Kids and Conservation

Helping students make a connection with nature and what they already know.



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Message from Author

Hello! If you are reading this it means you are on a mission. You are an educator of students, a lifelong learner or someone who feels the need to create a better world for others. Whatever your mission, this booklet will help you learn how to connect with others, particularly children, and how to connect them with the nature all around them. I hope it will inspire you to inspire others to create a better world not only for now but forever.

Forever starts now.



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I would like to thank fellow cohort members Tessa Torowski and Teresa Morlock for getting their students involved in my study. Without their involvement, there would be no information to contribute to this booklet. Keep up the good work; you are the teachers who are making a difference for your students and the environment.

I would also like to take the time to thank Cleveland Metroparks Zoo and instructors Adriana Rodriguez-Ferraro, Kathryn Corr and student leader Lauren Pool. Without their feedback and listening ears I would not have completed this project.







Here you see children holding a Burmese Python at Cleveland Metroparks Zoo during the Professor Wylde Animal Show. The mission of the Zoo is to create compelling experiences that connect people and wildlife. Offering this opportunity to audience members is certainly a compelling experience.

What the Research Shows

There have been several studies focusing on environment education (EE), effects of student involvement with nature experiences and the changes that occur with the students. Before trying to teach children to appreciate nature and become stewards of the earth you have to examine where they are mentally and emotionally.

Knowing the cognitive development of a child in 1st grade versus a child in 8th grade is key to reaching the highest benefit to the students. Researchers Lee, Grace and others have looked at the effects of conservation project involvement on students from ages 1-16 from Greece to Australia. As shown in several studies not only did the students understand the information about the project and biological principles of bats, sea turtles, snakes or wetlands, their discussion, public speaking and decision making processes developed as well.

When teaching about conservation issues and environmental protection, researcher Marcus Grace states that, "When students focus on the concept of conservation as a measure for countering extinction, they generally demonstrate positive attitudes towards conserving organisms, especially intelligent or visually attractive animals." This means students are already attune to the needs of conservation issues and are willing to help.

In the study done by Rosemary Evans the students were involved with a park and community project paying particular attention to the Tiger Snake. The students not only gained knowledge about the snake but were also asked to conduct interviews within the community and analyze the data compiling the information for presentations about living with the snakes. Teachers noted benefits of the student involvement with not only biodiversity education, but observation skills, reading and comprehension, math, Excel, English, public speaking and art and design skills. One project can incorporate all these skill sets that children will need to know. Why not get them involved with a local nature park research study? Have them participate in any citizen science project. The results are clear that participation in science with hands-on learning create knowledgeable students. As Farmer points out in his study, it is not only a one time experience during a field trip or one project it has to be a consistent way of thinking.



Knowledge retention is aided by repetitiveness and a study by Dimopoulos shows that student attitudes towards conservation initiatives are already positive and that knowledge of an issue can increase those positive attitudes. It was also mentioned that EE influences local attitudes and therefore behaviors to help protect, in this case, sea turtles near Greece.

So knowledge and participation affect attitudes. Attitudes affect behavior. Children are already at the stage of caring and the project carried out by this author was to see how much students can accomplish when given the tools and the opportunity. The project outlined in this publication was to have students create conservation videos about what people can do at home to save an endangered species. Surveys were conducted to measure a baseline for what students already know about conservation, biodiversity, and endangered species and to find out which ones they care about most and if they could help or not.

Thinking about the environment, ways to protect it and different areas to study should be a daily classroom activity. Some concerns are that as children grow and learn different things in school the focus moves off of the environment or nature and onto other issues. A child's need to wonder Why? is lost and they are given answers instead of trying to find their own. This is important to study because students are our future, whether we like where this is going or not. We want children to be healthy and care for themselves and the planet. Also, when students talk about something that is important to them, adults will listen. Search on YouTube for Alec Loorz or students and the environment. There are hundreds of videos of kids telling people they care and that they should too. Do you?









Here, students from Ms. Torowski's 7th grade point out Aurora the polar bear at Cleveland Metroparks Zoo. The students were asked to choose an endangered species and create a conservation video about what people can do to help.

What They Already Know

This community engagement lab focused on three distinct questions:

- 1. What do students already know about conservation, biodiversity, and endangered species?
- 2. Which species do they care about most?
- 3. Do they know they can help protect the planet?

Seventh graders from two schools in Ohio, one from Twinsburg and the other in Cleveland were surveyed to gain an understanding about these questions. Surveys were distributed using Survey Monkey online (to see the survey questions and answers see the Appendix) and 50 responses were analyzed. A second part to the project was inviting them to come to Cleveland Metroparks Zoo and make a conservation video on an endangered species. Only the seventh graders from Twinsburg participated in the video project.

Students who participated in the video project were split into two groups of 5 or 6 and were told they would be creating a conservation video about an endangered species. Their video needed to include four aspects: the endangered species they chose, a little bit of information about that species, why they are endangered and how someone at home could help. Videos would be posted on their teacher's website as soon as they were approved by parents and administration. They were given a full 3 hours to complete the project with very little involvement from the staff.

They were given computers and hurriedly researched and put together their project. They were asked to record by their endangered

species in the Zoo and were very enthused by the idea. They accomplished their goal and included everything they were asked. Through observation of the process the students worked well together making decisions about the format of their videos, the content and agreed on ways people could help. Students were excited from the start and created quality videos that will be available for view on their teacher's website as mentioned before.

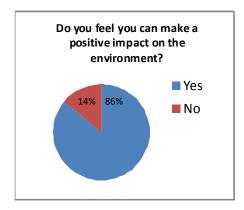


Figure 1 (left). Out of 50 respondents, 86% said they felt they could make a positive impact on the environment.

Table 1 (Below). Out of 50 respondents the number of animals below are the top 6 students were familiar with the most. Does not include all answers.

Animal	How many students were familiar
Tiger (Amur/Bengal/Siberian)	22
Polar Bear	16
Giant Panda	15
Cheetah	9
Elephants (Asian/African)	8
Eagle (Bald/Sea)	6
Don't Know of Any	5

As you can see by Figure 1 it is clear that the majority of students in both of these areas of Ohio feel they can make a positive impact on their environment. Of the students who responded "No" to the question, their reasons as to why could be classified in two ways: 1) Other people don't seem to care about the environment and 2) I'm only one person. These answers are not stating that they are not willing to help, it's that they feel others would not support them.

The endangered animals that the children seem to know more about are listed in Table 1. This supports Marcus Grace's reasoning that more exciting and visually stimulating animals seem to get more attention than others. Of the other responses that were recorded from the survey results it was overwhelming how specific answers became. Several other animals listed were the Galapagos Sea Turtle, Indus River Dolphin, and the Sichuan Takin (see Figure 2). Of these, the latter this author had to look up. This shows that although students may know about the most publicized



endangered species, they do know of ones that they themselves are interested in (for full list see Appendix).



Figure 2. Photo Courtesy of ZooBorns. A Sichuan Takin (Budorcas taxicolor Tibetana) and calf.

Table 2. Of 50 respondents, below are the ten student concerns about the environment. Does not equal 50, students responded with more than one answer.

Concern	How many students are
	concerned
Pollution (water, air, chemicals, safety)	15
Animals (Extinction, endangered species)	11
Habitat Destruction (grasslands, forests)	13
Forests (Rainforests, trees)	7
Water (Clean, uses, bodies of)	6
Trash (no more room, landfills, everywhere)	5
Ice Melting (Polar bear dying, north pole,	4
Antarctica)	
People Killing Animals (Poaching, due to	4
human action)	
Global Warming	4
No Concern	1

Regardless of where these students are from, rural suburban Twinsburg or inner city Cleveland, it is clear they have an idea of what is going on with the environment. They also have ways they can help positively impact the environment. Of the responses gained from the survey 44% or 22/50 said they could recycle, 33% or 16/50 responded with either cleaning up litter or not littering themselves. And finally, as small as it was 20% or 10/50 responded that they could raise awareness, tell others about things they could do to help or create an environmental group that would talk about participate in conservation issues.

Be mindful that these students were not prompted in any way and that the video project occurred after the survey. From these results to action on an individual level, how do we foster interest in the things they know and care about?







Cleveland Metroparks Zoo Crew, the teen volunteer program offers high school students the chance to educate others on the importance of nature, and in this case how chili peppers stop an elephant. They educate and are involved in several conservation areas such as beach clean ups, plant pulls and tree planting.

What to Say and When

Based on the results from this community engagement lab it is clear that students know more than we think they do. They pick up on attitudes of the people around them. The answers of "No" to the question if they could make a positive impact were all about the way they perceived how others believed or behaved. It's not that they do not want to help they just need a support system for it. That is you!

Although the path of earth's health seems bleak and another species seems to be discovered and lost every other day, the way to approach students is that there is always hope and that every little thing that can be done will help. They can make a difference. The point Richard Knight brings up is, "Can our students "save" the world? Probably not." But if we start them off small, with the classroom, in the home, your whole school they will see the hope and optimism in other issues as well.

In regards to the "when do we bring conservation up to students", there should be no set time. Children learn by observing and as long as we encourage their observations and questions you'll know when they are ready. There should be some environmental issues brought up as early as Kindergarten. In fact, there are songs that can be taught to children to bring up such issues pertaining to early elementary science curriculum as highlighted in Jacobson's review paper about using the arts such as reading, writing, singing and theater to connect people to nature and conservation issues.

As long as educators keep an open mind and are ready and willing to support what students are interested in, they will feel that support and will be more apt to help the environment. Now this topic of learning needs to be repetitive and consistent. Students should be exposed to all different types of knowledge. In Prokop's study the results supported the idea that education programs and lessons in schools increase knowledge of the students. As mentioned before knowledge leads to attitude formation which governs behavior. As long as we have a positive attitude, students will too.









The second group of Twinsburg students chose the Siberian or Amur Tiger to focus their conservation video towards. Here they are calling you to action to help prevent poaching and habitat destruction.

How to Get Them Involved

With the "Going Green" revolution in full swing it isn't hard to get your students participating in conservation issues. The main thing that will bring these issues to the forefront is to make a habit of focusing on a conservation issue. If it's a daily thing it become repetitive and they will be able to retain more information because of it. Another way to make it a daily habit is to create first hand experiences in nature. Why does handson learning work? It's because learners who are tactile or kinesthetic need to learn by doing and when you have an experience when catching a toad by a pond or seeing ducklings learning to swim it creates that first hand experience that those learners will be able to grasp.

Several initiatives that have been started focus on citizen scientists to gather research. Try looking up projects you and your students can contribute to and be able to share your research information with other students all over the world! Phone applications and new technology can be used to gather information, results and observations of anything you would like your students to focus on. Remember, as mentioned in the "What Research Shows" section, you can incorporate all different subject areas in one project that will get your students moving, thinking and observing.

Last but not least, one way to get them involved is to let them do their own research. This will let them focus on what is most important to them and will let them take responsibility for their research. It will give them a sense of accomplishment and will foster their interest even more.







Summary

As shown in this study students know a lot about current environmental issues and connecting them with their environment will foster positive interactions. The more knowledge we can give them the better their attitude will be towards helping the environment. Conservation issues could be helped by supporting students and what they are most interested in and have them participate in scientific research or conservation initiative. Getting sutdents involved in their learning and supporting what they already know and are concerned about will create a better world for everyone.

Future Research



This study is not the end all, be all by any means. There are several things that could be studied based on this first baseline of information. One question that should have been asked was which city the student lives in. That would have helped compare both cities to each other in regards to what endangered animals they know about, the attitudes the children have towards the environment and perhaps how they know about the endangered species they mentioned such as the Sichuan Takin and Indus River Dolphin.

Another interesting question is a study of teachers and their attitudes towards being green and a survey of their students and how they think about the environment. That would create support for the attitude affiliation that was observed in these results.

Last but not least study should follow up with the Twinsburg students and a survey to see if participating in the video project solidified their environmental concerns and action towards saving species.





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Survey Conducted Through Survey Monkey Online

50 Participants. 7th Graders from Twinsburg, OH and Cleveland, OH.

1. Do you know what biodiversity is?

Yes (6 responses) No (18 responses) Heard of it but not sure what it is. (24 responses)

2. Are you concerned for the future of our habitats and wildlife? Very (20 responses) Somewhat (28 responses) Not at All (2 responses)

3. If you are concerned, what about the environment are you concerned for the most?

(47 responses)

Not spoiling the environments with trash or buildings.

The polar bears dying because the ice is melting.

animals, more and more people are killing animals and they may become extinct.

Littering and pollution.

I am conerned about the cheeta's the most becouse their my favoite animal.People kill them and take their skin i really dont like it.

im concerned about the water, the water we use and all kinds of ways what if it get poluted, we need to learn how to use our water in good ways and keep it clean

i am concerned about the animals in the forests

I am concerned and Im concerned about that trash everywhere it can cause polution.

Im more concern of the north pole habitat

Where will the animals stay if they do not have a home.

that we will have to much garbage and no landfill or no place to put it im concerned about the different chemicials because they could cause air pollution and could be dangerous to people or animals

The bodys of water. and the rainforest.

animal extinction, and their habitats being destroyed.

i am concerned that the animals are going to get pushed farther out of their homes

animals

for the grass because animals use the grass to eat

for the trees because some animals live in trees.

The part of the environment that I am most concerened with is pollution into the environment

Our pollution wiping out sea creatures and some land creatures.

Pollution

Global Warming :(

The endangered Species

I am concerned that pollution, poachers, tree cutting and global warming is creating a bad environment for animals. But the part of the environment that I am concerned for the most is the pollution. Pollution can cause many animals to die, which means that more animals will be endangered. This is not the life that we should want to live, so people should help stop pollution from controlling our lives.

Antarctica

We are chopping down around 90% of our worlds rainforest, leaving thousands of species homeless

i am concened about how much pollution were putting in the water. airpollution

There are several things.. but one of them is that the world will turn into a huge pile of trash, and it will be no longer sutible for living.

I am most concerned that some of earths animals will die because of polution and lost of habitat

i am concerned for the animals.

The most thing i am concerned about are the chances that we have to kill off many species.

animal

safety

pollution

im concerned about the animals and i want the population to be balanced out and no more extictions on our Earth.

global warming

The rainforest and our rivers and lake mostly all bodies of water. I am also concerned about the air and our atmosphere and space because of all of the pollution and space junk.

The disappearing of forests, the melting of the polar ice caps, and the polluting of oceans and beaches.

Probably the ocean environment because of things like oil spills, etc. Global warming and animal extinction

I am concerned about how much gasoline is being put into the atmoshere. animals habitats

Yes im very concerned abuot my evironment becaus i wont it to be safe so poeple can live there.

nothing

YES

Well lots of animals are becoming or are in danger of becoming extinct and its mainly due to humans, like over hunting or destroying their habitat.



4. What form of technology is your favorite to use? (choose your top 3)

CELL PHONE (including apps, games, barcode scanners etc.) (31 responses) VIDEOS (11 responses) PLAYSTATION, XBOX, WII (27 responses) COMPUTER/LAPTOP (39 responses) TABLET (Kindle, Nook, Galaxy Tab) (10 responses) ANDROID (10 responses) APPLE (22 responses) Other (6 responses) Tv,watch, Camera MP3 None playing outside (Cellphone is apple)

5. What are some endangered species you know of? (50 responses)

red salamander Indiana bats Polar Bear Bald Eagle Pandas Sishuan takin (?) Blue Butterfly **Polar Bears** Pandas, bald eagle, I dont know any. cheeta's maybe dolfins thats about all. dont no any unless the bald eagle i dont knoww Lions, Tigers, Wolfs, Cheetahs, Sharks, Piosie Frogs And Snakes polar bears, poison leap frog Tigers, Panda, Aligator, Cheetah Bald Eagles, bats, prying mantas rhino I dont know any Panda Bear., Polar bear. bengal tiger, polar bears, gila monster, panda bears. blue whale eagles red tailed foxes red tails foxes polar bears, cheetas, gorrilas?, and I know of the giant panda, blue whale, chimpanzee, tiger and also a cheetah. Tiaer Tigers Cheatas Asian Elephants African Elephants Whales, Orangutans, Polar Bears, Pandas and that's it tigers, cheetahs, types of coral, african elephant, asian elephant, blue whale, gorilla, amur

leopard, snow leopard, marine otter, black rhino, white winged duck, whooping crane, california condor and crested shelduck. cheetah, polar bear, elephant Clouded Leopard, Siberian Tiger, African Elephant i know of the elephant tiger lion cheete hyneyn and bob cat those are it. tigers Panda, Eagle, Tiger, Asian Elephant The American alligator, pandas, polar bears, tigers, and some more. tiger, elephant, Tiger, polar bear, and asian elephant polar bear Panda Polor Bears Wolves hawks PANADS pandas. panthers. tigers. tigers, birds, elephants Polar bears, Penguins (certain types), Pandas. Sea turtles, siberian tigers, polar bears, and whales. Indus river dolphin, green sea turtles, sturgeon (the fish in caviar), coelacanth. Polar Bears **Bengals Tigers** tapier,tiger,mantee,panda, Lions, tigers and bears. I don't really know none of them but i'm sure i will learn about some of them. I DONT KNOW WHAT ENDANGERED SPECIES IM KNOW OF California Condor Chinese River dolphin Blue Butterfly Assam Rabbit Jahvan Rhino Giant Panda Giant Stick Bug Coelacanth Bengal Tiger Polar Bear Galapagos Island Turtle 6. Are you male or female? Male (18 responses) Female (32 responses) 7. Are you: White (20 responses) Black or African-American (18 responses) American Indian or Alaskan Native 0% Asian (5 responses)

Pacific Islander 0% Hispanic/Latino 0%

1997 (2 responses) 1998 (19 responses) 1999 (29 responses)

From Multiple Races (7 responses)

8. In what year were you born?

9. What kinds of things do you like to see or use at a Zoo or museum? (Choose 2)

Interactive Displays (19 responses) Signs with information on them (11 responses) Bright colors (11 responses) Large Pictures (6 responses) Hands-on activities (Puzzles, blocks, moving parts, etc.) (30 responses) Touch Screen (15 responses) Buttons (3 responses) Sounds (5 responses)

10. Do you feel you can make a positive impact on the environment? If so how or what would you do?

Yes (if gave action, yes is implied) (43 responses)

No (7 responses)

Answers given:

Keep natural areas clean

Recycling, using energy efficant light bulbs, energy efficant applicances.

Yes, i would recycle and pick up trash if someone litered on the ground

Yes, by picking up litter, and not polluting.

Yes, I would I would love to clean up a area that really needs cleaning like the beach!

No i feel if we want to make a big change on this earth we will need a little help from everybody!

no i dont do things for the environment but if i did i will do things to help the animals

Yes,I do think I can have a positive impact on enviroment by not littering and helping clean up the enviroment.

yes because if i were rich i would open homless shelters around the world for people who lost everything in there life and to help them get back on there.

We can make a positive impact on the environment by consuming less pollution, cutting down less trees and maybe thinking about animals Yes I believe I can make a positive impact on the environment by recycling

at home and at school.

yes i can recycle plastic

yes i do feel tht i can make an positive impact on the environment by cleaning up

trash thats on the ground by recycleing plastic also by not wasteing paper and saveing it because u might be able to write on it again

Yes i can by making a group at my school that recycles.

yes, i can recycle and persuade others to do the same.

i can help recylce so they don't have to cut down more trees for products reclye

I would make a garden

i will have a community garden .

I feel i cannot make a very large impact on the environment. The most i can do to

help is use less water, recycle, and plant trees.

I would have to make changes that not only I could accomplish like significantly

reducing pollution caused by Mills and factories or I could just recycle. Yes, I can help not pollute the enviroment by carpool with my friends and I can not litter.

Yes. I recycle

Yes I do. If you raise awareness and just talking about it to other people you can make a difference.

Yes, I feel that I can make a positive impact on the environment. To do this, I could start an environmental club, protect animals, and teach children how important the world is to us who care.

yes,by donating money to zoos so they can keep the animals wealthy Turn lights off when I'm not using them, not leave water running, etc.

i think concerving energy will help the envoronment i also think that picking up after your trash will help with the environment.

By riding my bike more

Recycle everything recyclable, pick up any trash i see use paper instead of plastic, and carpool.

Yes, I can continue to recycle, use bikes instead of cars, and not litter. yes,i can recycle my pop cans.

Yes i do because i know deep down inside that people do care.So i think if we can get them to care more.WE can save many species.

clean up the area

Recycle cans and paper.

No, Because People Dont't Really Care .

no

YES, I would help with pollution and other things that harm the earth i can. some of the things i can do would be to pick up the trsh around my neighbor hood and encourage people not to liter

stop wasting water, recycle

Yes,I can start a Be Green club at my school where we do nature walks,Pick up trash etc. We would clean up the enviorment one by one making a difference in life.

I do feel that I can make a positive impact on the enviroment. I would recycle more, plant more trees, walk or bike shorter distances more instead of taking a car, and when I go to the beach spend more time picking up trash.

I feel that I can make a positive impact on the environment. I would probably try to devise a plan to try and remove pollutants from the oceans/seas without harming the ocean life. I would also try to set up some kind of awareness group to try and get people to use/manufacture more unbleached, naturally colored paper.

Yes, I can recycle everything I use that can be recycled

I don't really think i can

yes, by recycling

I do not feel that I can make a positive impact on the evironment because some poeple just dont care about they environment.

yes, I feel that I can be a very good impact on the environment and I also feel that other people can to, it's just the matter of how lazy they are and I think that Cleveland is a bad community.

I WOULD TRY TO MAKE THE WORLD A BETTER PLACE BY RECLYCING i'm not sure if I can because I'm just one kid, but If I really tried I think I could. I could probably raise awareness of the cause.







