Conservation Attitudes and Actions for Students in the Pittsburgh Zoo & PPG Aquarium's KidScience and Zoo U. Programs

IAP Final Report

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Abstract

Because many zoo conservation education programs are tailored toward children, this study was designed to assess whether students' commitment to conservation increases as they increase in age and as they take additional classes with conservation messages. The subjects of the study were students in the KidScience and Zoo U. programs at the Pittsburgh Zoo & PPG Aquarium. Students completed a survey, which was designed to assess environmental views, attitudes, and actions. Zoo U. students scored higher than KidScience students on all points of the survey. After completion of the survey, the students began to work with zoo staff and an established conservation organization to address environmental issues related to polar bears. Many more action projects are planned for the spring of 2010.

Conservation Attitudes and Actions for Students in the Pittsburgh Zoo & PPG Aquarium's KidScience and Zoo U. Programs

Conservation education programs in Zoos and Aquariums are often tailored toward children, as they are more likely to be open to conservation messages and possess an innate sense of wonder about the natural world (Rickinson, 2001). The underlying objective in developing conservation education programs for children is the supposition that those who make personal connections with the environment early in life will be more likely to act in more environmentally conscious ways in their adult lives (Swanagan, 2000).

As coordinator for two long-term conservation education programs at the Pittsburgh Zoo & PPG Aquarium, I have the unique opportunity to witness and assess my students' conservation attitudes and commitment over the course of several years. Many of my students begin taking classes with me as children, and they continue with programs as they approach and begin adulthood. KidScience students attend classes when they are between 11 and 13 years old. Zoo U. students are between 13 and 18 years old. Both programs are year-round, and all topics and themes build upon previous material. While some students do begin classes at different times or stop taking classes as they get older, most of our students begin attending classes as 1st year KidScience students and continue with the programs until they graduate high school.

Because of the long-term, continuous relationship I have with my students, I have designed this study to test if the students, in fact, do grow in their commitment toward conservation, both in attitude and action, as they grow in knowledge and independence. This study seeks to investigate the following question: Are Zoo U. students more committed to conservation than KidScience students? The commitment to conservation will be measured as the sum of two factors: attitude toward the environment and environmentally-friendly behaviors.

Possible environmentally-friendly behaviors could include recycling on a regular basis, being aware of energy consumption and working to reduce energy usage, support for conservation organizations, and participating in community conservation efforts. Those who have a more positive attitude toward the environment and those who engage in eco-conscious actions will be rated as having a higher level of conservation commitment.

Prior to conducting the assessment, I predicted that Zoo U. students would be committed to conservation than KidScience students. They would rate higher both in environmental attitudes (more positive toward the environment) and actual behavior. My prediction was based on the assumption that students who have more exposure to conservation messages and ecological concepts will be more likely to take more meaningful stances for conservation. Also, because Zoo U. students are older, they, likely, have more freedom to make their own decisions regarding transportation, the products they buy, financial support of conservation organizations, and volunteering their time in an environmentally productive manner than KidScience students.

In addition to making my own predictions as to the outcome of the conservation commitment survey, I obtained predictions from all fall 2009 students in both the KidScience and Zoo U. programs after surveys were completed. All sessions overwhelmingly predicted that Zoo U. students would score higher in both environmental attitude and actions. While a few students in each session predicted that there would be no difference in conservation commitment between Zoo U. and KidScience students, none of the students predicted that KidScience students would score higher than Zoo U. students in attitude or action. While I was somewhat surprised by the prediction, especially from KidScience kids, as they were effectively saying that they would not be as committed as older kids, their explanations aligned with my own reasoning. The students thought that because the Zoo U. kids are older and have been in the programs

longer, they would have more knowledge that would lead them toward more positive environmental attitudes. In addition, the students felt that because the Zoo U. kids are older, they are more likely to have the means to behave in an environmentally friendly manner. They will be better able to make their own choices, especially when it comes to transportation and which purchases to make, and they are more likely to have money that can be used for conservation purposes. The students cited the abovementioned examples without any suggestion from me or from any of the other teachers, so I was fascinated at how closely their ideas aligned with my own.

The objectives for this study are many. First, I wanted to obtain an assessment of the conservation commitment of all of my students, which could be used to tailor future course lessons and activities. I will be able to distinguish where current course materials are lacking and where we can improve the experience for the students.

Also, several others at the Zoo will utilize the program assessment. The Curator and Assistant Curator of Education can perceive how the KidScience and Zoo U. programs influence the attitudes and behavior of its students. The assessments can, also, be used to secure future funding for the programs, as the development department often reports assessment results to granting organizations.

Thirdly, students will be encouraged to consider their actual knowledge, attitudes, and actions toward environmental and conservation issues. Often, people say they are committed to conservation, but their actions do not fit with their words (Nisbet, Zelenski, & Murphy, 2009; Scott & Willits, 1994; Maloney & Ward, 1973). By discussing action steps, students will be required to consider what they have done in the past and ways in which they are capable of behaving in the future. Students will also be encouraged to think of ways they can become more

involved with the community. The action project will allow students from both programs to work together, and students will become more active and visible within the Zoo and hopefully, within the community at large. The action project will allow students to develop and strengthen interpersonal skills, speaking skills, leadership skills, and creativity.

Method

A survey to assess the students' commitment to conservation was developed and administered to students (See Appendix 1). The content of the survey was initially developed prior to the conservation values Community Engagement Lab assignment, which addressed survey techniques, in the Conservation Science and Community class, but CSC class materials informed the piloting, editing, and implementation of the surveys (Schultz, 2001). The survey was piloted with staff members in the Conservation Education Department at the Pittsburgh Zoo & PPG Aquarium. Staff members responded to the survey, and they provided feedback regarding any clarifications that should be made, any statements that were confusing or misleading, and general critiques of the survey. The structure and content of the survey was edited accordingly.

Many of the questions and statements included on the survey were taken from and modified from those found in studies by Dunlap, et al. (2000) and Maloney & Ward (1973). The survey was comprised of several segments, which measured different aspects of environmental commitment. The Scale portion of the survey was designed to assess students' understanding of environmental issues and to measure their general worldview (Dunlap, et al., 2000). The Verbal portion of the survey was designed to measure what students say they would be willing to do for conservation. The Actual portion of the survey and the Yes/No portion both measure what students actually do for the environment, and the Affect portion measures students' emotion and attitude toward conservation (Maloney & Ward, 1973).

Subjects of the study were current students in the KidScience and Zoo U. programs at the Pittsburgh Zoo & PPG Aquarium. KidScience students are ages 11-13, and 54 total KidScience students responded to the survey (30 first-year students, 24 second-year students). Zoo U. students are ages 13-18, and a total of 29 Zoo U. students responded to the survey. All surveys were given on the first day of class for the 2009-2010 school year of KidScience and on the first day of the 2009 Fall Semester of Zoo U. The survey was administered to the 2nd year KidScience kids on Saturday, October 10th, 2009. The survey was administered to 1st year KidScience kids and Zoo U. kids on Saturday, October 17th, 2009. Students took approximately 20 minutes to complete the survey.

After the completion of the surveys, students were debriefed as to the scope of the study. Students were told that the survey would be used to determine whether KidScience or Zoo U. students are more committed to conservation, and the results of the survey would be used to inform future lessons, activities, and programs for the kids. In addition, students were responsible for designing and carrying out a conservation-related project. Students were also invited and encouraged to make predictions as to the results of the survey. After predictions were given, students were asked to brainstorm ideas for an action project that the entire group could design and implement in the coming weeks. Students had the next few Saturdays to work on brainstorming and designing the action project. The final plan was set on November 7th, as all KidScience and Zoo U. students were together for a special program.

Results

A total of 54 KidScience students completed the survey. The mean age of a KidScience student is 12.31 years old (sd=0.99). The mean amount of time in the program is 6.33 months,

though because the survey was given on the first day of class ever for first-year students and the first day of classes for the second-year students, the standard deviation was 6.02 months.

A total of 29 Zoo U. students completed the survey. The mean age of a Zoo U. student was 14.48 years old (sd=1.06). The mean amount of time in the programs is 24.45 months, though because some kids had been in the program for several years, while others were just beginning the courses, the standard deviation was 11.70 months.

Table 1. KidScience and Zoo U. Means and Standard Deviations for Survey Portions

		Scale		**Yes/No**		**Verbal**		**Actual**		**Affect**	
	Total points possible	5		7		8		10		10	
		Mean	*St. Dev.*	*Mean*	*St. Dev.*	*Mean*	*St. Dev.*	*Mean*	*St. Dev.*	*Mean*	*St. Dev.*
KidScience		3.67	0.35	4.61	1.23	5.44	1.8	4.56	2.12	7.34	1.97
Zoo U.		3.95	0.4	5.03	1.17	5.7	1.38	5.73	1.78	8.04	1.73

The survey was broken down into sections and the results were analyzed. Zoo U. students scored higher than KidScience students on every portion of the survey, and the standard deviation for each section was generally lower for Zoo U. students, as well (Table 1).

The Scale section of the survey asked students to rank statements from 1 to 5, with one being ‘strongly disagree’, three being ‘I don’t know’, and five being ‘strongly agree’. The scoring on questions 3, 5, 7,9, 12, 14, and 15 was reversed, as the wording of the statements were such that disagreement with the statement reflected a proecological view, as opposed to the other 8 questions, which reflected wording in which agreement would indicate a proecological view (Dunlap et al, 2000). The responses were added up on each survey and divided by the number of statements in the section, which was 15, to obtain the mean score for an individual student. All student scores were then averaged to obtain the total mean for the program. Zoo U. students

scored higher (m=3.95, sd=.40) than KidScience students (m=3.67, sd=.35) on the Scale portion of the survey.

The Yes/No portion of the survey measured behaviors. Respondents were given one point for each 'yes' reported. Because there were seven statements in the section, a maximum of 7 points were possible. Zoo U. students (m=5.03, sd=1.07), again, scored higher than KidScience students (m=4.61, sd=1.23).

The Verbal, Actual, and Affect portions of the survey were presented as statements, to which the students responded by writing true or false to indicate agreement or disagreement. Students were given 1 point for each statement that matched the environmental viewpoint. Zoo U. students scored higher, with lower standard deviations, than KidScience kids on each portion of the survey in the true/false section (see Table 1).

Discussion

Overall, the Zoo U. students did score higher on all sections of the survey than the KidScience students, which supported my prediction and the predictions of the students. For the Scale survey, both student groups skewed toward the more pro-environmental portion of the scale, as Zoo U. recorded a mean score of 3.95 and KidScience scored a mean of 3.67. As a 3 represented 'unsure' for the students, and a 4 represented 'agree', Zoo U. students were more likely to match with an environmentally conscious worldview than KidScience kids, though KidScience students did score high on the scale, as well. KidScience and Zoo U. kids are probably likely to indicate a view that is positively oriented toward the environment, as the programs are elective, extracurricular education programs, which require an innate interest in the subject matter. If the students did not have a positive view of environmental concepts, they would likely not apply to the programs. In addition, one theme for both programs is conservation

biology, so even students who have recently begun the programs have been exposed to conservation messages. The fact that Zoo U. kids scored higher suggests that the students do absorb those messages and alter their perspectives accordingly.

For the Yes/No section of the survey, and the Actual portion of the survey, behaviors actually performed by the students were measured. Again, Zoo U. students scored higher than KidScience students, as Zoo U. students had done an average of 5.03 of the 7 actions presented in the Yes/No section and an average of 5.73 out of 10 actions presented in the Actual section, compared to the KidScience students' 4.61 out of 7 and 4.56 out of 10. The fact that both groups were more likely than not to have performed environmentally positive behaviors is extremely encouraging, as many researchers have reported that people do not necessarily behave environmentally, though they may be aware of the problems and indicate an environmentally favorable attitude (Nisbet, Zelenski, & Murphy, 2009; Scott & Willits, 1994; Maloney & Ward, 1973). After sharing the results with the students, Zoo U. kids have shared that they, in fact, believe their increased likelihood to have performed conservation-related actions may be attributed to their increased independence.

Zoo U. students also scored higher than KidScience students on the Verbal and Affect portions of the survey, as Zoo U. kids matched 5.70 out of 8 statements of what they would be willing to do for conservation and 8.04 out of 10 emotions related to the environment, compared to 5.44 out of 8 and 7.34 out of 10 for KidScience kids on the same portions of the survey. For both programs, what the kids say they are willing to do and what they actually have done differ, as Verbal scores are comparatively higher than Actual scores. In addition, scores for Actual behavior was less than Affect for the environment for both groups, which is not surprising because of the phenomenon reported above. However, since emotion, affinity, and interest in the

environment are important predictors of environmentally friendly behaviors, the fact that both sets of students scored extremely highly on the Affect section of the survey is heartening (Nisbet, Zelinski, & Murphy, 2009).

While the survey was a successful tool for measuring KidScience and Zoo U. students' commitment to conservation, there are a few changes I would make to the survey, in the future. First, because it was a written survey, several of the kids with learning disabilities, such as Asperger Syndrome, had a difficult time completing the survey on their own. Should a survey be administered in the future, a verbally administered option should be available. Secondly, though the survey was piloted with staff members, several of the statements proved to be confusing for some of the younger kids, as some did not understand the definition of some words used in the questions and statements. A pilot run with younger students would be advised. Finally, the Verbal section of the survey should be increased to 10 statements, as with only 8, it was difficult to draw a solid comparison with the Actual and Affect portions of the survey.

Student Action Component

Each class of students made a list of potential action projects to complete. I gathered all student ideas and compiled a master list of projects that were both feasible and oriented toward either the Zoo community or the community at large. I presented the master list to all students on Saturday, November 7th, and asked the kids to vote on which projects they would like to undertake. Students determined that because they had so many good ideas for action projects, they would try to implement as many projects as possible throughout the school year. Due to the condensed timeframe for the IAP, many of the action projects will be carried out after the final report is submitted. However, the report discusses the steps and projects that have been started prior to the submission of the final report and will detail future actions planned for the spring.

Given the short amount of time the students had to create and carry out an action project, the outcomes so far have been promising. Since we only had one Saturday with each group in November after the plans were made (November 14th for 1st year KidScience and Zoo U. and November 21st for 2nd year KidScience), most of the results for the action project are preliminary. However, all students in both programs are excited and committed to completing multiple action projects before the end of this school year, both within the Zoo and incorporating the larger community.

Inspired by the program presented on November 7th (see Appendix 2), which was the day the kids all determined which projects to begin, students decided to work with Polar Bears International (PBI) to raise money for conservation, raise awareness in the community about global warming, and create more green spaces to combat carbon emissions. Students have formed a partnership with Josie Romasco, an aquarist at the PPG Aquarium and the Pittsburgh Zoo's keeper ambassador to the Polar Bears International Leadership Conference in October, to develop programs for middle school and high school audiences. She is also working on a project, called 'Acres for the Atmosphere', through which each polar bear ambassador is responsible for making sure at least two acres of trees are planted over the next year. KidScience and Zoo U. students have committed to helping with the project, as well.

Josie Romasco has visited two schools, so far, to present the program that the students helped her to design, and she is scheduled to visit more schools in December (See Appendix 4). Students not only helped Josie to tailor her message to middle school and high school audiences, but they also coordinated the assemblies at their home schools. She has spoken to approximately 250 students to date, though she hopes to present the program to more than 2000 students throughout the Western Pennsylvania area over the next year.

In addition, at the Zoo's Polar Bear Birthday Party Events at the Zoo on Saturday, November 21st, several students set up a table and took turns presenting polar bear information and sharing polar bear biofacts with zoo visitors. Students raised $233 for Polar Bears International during the 3 hour event (See Appendix 3).

Finally, the kids found out from Josie that PBI is partnering with the American Association of Zoo Keepers (AAZK) to raise money for a program called, 'Trees for You and Me'. Unfortunately, Pittsburgh does not currently have an active chapter of AAZK, but because it ties in so well with the kids' project goals, we are currently trying to encourage our keepers to renew their affiliation with the organization. In the meantime, kids have contacted keepers to ask for donations, and they have proposed a contest to encourage keepers to donate to the cause. So far, students have collected $48 to go towards the AAZK's Trees for You and Me Program from the Zoo's keepers, and they are sponsoring a contest in which the Zoo department that donates the most money toward the program will win a pizza party. Donations will be accepted throughout December, and the contest winner will be announced December 22nd.

A few Zoo U. students have, also, developed a lesson on global warming that they presented to both 1st-year and 2nd-year KidScience students on December 5th and December 12th, 2009.

Conclusion/Future Plans

Because of the survey results indicating that Zoo U. kids are slightly more committed to conservation than KidScience kids, both groups have indicated that they want to step up their environmental efforts. Zoo U. students want to work more closely with KidScience students to serve as mentors and motivators for normal class projects and action projects alike. They have proposed lessons and games to engage the KidScience kids, and they want to share their

knowledge and experiences with their slightly younger peers. Zoo U. kids also indicate a desire to score even higher than the KidScience kids on future assessments. KidScience kids want to increase their scores by learning more about conservation biology and participating in more conservation activities. Their goal is to become more committed to conservation than the Zoo U. students.

The Polar Bears International program, which brought all of the students together in early November, inspired their view for their first action project of the year. By pledging their help to currently running conservation programs, they were able to get the support needed to take their first action steps this fall. They, also, had to contact and communicate with Zoo staff members, such as Josie Romasco, to assist with her projects and school programs, and they proposed their ideas to education staff members for approval when they wanted to set up a polar bear table at the bears' exhibit and when they wanted to ask for donations from keepers around the Zoo.

KidScience and Zoo U. students have learned several ways to engage the community, even as they learn to work together for a common goal. Students endeavored to educate zoo visitors, they helped to incorporate a conservation message into an age-appropriate school program, and they raised money that will be sent to well-established conservation organizations. The kids were able to perceive that even though many environmental issues are large and intimidating, each person can take small steps to affect change and positively influence the world.

Because of the condensed time frame, many of the kids' wonderful ideas had to be postponed until the spring, as we did not have enough time to prepare them and take action steps. Especially since the kids are so committed to the idea of conservation, we will be undertaking one project after another beginning in January. Steps for the Polar Bears International and Trees

for You and Me/Acres for the Atmosphere projects will continue for several more months, as kids want to organize tree planning days throughout the Pittsburgh area and encourage their schools to green their grounds by planning trees.

One future project is for KidScience to create a 15-20 minute show that they can present at the Zoo's amphitheater throughout the summer featuring kid-friendly conservation messages. After discussing the survey, many of the kids indicated that they do not learn enough about conservation and the environment at their schools. Nearly all of the middle school age students said that they had never had a lesson on global warming and everything they know about the topic is what they hear from television. Students specified that the same went for why it is important to recycle, 'green' technologies, and many of the other conservation messages that are popular today. To address this concern, the kids proposed that they research many of the common messages and present them in such a way that is entertaining and clear to younger audiences.

Students in both programs are also very excited about holding a Conservation Fair this spring. The proposed idea is that students would have an entire day in the spring, which the Zoo could advertise, during which students have different booths and tables throughout the Zoo with games, activities, prizes, and information about animals, the environment, and conservation. The kids will work in teams to design their own booths, and zoo visitors would visit each booth at their leisure as they walk throughout the Zoo. The kids would like to tie the fair in with the United Nations World Environment Day, which the Pittsburgh area will be hosting this spring. The kids also hope to work together to draft an article that could be sent out the Pittsburgh Zoo's *Zoo Explorer* members' magazine or as a media press release to draw interest in their fair and activities.

Though initially prompted by the Inquiry Action Project requirement, student community action projects are going to become a significant part of both the KidScience and Zoo U. curricula for years to come. The kids have gotten more eager about the proposed action projects than I ever imagined, and the steps already taken for the polar bear related projects speaks to the kids enthusiasm. They could have done only one or two steps to fulfill the requirements of the project, but instead, they proposed and carried out multiple project components, and they excitedly proposed plans for the future! The students are highly motivated and environmentally conscious by nature, but they way they have stepped up to the action project challenge has astonished me. I am fortunate to teach such mature, passionate students who take seriously the ability to make a difference in the world. I only hope I can provide the tools to prepare them for a productive, conservation-minded future.

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Appendix 1

KidScience/Zoo U. Pre-Survey

How old are you?

Approximately how long have you been taking KidScience and/or Zoo U. classes?

Do you remember the month and/or year of your first class?

Is your home in an urban (in a city), suburban (in a small town or housing plan), or rural area (surrounded mostly by fields and trees)?

What does the word environment mean?

What does the word nature mean?

What is conservation?

Why do you feel conservation is important?

What do you think is the biggest threat to the environment?

Place a number in the left column using the following scale for each question to estimate how you feel after reading each statement.

1	2	3	4	5
Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree

	When humans interfere with nature, it often produces disastrous consequences.
	The balance of nature is very delicate and easily upset.
	The balance of nature is strong enough to cope with the impacts of modern industrial nations.
	Humans are severely abusing the environment.
	The ecological crisis facing humankind has been greatly exaggerated.
	If things continue on their present course, we will soon experience a major ecological catastrophe.
	Human ingenuity will insure that we do not make earth unlivable.
	Despite our abilities, humans are still subject to the laws of nature.
	Humans will eventually learn enough about how nature works to be able to control it.
	The earth is like a spaceship with very limited room and resources.
	We are approaching the limit of the number of people the earth can support.
	The earth has plenty of natural resources if we just learn how to develop them.
	Plants and animals have as much right as humans to exist.
	Humans have the right to modify the natural environment to suit their needs.
	Humans were meant to rule over the rest of nature.

Please answer the following questions with a YES or NO

During the past 2 years, have you…

	Contributed time or money to an environmental or wildlife conservation group?
	Started buying a product because you think it protects the environment?
	Contacted a government agency to get information about the environment?
	Read a conservation or environmental magazine?
	Watched a television program on the environment?
	Learned about a political candidate's position on the environment?
	Recycled newspapers, glass, or other items on a regular basis?

Directions: Answer each question with **True** or **False**. There are no right or wrong answers. Simply answer with the statement that fits you best.

T or F ?

	When I grow up, I'd be willing to take a bus to work in order to reduce air pollution.
	I would never join a group or club which is concerned solely with ecological issues.
	I would be willing to use a bus system or other mass transit to help reduce air pollution.
	I would ask family and friends to give up driving on a weekend due to a smog alert.
	I'm not willing to go out of my way to do much about ecology since that's the government's job.
	I would donate a week's allowance to a foundation to help improve the environment.

	I would be willing to write my congressman weekly concerning ecologically issues.
	I probably wouldn't go house to house to distribute literature on the environment.
	I have not purchased a product due to its lower pollution impact.
	I keep track of my congressman's and senator's voting records on environmental issues.
	I have never written a congressman concerning pollution problems.
	I have contacted a community agency to find out what I can do about pollution.
	I don't make a special effort to buy products which are sold in recyclable containers.
	I have attended a meeting of a club specifically concerned with helping the environment.
	I have switched products for environmental reasons.
	I have never joined a cleanup drive.
	I have never attended a meeting related to ecology or the environment.
	I (or my family) subscribe(s) to ecological publications (magazines, newspapers, etc.).
	I feel people worry too much about pesticides on food products.
	It frightens me to think that much of the food I eat is contaminated with pesticides.
	It makes me angry or upset to think that the government doesn't do more to help control pollution of the environment.
	The statement "Many species are in danger of becoming extinct if we do not act now." doesn't bother me.
	I become very angry or upset when I think about the harm being done to plant and animal life by pollution.

	I am not bothered by “noise-pollution.”
	I get depressed on smoggy days.
	When I think of the ways industries are polluting, I get frustrated and angry.
	The whole pollution issue has never upset me much since I feel it’s somewhat overrated.
	I rarely ever worry about the effects of smog on myself and my family.

Appendix 2

Polar Bears: Symbols of the Arctic

11/7/2009
1:00 PM - 4:00 PM

CELEBRATE POLAR BEAR CONSERVATION
WITH A TRIP TO THE ARCTIC
(Via live video conferencing from Churchill Canada)

Zoo Adult Lecture Series
Saturday, November 7
1 p.m.

(Pittsburgh) (November 7, 2009)-Join the Pittsburgh Zoo & PPG Aquarium as we celebrate polar bear conservation with a unique opportunity to speak with Polar Bear International scientists and wildlife experts from Churchhill, Canada, home of the polar bear, through a live video conference, Saturday, November 7 at 1 p.m. "This is a great opportunity to ask questions of those who regularly have close up experiences with polar bears every day," says Margie Marks, Curator of Conservation Education. "The scientists will address threats facing polar bears and the strategies that researchers and conservationists are using to save these magnificent animals from extinction, plus it will be exciting to see polar bears moving about in the background too. "PPG Aquarium Aquarist Josie Romasco will begin the program with a discussion and photos from her recent trip to the Arctic to study polar bears.

Appendix 3

Students working the table at the Polar Bear Birthday Party

Appendix 4

Josie Romasco presenting to students at Avonworth High School

Appendix 5

Zoo U. student, Molly Corder, teaching 2nd Year KidScience students about global warming