by trash  
The water that seeps into my home is now cluttered with  
everything I used to be scared of  
I have been forced to live and adapt  
Forced to succumb to human carelessness  
Do I not matter?  
Did they forget I was down here?  
I will soon suffocate from their harmful ways  
I will become filled with toxic waste  
I wish I could give them a taste

(12th Grade Student, Valley High School, West Des Moines)



## WATER ROCKS! SUMMITS

The Water Rocks! Summits are two-day professional development workshops, designed to multiply WR's reach by sharing knowledge and teaching strategies with K–12 classroom teachers and extension/environmental educators. Following a multi-year hiatus due to the COVID-19 pandemic, two WR! Summit workshops were offered at Iowa State University in 2022, June 16–17 and June 23–24. This year's workshops were attended by 26 educators in total, representing 13 school districts across Iowa, 2 ISU Extension and Outreach county offices, 1 county conservation board, and 2 out-of-state conservation organizations.

**Each workshop included talks from guest speakers, hands-on activities, games, videos, and tried-and-tested recommendations for teaching environmental lessons to different ages of students.** Twenty-six total educators participated in the 2022 Summit workshops, representing a broad statewide distribution, a balance of urban/rural school districts, and a variety of grade levels. Each participating school or organization received a complimentary activity kit, valued at over \$800, featuring WR!'s original educational modules, materials, activities, and games.



The WR! Summit workshops were evaluated on multiple levels, including staff event evaluation, post-workshop participant reflections, and a pre-event and post-event self-evaluation indicating participants' knowledge of and comfort teaching different environmental topics. On the self-evaluations, educators reported coming in with moderate background knowledge of water quality, soil health, and Iowa's ecosystems, with an average pre-assessment score of 54/100 (n=26). After participating in the 2022 Water Rocks! Summits, educators' proficiency and understanding saw substantial improvement, with an average post-assessment score of 80/100 (n=26).

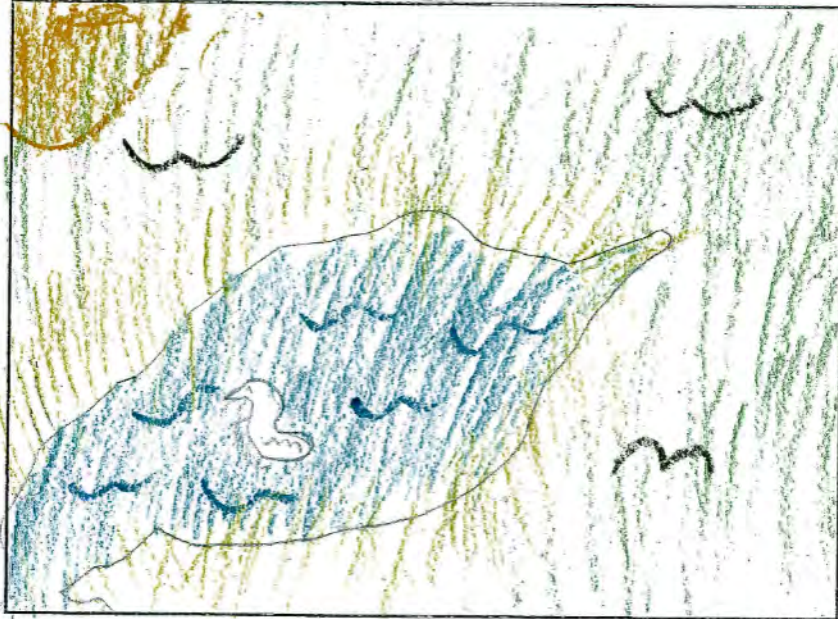
Proficiency Indicator (Points Possible)	Pre-Assessment Average (n=26)	Post-Assessment Average (n=26)
Questioning, Analysis, and Interpretation (30)	13	<b>17</b>
Knowledge of Environmental Processes and Systems (40)	25	<b>40</b>
Understanding and Addressing Environmental Issues (10)	4	<b>6</b>
Personal and Civic Responsibility (10)	4	<b>6</b>
Emphasis on Education, not Advocacy (10)	8	<b>11</b>
Total Score (100)	54	<b>80</b>

Water Rocks! has now completed 15 Water Rocks! Summit workshops to date. Collectively, since 2014, **Water Rocks! Summit workshops have reached 282 teachers, 14 middle school/high school students trained as peer mentors, and 62 extension/environmental educators**—multiplying the impact of Water Rocks!' engaging youth water education efforts across the state, across the Midwest region, and across generations!



## STUDENT AND TEACHER THANK-YOU NOTES

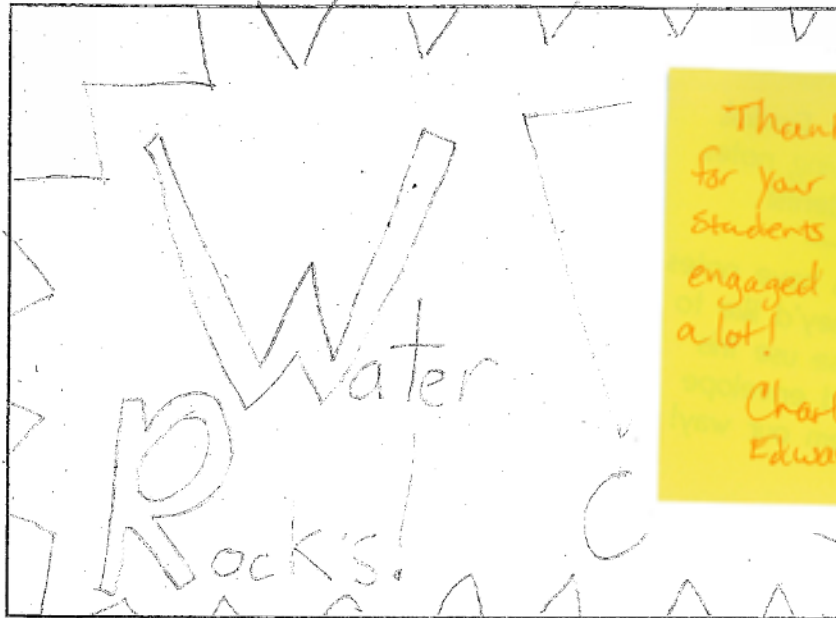
NAME: Aditi



today me and my class went to  
conservation station AKA water rocks!  
It was really fun they taught  
us filter water, storing water, habitat and  
about migrate. And we played hopscotch!  
it was fun. For animal to live they need  
food water and a home.

~~Chat~~ Elic

Example  
of a  
Wetland

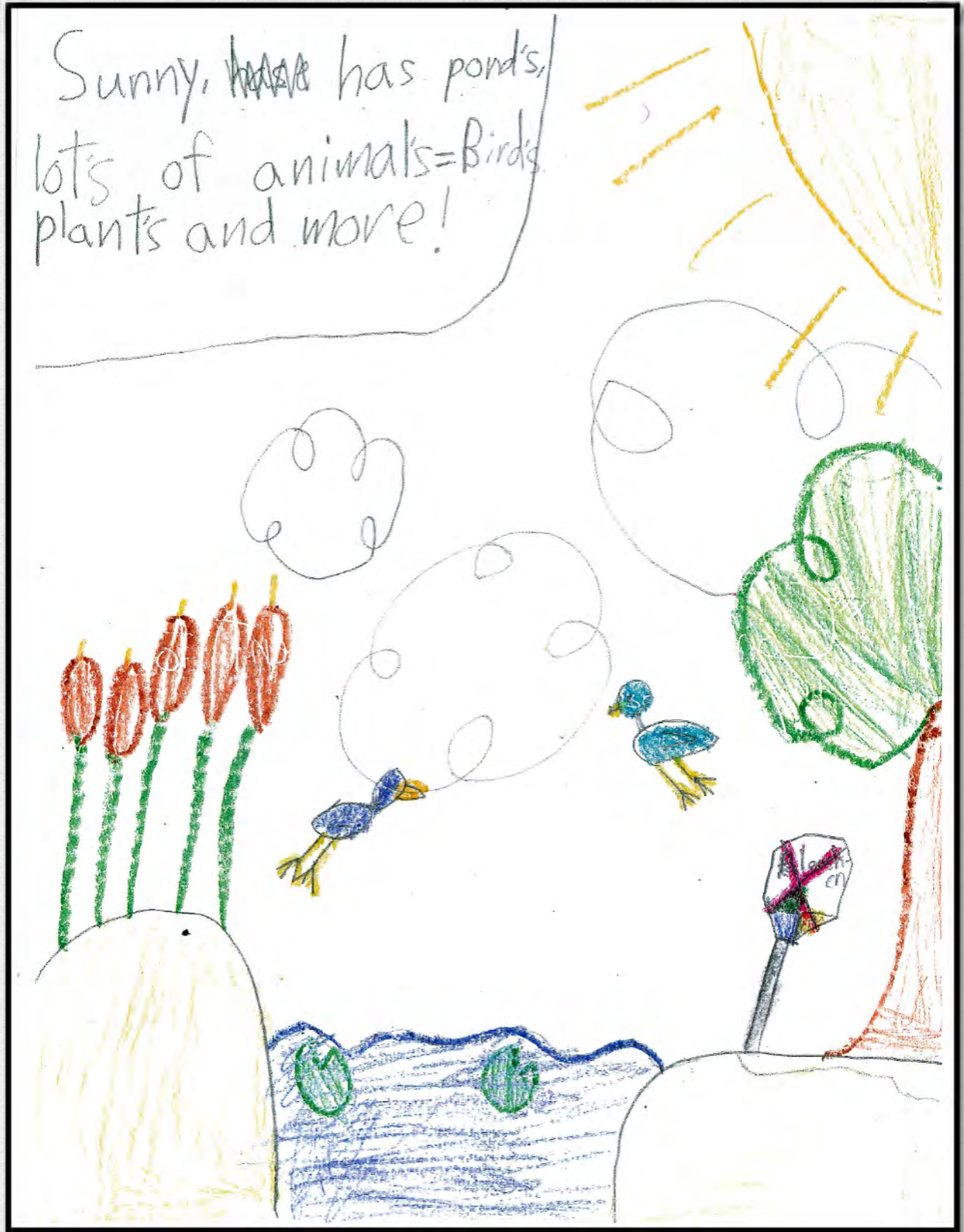


Thanks so much  
for your visit. The  
students were totally  
engaged and learned  
a lot!

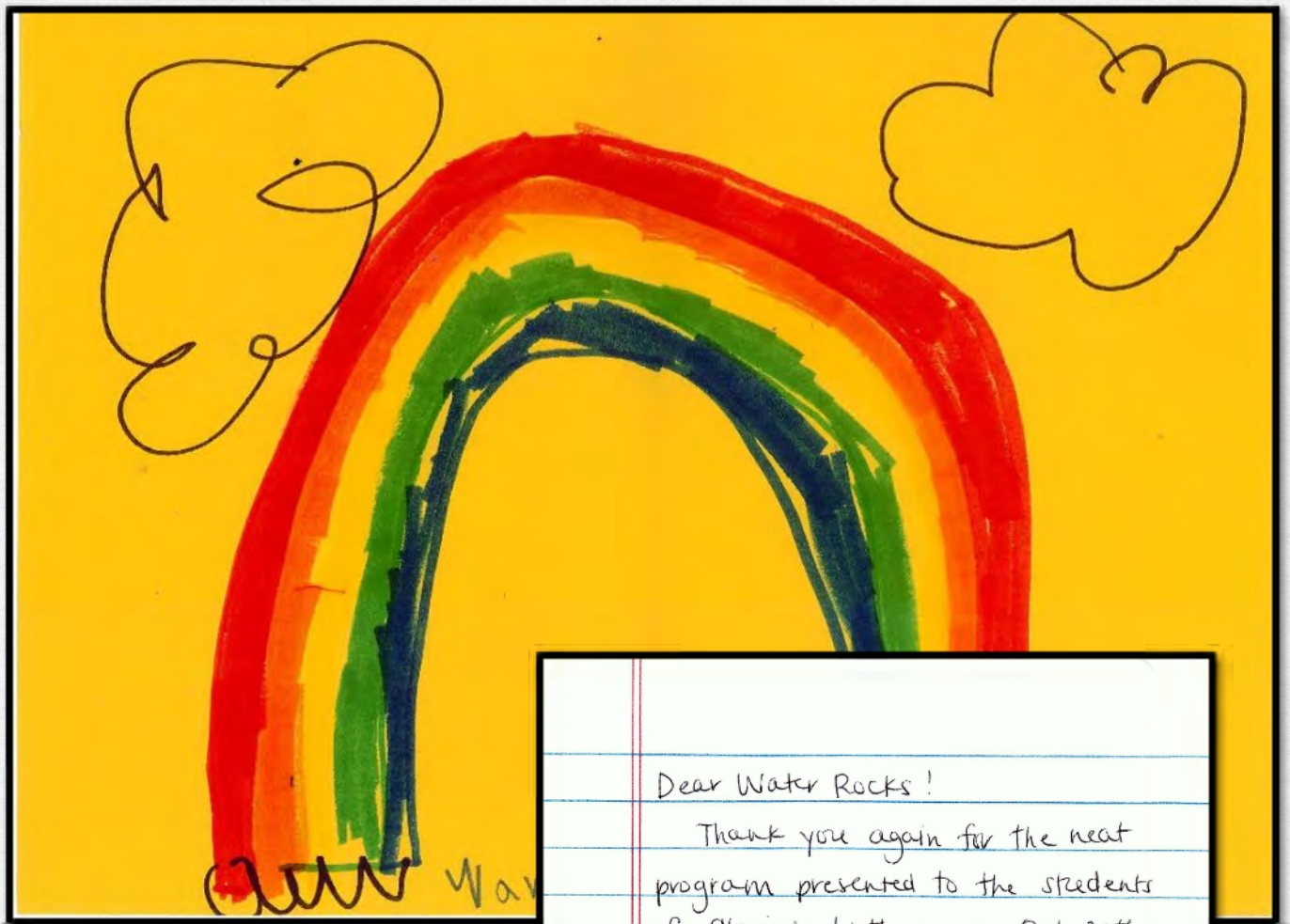
Charli Hanway  
Edwards 3<sup>rd</sup> grade

<sup>the</sup> Conservation station went to  
my school! My school is called  
Edwards Elementary. Did you know  
that there is as much animals in  
wetlands than the amizon rain  
forest! You can look on the back  
to see what a wetland looks like.  
We also played migrashen hoop scooch.  
And only 5 pepol won! And I was one  
of them!

Sunny, ~~here~~ has ponds,  
lots of animals=Birds,  
plants and more!



Edwards Elementary School, Ames



Clarinda Lutheran School

Dear Water Rocks!

Thank you again for the neat program presented to the students of Clarinda Lutheran on Oct. 20th. They so enjoyed it and talked about it afterwards. It was engaging and fun for the students. You did a great job of presenting the program. The kids wanted to write notes and even sent a few extra pictures and a puzzle along also! 😊 Keep up the good work!

Lisa Espinosa  
1/2 Grade teacher at  
Clarinda Lutheran School

Dear Water Rocks,

Thank you for having us. I had so much fun. I love bees there cool.

Bees are important am I right. Bees make honey, it's sweet. Bees also make fruit.

now let's talk about the game. It was alot of fun. What if we were butterflies and that hapiened to us.

Sincerely  
lofen

• • • from Joplin

Dear water rocks,

Hi water rock, its Joplin. and I writing you this letter becuaze I want to say thank you for every thing you did, it all was very fun. And along the way I learned new thing I didnt know.

And my favorite part was the butterfly game. now that was fun. but the quiz was fun aswell. you know what they were so fun I cant chose wich was my favorite. I cant help but say thank you.

I really enjoyed our time together. It was all so much fun that even our teacher joyed in. Thank you so much. I hope you enjoyed having us. Come back soon.

Sincerely Joplin

thanks ♡



Dear Alex and Ann, 11/17/21

Thank you very much for visiting Grant School 4<sup>th</sup> graders yesterday, Nov. 16<sup>th</sup>. We had a lot of fun and learned a lot too! The students were engaged with your energy and enthusiasm! We appreciate you making the long trip here. →

Go ISU! Thanks again!

Sincerely,  
Mrs. Paul

GARTNER • STUDIOS

Dear Alex and Ann

Thank you for visiting us. Thank you for teaching all of us and Mrs. Paul. My favorite part was the bees and you teaching us about pollinators, pollen, nectar and mutualism. I loved how you let other people go up and volunteer. Thank you again!

Sincerely,  
Michelle  
Corville

Grant Elementary School, Muscatine

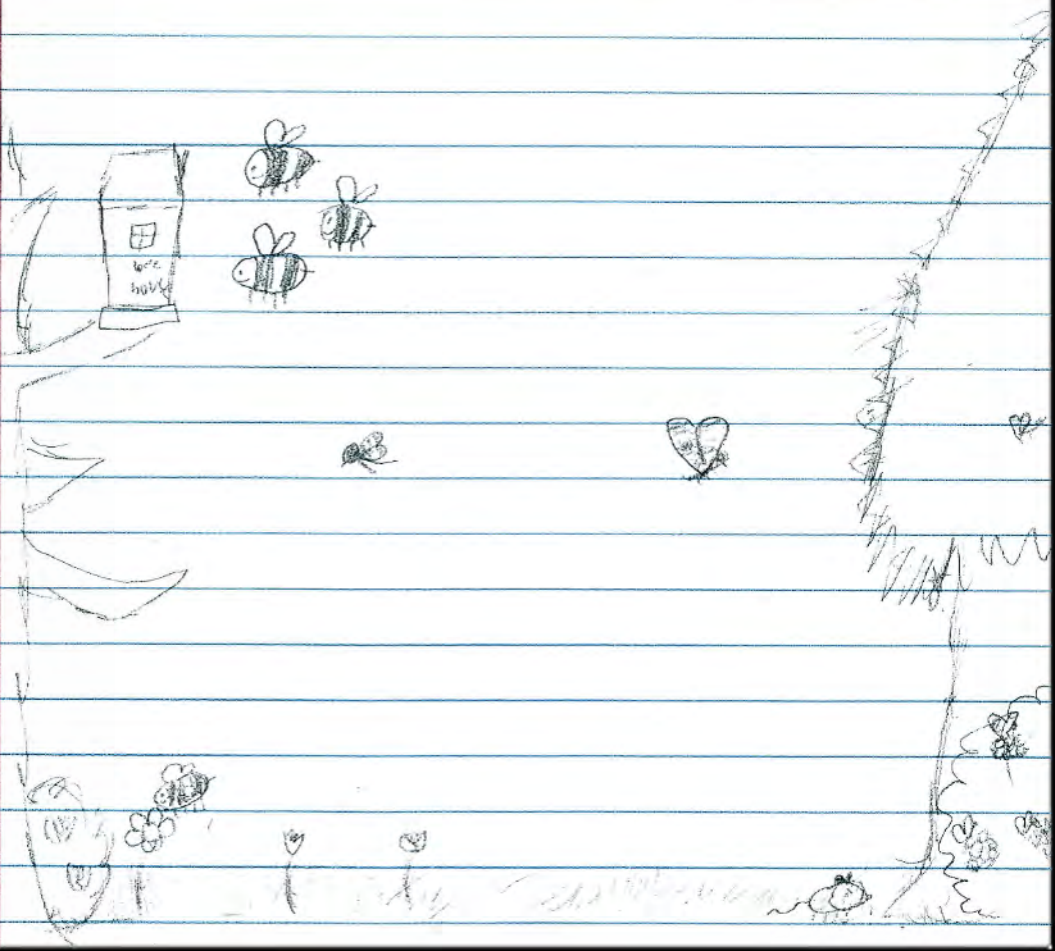
Dear Alex 2nd Ann

11/18/04

I wanted to tell you THANKS for coming to our school to play games and talk about science with us. It was very thoughtful of you to drive all the way here to our school from Ames, IA. Isn't that a three hour drive? You guys were so energetic and it was so much fun. THANK YOU!

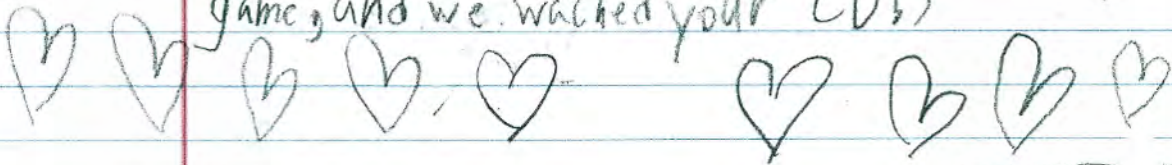
Your friend

Ember ☺



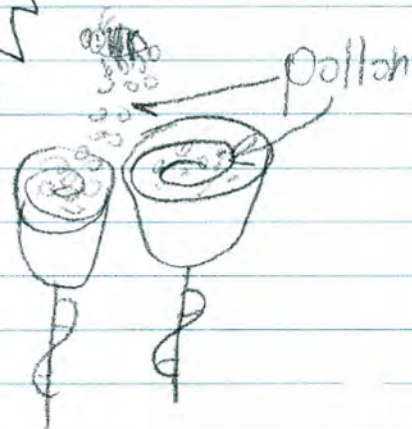
Dear Alex and Ann, 11/17/21

I Really loved your show! You're so smart both of you. I watched one of your videos, I loved it! Thank you for coming. I learned so much about mutualism. My favorite game was when we were monarch butterflies, and when we were migrating. Also so you know I hope you come again. PLEASE COME AGAIN! (ps. I loved every game, and we watched your CD's)



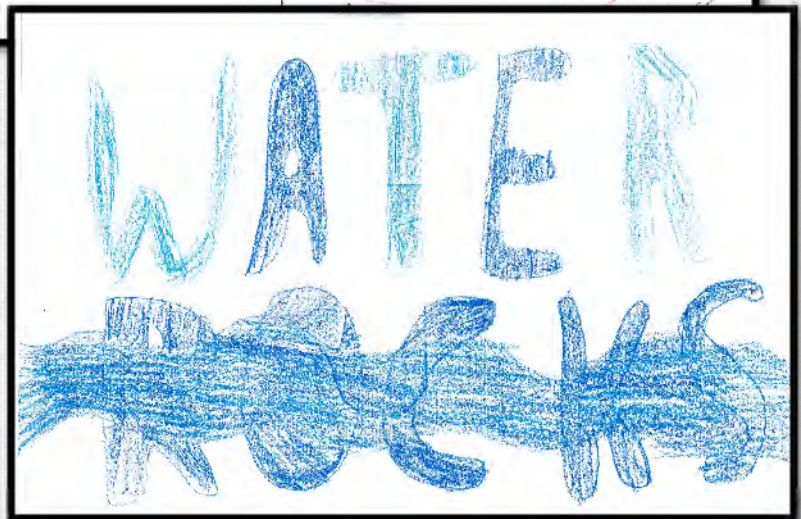
Color this page ü

Sincerely  
panda





Gilbert Intermediate School

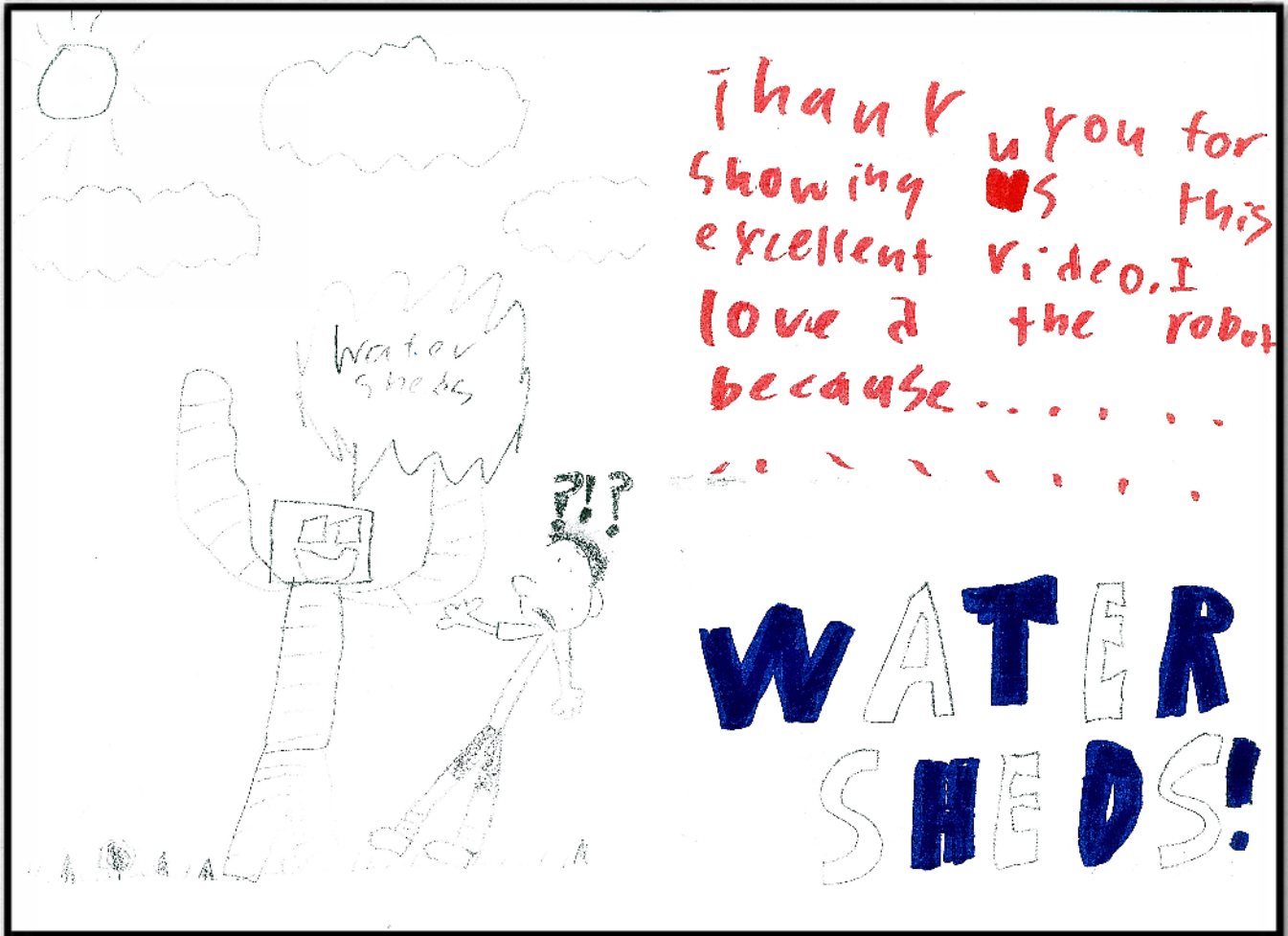




To water rocks.

I loved the duck pollution and water  
Sheds! I didn't know anything about this until  
We had this live stream!

a 4th grade girl  
Mallory



Gilbert Intermediate School

Dear Water Rocks people,

Thank you for taking your time to teach us about watersheds! The robot was really funny, and it made us laugh so hard! I loved how you used the ducks as the water, which was helpful, yet funny!

Thank you,

Devrim

4th grade



To: Water Rocks

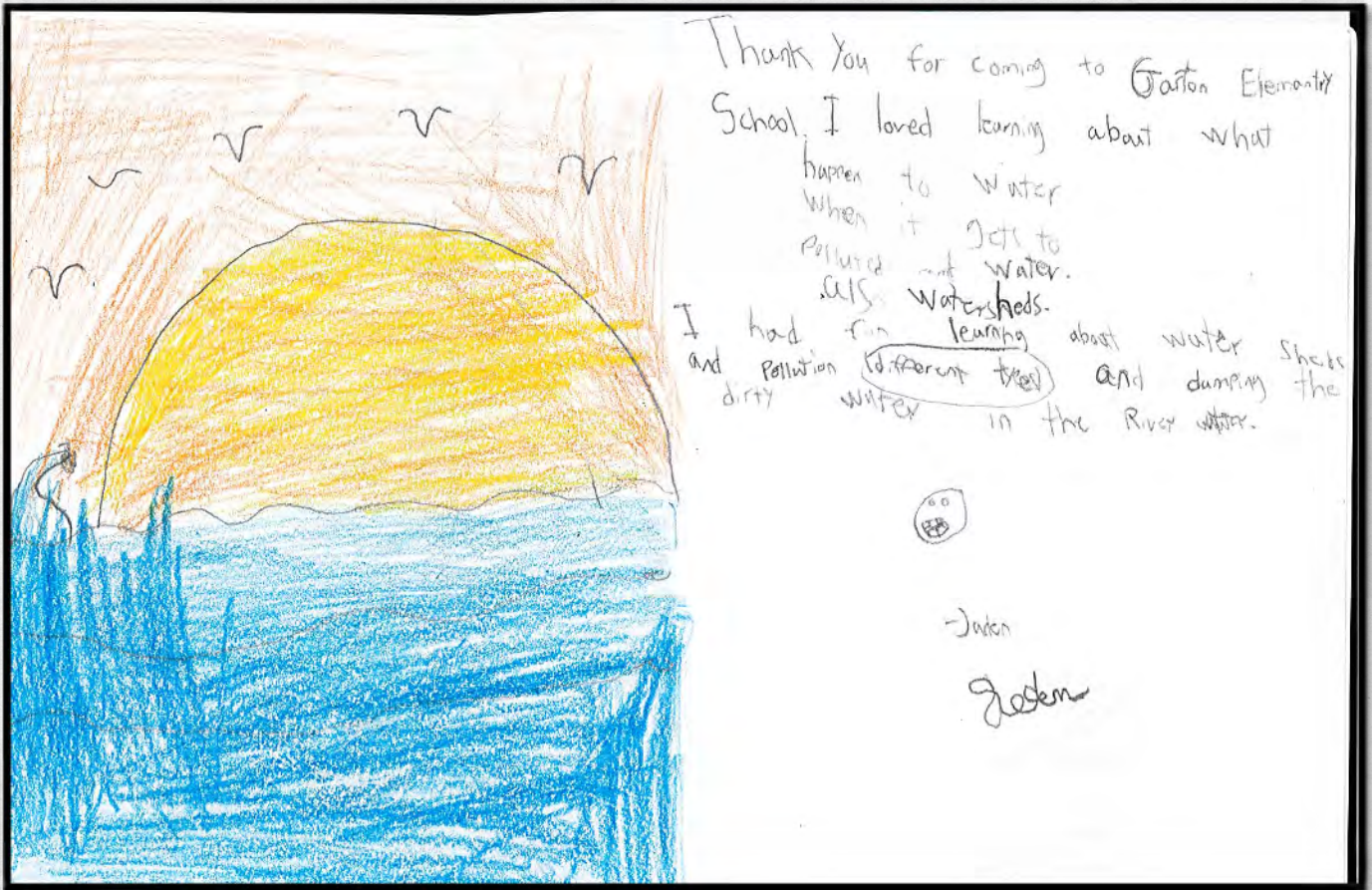
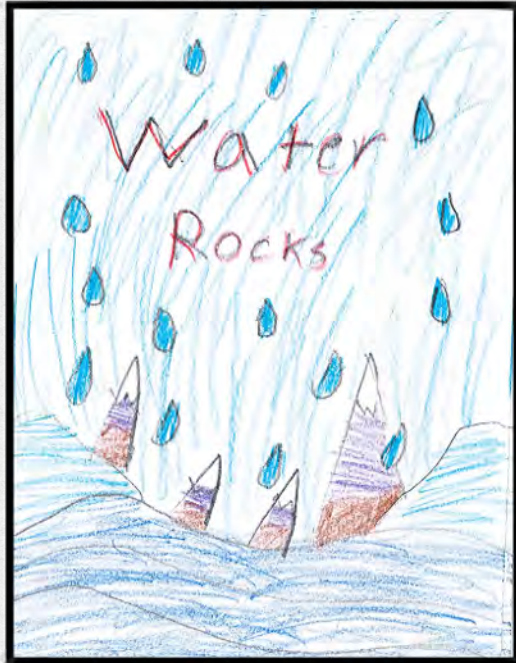
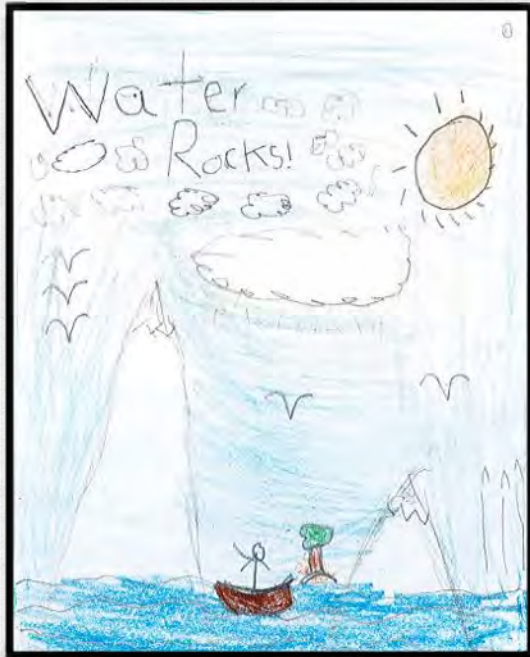
- crowd  
help save  
the lake!!



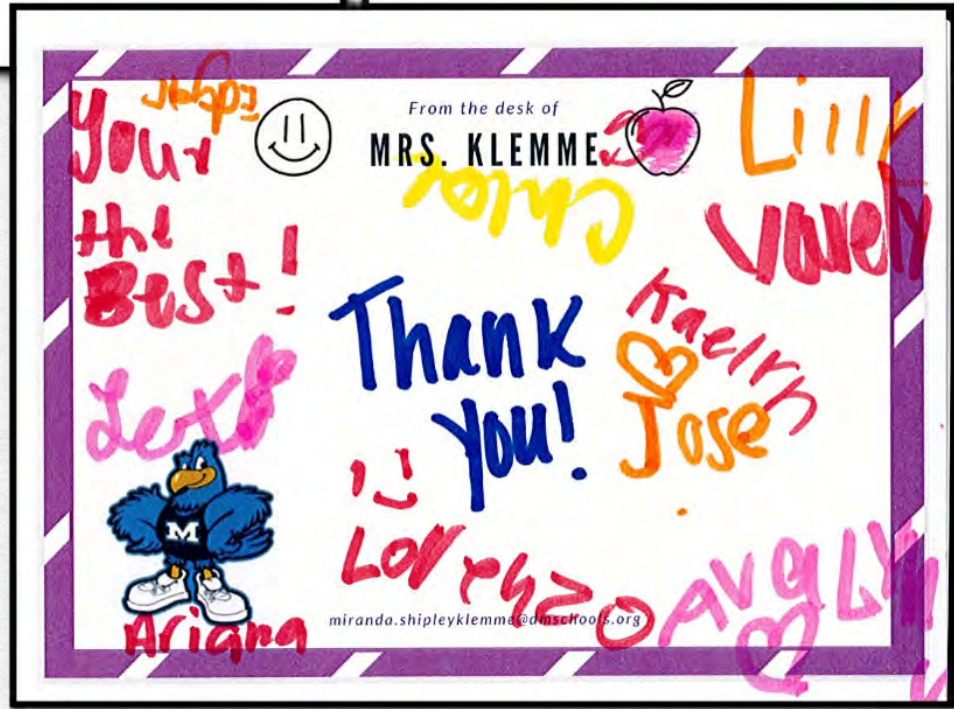
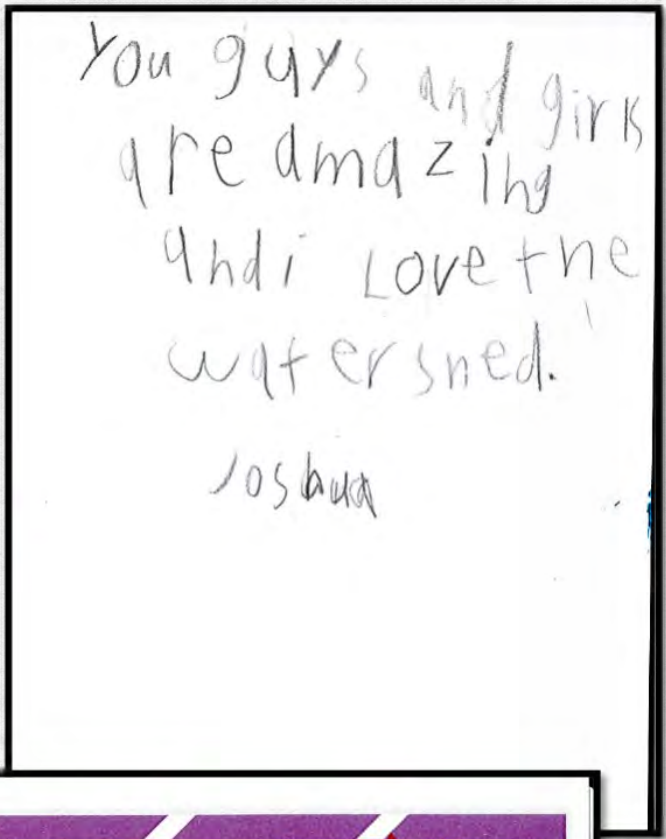
Ann & Richard,  
Thank you  
so much for  
putting such  
enthusiasm &  
knowledge into the  
presentation! They  
loved it! Kim Patton  
Albia

Albia Community Schools—Lincoln Center





Garton & McKinley Elementary Schools, Des Moines



Garton & McKinley Elementary Schools, Des Moines

Dear Water Rocks,

Thank you for visiting  
our school last week!  
The kids had fun  
learning about  
mutualism and playing  
Jenga! We would love  
to have you again  
next year! Also, thank

Dear water Rocks,

Thank you for coming to perkins.  
My favorite part of the  
lesson was the janga block  
game. I hope you will come  
back to perkins next year  
for another field trip.

From: stella

Dear Water Rocks, I loved all the  
activity's we did, ~~especially~~ especially janga,  
I also really liked the hive. Maybe I'll read  
some more books about bee's.

from: Matville

♥ thank you!

Water Rocks

I had a wonderful time with you! Also  
I loved playing bingo and hop scotch! I would  
love if you could come again! It was  
really nice of you to give us a set of  
wetland bingo also all of us a sticker! We  
all had a really good time. Thank  
you! ♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥  
♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥♥

Sincerely  
Ellie

@KaneashKansh

♥ thank you!

## Water Rocks

Dear Water Rocks thank you for doing  
these fun activities with us!! You know  
a lot about wetlands the Hop Scotch was  
Hard!! ... And fun!! Most of all was my favorite  
was closing our eyes and listening to the  
Wetland sounds! and Oh!! the Bingo so  
Fun!! the trivia was fun too! I hope  
you have a good time teaching about

<sup>Wetlands!!!</sup>  
Sincerely

Myla Gray

©KaneeshKaneesh

thank you!

Water Rocks

The bingo was super fun, so was the hop scotch, thank you for teaching us about the wetlands and all their jobs. It would be awesome if you could come visit us again, only next year I'll be in 5<sup>th</sup> grade. Thank you very very very much.

Sincerely  
Brooke Baldock

©KaneeshKannsh





[WWW.WATERROCKS.ORG](http://WWW.WATERROCKS.ORG)