

The Effects of Conservation Issue Involvement on 7<sup>th</sup> Graders in Northeast Ohio

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**Abstract**

This research study outlines the many benefits nature has to offer an individual such as mental, physical, emotional and intellectual health. Connecting children to nature and giving them firsthand experiences with nature tend to aid in the advancement of positive attitudes and values towards it. Nature-Deficit Disorder is the alienation of children to nature that has shown a large affect on students in today's modern schools. Involving students in some sort of citizen science project will not only engage them but it will affect their attitudes towards conservation issues.

7<sup>th</sup> graders from 2 Northeast Ohio schools were surveyed on their beliefs and attitudes towards conservation issues and helping the environment. One school participated in a conservation issue video recording session and was then asked to take a post-survey. Due to the low number of post-survey answers compared to pre-survey data the results were lower when asked if the student's thought they could do something to help the environment. The result of observation of children within this age group is the same however, that if given the chance to explore and study the world around them, they would be willing to aid a conservation effort.

**Why Nature is Important**

Nature has many benefits outlined in dozens of scientific papers and books. Its benefits are widely utilized in the presence of plants within buildings, daylight imitating light bulbs and large windows in offices. There are many studies looking at attitudes towards conservation initiatives, the benefits of being outside and the correlation of an individual's background and previous experiences with nature. This study would like to focus on all the ways just being within nature benefits not only adults but children as students too. To define nature, it can be anything that occurs naturally, for example as small as a leaf on the ground in the fall, the little ant running along your windowsill or the empty parking lot that has grass and weeds growing in it to the Rocky Mountains and Pacific Ocean. As a primate species, we are born with an innate "sense" of nature. Through observing great apes and small children it is clear that the way they interact with nature is similar and both use it to explore and learn, question and find solutions to problems (Kahn, 2002). The terms nature vs. nurture refers to genetics and what a person is born with or what their background provides them through life experiences. A phrase that came through this study was that we don't need "nurture" to experience nature.

Since this urge to explore nature is innate, there must be a good reason why we as a species have evolved to benefit from it. There are many ways that nature benefits us as a whole person. The most obvious being the physical benefit. Of course we use nature to go hiking, rock climbing, bird watching, canoeing and a plethora of other ways people enjoy what nature has to give. Along with these activities come health benefits such as cardio health, stress relief and muscle exercise. In some urban areas though, it is a little more difficult to find a river to kayak in or a mountain to climb. Do not fear city-dwellers! There is hope for you yet. In a retrospective study conducted to find a correlation between “greenness” within a neighborhood and children’s Body Mass Index (BMI), they found a positive correlation between greenness and lower BMIs. This was after they had controlled for area of greenness and area in which they studied (Bell, 2008). This is a huge find in regards to decreasing childhood obesity which is a major area of focus for First Lady Michelle Obama and her “Let’s Move!” Campaign (Let’s Move!). Childhood obesity has doubled and even tripled for youths over the last 30 years and has been shown to lead to other health problems such as asthma, diabetes and when adults can cause cardiovascular disease and strokes (Bell, 2008).

The physical benefits are important but even intellectual benefits from nature are important to a student’s developing mind too. According to Peter Verbeek, childhood is, “a period during which we are particularly motivated to seek out the natural world around us” (Kahn, 2002). As mentioned before, it is an innate need for nature that keeps us balanced. One way of challenging students is to take them outside any building you have and see if they can identify just one bird that they can see. Most will not be able to tell you even though they probably see them day after day (if it’s a common bird in your area). Learning to observe the world again after so many years of standardized testing and recess for only 30 minutes a day is hard when you get older. That is why education, formal and informal, needs to include nature from the very beginning and by using activities outdoors you add a dimension to learning only nature can fill. Connections with nature can only be made through experiencing it firsthand (Cornell, 1998).

There have been studies about this new fangled Environmental Education (EE) movement and the effects it has on children and their aptitude for learning. One such study was conducted by the California State Education and Environment Roundtable that included several different schools located in states across the United States. Their Environment as an Integrating

Context for learning (EIC) is equivalent to EE education focusing on out of classroom work within the outside environment and community around the school. Out of 14 schools tested in several different areas, several things became clear:

1. 92% of comparisons of the schools with EIC and without showed that students with EIC learning outperformed the students without.
2. Behaviorally, 100% of students with EIC vs. students without showed fewer discipline problems.
3. Areas such as Language Arts (including reading, writing and speaking), Math, Science, Social Studies, critical thinking and interpersonal skills all scored over 95% better in students with EIC learning (Lieberman, 1998).

Not only did the students benefit from this type of learning but the teachers were found to have had better experiences and more success continuing with the education of all of their students.

In schools children are taught facts and figures and how to think critically. One thing they're also taught when they are younger is how to deal with events in life, how to cope with loss or fear along with developing beliefs and imagination. Nature even has an effect on the development of coping capabilities as shown in kindergarteners during the Second Lebanese War in Israel. The researchers looked at several different schools and instituted Nature Therapy to help Kindergarteners learn to cope with what had been going on around them as well as to combat their fear. This type of therapy incorporates, "art, drama therapy, gestalt, narratives, eco-psychology, transpersonal psychology, adventure therapy," (Berger, 2010). All of these aspects include nature in some way either by using a story about nature, have the kids act and play as if they were in control of the things going on around them, and creating rituals that become important means of communicating those fears. Learning how to cope at a young age reduces the risk of post-traumatic stress disorder (PTSD) later in life (Berger, 2010).

Another benefit on intellectual or mental health is the effect nature has on students with Attention-Deficit/Hyperactivity Disorder (ADHD). This is important to note: ADHD is "the most common neurobehavioral disorder of childhood" (Kuo, 2004). This is considered a stress disorder and through previous studies, these researchers have drawn the parallel between the stress-relieving properties of time spent in nature with the distracted attention of students with ADHD. After they surveyed 406 participants they concluded that "green" outdoor activities were beneficial in reducing symptoms of ADHD in un-medicated children in age groups ranging from

5-18. Just going for a walk was considered a “green” activity and parents who were involving their children saw a large improvement with them as well (Kuo, 2004).

So keeping a running tally we have physical, mental and intellectual benefits from nature, let’s move on to the emotional benefits. As mentioned before nature has a stress-relieving quality. Stress can make people angry, upset, and hurried and can lead to ill physical effects if prolonged. The way nature does this is by one of two ways: “1) restores stress-fatigued cognitive resources to enhance coping abilities or 2) stimulate underutilized portions of the “old” brain, which balance the concentrated stimulation and relieve exhausted portions of the brain to reduce stress” (Largo-Wight, 2011). This is basically stating the widely held belief that if you pet a cat long enough, your blood pressure will go down or if you walk in nature or look at a picture of a natural scene for 5 minutes you’ll feel rejuvenated. But in this study they measured nature within a healthy work environment. People with contact with nature and natural things such as indoor plants, opening blinds and going outside for a break reported less perceived stress and less stress related health effects (Largo-Wight, 2011). So that is the affect small doses of nature has on adults, imagine how else children might be affected positively by nature.

One thing that was integral in understanding what is happening to children around the world is to understand the theory of Nature Deficit disorder as coined by Richard Louv within the past decade. He defined it as, “describe[ing] the human costs of alienation from nature, among them: diminished use of the senses, attention difficulties, and higher rates of physical and emotional illness” (Louv, 2006). So all we have to do is get children to “greenness”, or back to nature to improve their overall quality of health now and in the future. The younger we can get children back into nature the more connected they will feel, the healthier they will be and the attitude towards nature will not be what Stephen Kellert called dominionistic as in “what can I get out of it” but more moralistic as described as, “right and wrong of treatment of animal and nature, strong opposition to cruelty/exploitation” (Clayton, 2009).

One way we can get children back is by employing them as students to help scientists with research. These “laymen” scientists are called citizen scientists and they can be found everywhere. To apps on phones, social media and many resources for teachers it is very easy include students in research and observations of the world in which they live. The thing is too is that they are willing to do it if only given the chance (Louv, 2009/2010). In one survey of 6<sup>th</sup> and 8<sup>th</sup> grader’s environmental literacy, they found that 6<sup>th</sup> graders scored higher for both sensitivity

and general environmental feelings and actions while the 8<sup>th</sup> graders were high on knowledge and cognitive skills (McBeth, 2010). If you put the two together a) you get 7<sup>th</sup> graders and b) you could have them work cooperatively and have the 6<sup>th</sup> grader's passion and the 8<sup>th</sup> grader's knowledge to complete tasks.

### **There is Hope**

Through a survey of Northeast Ohio students I have been able to show that there is hope and that the future is not as bleak as it might seem. The questions asked gauged what or how students felt about the environment, endangered species, and whether or not they thought they would be able to affect a positive change on their environment. 7<sup>th</sup> grade students from two very different schools were chosen to participate in a study that would give a baseline on their thoughts about the current state of the environment. Children from a public school located within the Cleveland Metropolitan School District (CMSD) and students from a public school located in the Twinsburg City School District were chosen to reflect different cultural and socioeconomic backgrounds located in urban and suburban/rural settings respectively.

This pre-survey (Appendix A) had 10 questions and was administered by their teachers in class through SurveyMonkey. The Twinsburg students were offered 1 extra credit point to complete the survey. Following the completion of the survey, students from both classes were invited to come to Cleveland Metroparks Zoo on a Saturday for 3 hours to “investigate a biological issue” where for those three hours students researched one endangered species the zoo currently has, planned and created a video about that animal and ways to help them in the wild and finally edit the videos together. Only the Twinsburg school attended that Saturday and students were awarded 5 points for participating. 11 students that attended took a post-survey (Appendix B) to see if their answers deviated from the baseline pre-survey results.

Figure 1 clearly shows that of the total 50 7<sup>th</sup> grade participants, 86% feel they can make a positive impact on their environment. Of the 14% that said they could not, it was not an issue of they didn't want to or they didn't know how, it was a reflection on what they know about the problem and how they perceive others feel about it. Such answers including, “I'm only one person,” and, “because people don't care,” are examples of those who negatively responded. All participant answers to the pre and post-surveys can be found in Appendices A and B.

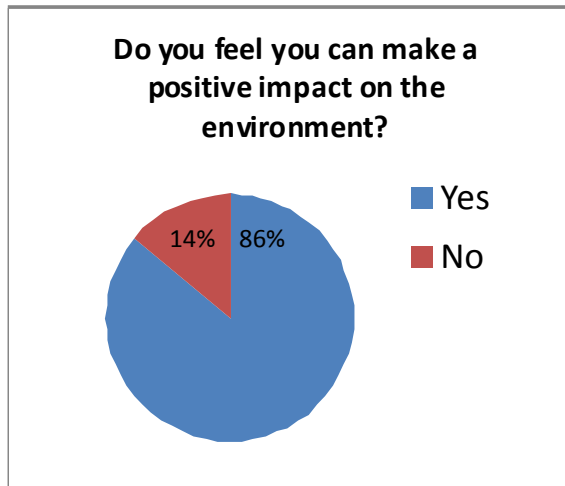


Figure 1. Percentages are based on responses to the pre-survey. They were calculated by taking the number of Yes or No answers and dividing it by 50.

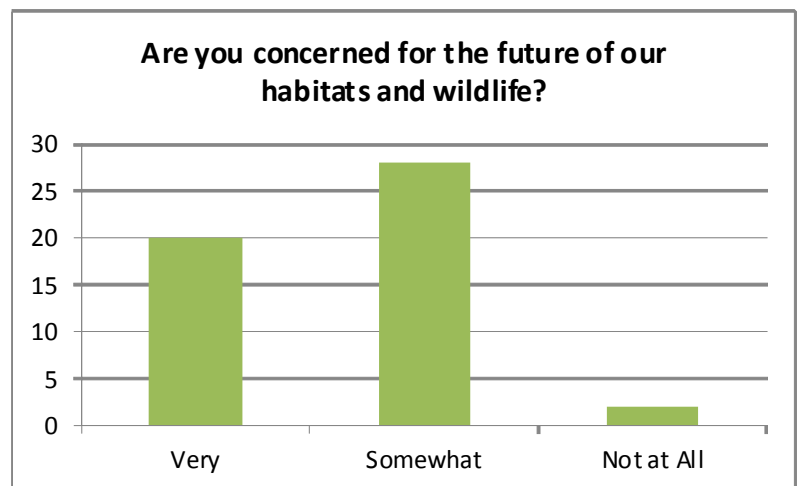


Figure 2. Numbers were noted out of 50 participants answers from the pre-survey.

### Videotaping Takes Patience

The easiest part of the day was having the kids pick an endangered species to focus on and have them research why they are endangered and how people around the world can help by doing something small every day. Give them the internet and some reliable sources and off they went. The information was approved and then they started to create what their video would look like. Students took the reins on every part of this project and needed only small guidance (reminders of how much time they had left) in order for them to stay on task and excited about the videos. Through the technology of the Flip Cam and a Casio Digital Camera, students went out within Cleveland Metroparks Zoo and created two videos, one about issues surrounding the polar bear and the other about the Amur tiger. After an hour and a half of filming they returned to edit their videos each 1-3 minutes in length.

### Effect on Students

After the activities of the day, students were asked to answer 6 questions that they were to have answered within their videos as well. The question we were interested in the most was if they felt they could make a positive impact on their environment. This mirrored the questions in the pre-survey. The post-survey answer can be seen in Figure 3. The percentage of students who answered Yes was lower than that of the pre-survey. Only 11 participants took the post-survey (Appendix B) and answering was kind of rushed. These are some things that could be remedied

in a future study. Videos will be uploaded on their teacher's webpage as soon as waivers are signed.

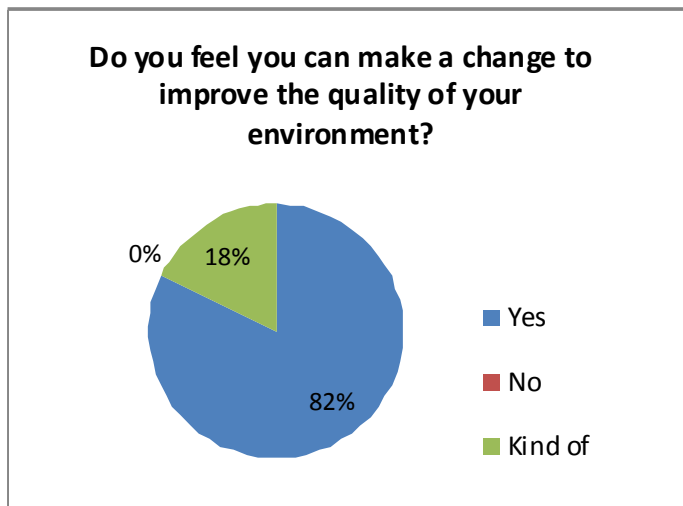


Figure 3. Percentages calculated with answers from 11 participants who responded to the post-survey (Appendix B).

### Future Studies

There would be several studies that could lend more information to this topic. First, a wider range of sampling for the pre-survey would have been ideal, preferably from students around the state or around the country. It would have been beneficial to have students who didn't take the pre-survey participate and see how they reflected back to the baseline.

It would also be interesting to discern how students from different socioeconomic backgrounds feel towards the environment and their motivation to help. Further surveys could potentially ask where students get their information about the environment from, for example their parents, teachers or news stations. Perhaps another participating school from a different area would go about making their conservation video differently or have a different focus than the ones produced by Twinsburg.

More research involving different ages of students would be interesting to compare their willingness to help a conservation issue if given the right tools and knowledge to do so. Ultimately, this information along with further research about technology used by other grade levels will be used to design within-zoo kiosks to get children and teens more involved with conservation issues and citizen science opportunities while visiting the zoo.



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## Appendix A

SurveyMonkey Survey and Results. 50 Participants. 2 responses had to be deleted due to age.

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 concerned about the cheeta's the most because 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 alll 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 extinctions 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

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 dolphins that's about all.

don't know any unless the bald eagle

i don't know

Lions, Tigers, Wolves, Cheetahs, Sharks, Piosie Frogs And Snakes

polar bears , poison leap frog

Tigers, Panda, Aligator, Cheetah

Bald Eagles, bats, prying mantas

rhino

I don't 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, gorillas?, and

I know of the giant panda, blue whale, chimpanzee, tiger and also a cheetah.

Tiger

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%

From Multiple Races (7 responses)

8. In what year were you born?

1997 (2 responses)

1998 (19 responses)

1999 (29 responses)

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 lited 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 homeless 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 enviornment one by one making a difference in  
life.

I do feel that I can make a positive impact on the enviornment. 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.



## Appendix B

Post videotaping survey. 11 responses.

1. Do you know what biodiversity is?  
Yes (4 responses)  
No (1 response)  
Kind of (6 responses)
2. What about today helped you learn the most about endangered species/biodiversity?  
Researching (4 responses)  
Videotaping (3 responses)  
The tiger itself (3 responses)  
Talking about the endangered species (1 response)
3. Do you feel that you can make a change to improve the quality of your environment?  
Yes (9 responses)  
No (0 responses)  
Kind of (2 responses)
4. Do you think you can affect others to make a positive impact on their environment?  
No (3 responses)  
Yes (5 responses)  
Kind of (3 responses)
5. After today, is helping the environment something you'll think about?  
Yes (11 responses)  
No (0 responses)
6. Will you do anything at home to help the environment or an endangered species? What will you do?  
Yes (11 responses)  
No (0 responses)  
Answers:
  - Recycle paper
  - Recycle
  - Not buy fur products
  - Do whatever it takes
  - Try to raise awareness
  - Recycle
  - I will start recycling more plastic to save waters
  - Turn off all power in my room when I'm not there
  - Recycle paper
  - Recycle paper
  - Raise awareness