



iSaveSpecies—Great Apes Summative Evaluation Report

Zoo Atlanta

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Executive Summary

The iSaveSpecies project, created by Project Dragonfly at Miami University and a consortium of zoos and aquariums, designed and implemented a socially-networked exhibit system to engage family visitors to zoos and aquariums in inquiry and conservation. The first wave of the iSaveSpecies exhibit stations focused on *Great Apes*, allowing families to conduct research on captive ape populations and to help save wild apes by joining the work of experienced field conservationists. Participating zoos have incorporated three touchscreen-based research and action kiosks in or near their ape/bonobo/orangutan exhibits.

To support these efforts, the Lifelong Learning Group conducted a summative evaluation to determine the effectiveness of the iSaveSpecies electronic interactive kiosks at engaging families in inquiry, STEM, and conservation actions. The study was designed to answer the question: Do the iSaveSpecies kiosks achieve their desired (collective) outcomes?

Data for this study were collected at four different zoos. This report focuses on Zoo Atlanta; data were collected onsite at the Zoo from adult visitors (N=239) in the gorilla viewing area. Two types of participants were sought—those who used the iSaveSpecies kiosk and those who did not—to complete a questionnaire or an interview.

The study found that visitors who engaged with the iSaveSpecies *inquiry kiosks reported they used basic science inquiry skills during their zoo visit*. Visitors who interacted with a kiosk reported they were more likely to talk with others in their group about what they observed or did, ask questions about what they observed, record information about an animal's behavior, and compare research results with others.

However, an essential inquiry skill is the ability to ask questions that lead to investigations, and respondents were less likely to share a question about the gorillas in response to an open-ended follow-up question on the questionnaire. Additionally, when asked how they would investigate their question, those who responded favored finding the answer on the internet or asking a zoo employee, rather than observing the gorilla. The low number of responses, the high number of simple/uninvestigable questions, and the visitors' passive investigation techniques may be due to several factors including a lack of time or an environment un conducive to writing a question and/or investigation.

Visitors who interacted with the iSaveSpecies kiosks reported they felt more knowledgeable about how to study gorillas, understood gorillas better, were more aware that gorillas need to be protected, and visit Zoo Atlanta to learn and/or support conservation. Interviewed visitors who explored the Do All Day kiosk had a better understanding of gorilla behavior and those who completed the Which Are You kiosk shared an understanding of different gorilla's personalities.

Zoo Atlanta visitors who interacted with the iSaveSpecies poster kiosk were more likely to report they understood great ape conservation efforts than visitors who did not use the poster kiosk. However, the mean scores for specific conservation actions were fairly neutral; with the mean scores for the majority of statements rated below the midpoint. Additionally, research indicates visitors come to zoos and other informal learning spaces holding a set of prior knowledge, the conservation knowledge and beliefs regarding gorillas need to be protected and recycling cell phones shared by respondents may have been informed by their current zoo visit, a print source, website, or visit to their cell phone store.

Visitors who engaged with the iSaveSpecies interactive kiosks feel it added value to their zoo visit. Mean scores for those who used the iSaveSpecies kiosks were all well above the midpoint. Respondents indicated they had fun, found a different way to engage with the animals, and received new information from the kiosk. The kiosks provided visitors on opportunity to participate in an activity they could do with others in their group.

The key outcomes of this study include:

- Visitors who interacted with the iSaveSpecies kiosks felt it added value to their zoo visit.
- Visitors who interacted with the iSaveSpecies kiosks felt more knowledgeable about how to study gorillas, and felt they could help gorillas than visitors who did not interact with the kiosks.
- Visitors who engaged with the iSaveSpecies *kiosks reported they used basic science inquiry skills during their zoo visit.* Visitors who interacted with a kiosk reported they were more likely to talk with others in their group about what they observed or did, ask questions about what they observed, and record information about an animal's behavior, and compare research results with others.

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Introduction

The iSaveSpecies project, created by Project Dragonfly at Miami University and a consortium of zoos and aquariums, designed and implemented a socially-networked exhibit system to engage family visitors to zoos and aquariums in inquiry and conservation. iSaveSpecies inquiry and action tools reside in an evolving library of exhibit interactives, modified by partner institutions to suit the particular needs of their visitors.

The first wave of the iSaveSpecies exhibit stations focused on *Great Apes*, allowing families to conduct research on captive ape populations and to help save wild apes by joining the work of experienced field conservationists. Six partner institutions — Cleveland Metroparks Zoo (Cleveland Zoo), Columbus Zoo & Aquarium (Columbus Zoo), Pittsburgh Zoo & PPG Aquarium (Pittsburgh Zoo), Riverbanks Zoo and Garden, The Santa Barbara Zoo, and Zoo Atlanta — have participated in this project, incorporating three touchscreen-based research and action kiosks in or near their ape/bonobo/orangutan exhibits. By building cross-institutional partnerships committed to sustaining life on our planet, the iSaveSpecies projects believes that the new tools for inquiry and public action will achieve broad national impact.

To support these efforts, a summative evaluation was conducted to determine the effectiveness of the iSaveSpecies electronic interactive kiosks at engaging families in inquiry, STEM, and conservation actions. This study built on a prior evaluation of the kiosks, the Great Apes Kiosk Evaluation, which focused on visitor interactions with the interactive kiosks. That study found that the level of engagement with the iSaveSpecies interactives was high at most sites and visitors who engaged with the interactives spent up to three minutes longer in a viewing area. Additionally, visitors who interacted with the kiosk were likely to understand the “what?” message, but they were less likely to understand the “why?” message.

While the prior evaluation provided insight into visitor interaction with the kiosks, this study focused on the efficacy of the iSaveSpecies interactive kiosks engaging visitors and delivering their messages, including encouraging visitors to develop inquiry skills, knowledge of pertinent STEM content, and engaging in specific conservation actions.

A summative design utilized questionnaires and interviews to gather data from zoo visitors. Questionnaire data were gathered from two types of zoo visitors: those who used an iSaveSpecies kiosk and those who did not. Interviews were conducted with adult visitors seen interacting with at least one of the iSaveSpecies kiosks.

The overarching evaluation question for this summative evaluation was: Do the iSaveSpecies kiosks achieve their desired (collective) outcomes? To address this larger question, five sub-questions were asked:

1. Did visitors who engaged with the iSaveSpecies inquiry kiosks report they have used basic science inquiry skills during their zoo visit?
2. Did visitors who engaged with the iSaveSpecies interactive kiosks have a better understanding of the STEM content related to the iSave Species kiosks?
3. Did visitors who engaged with the iSaveSpecies conservation poster kiosk understand great ape conservation efforts?
4. Did visitors who engaged with the iSaveSpecies conservation poster kiosks report involvement in specific conservation actions?

5. Did visitors who engaged with the iSaveSpecies interactive kiosks feel it added value to their zoo visit?

Methods

The audience for this summative evaluation study was adult visitors to the Zoo Atlanta gorilla area. Additionally, to better understand the impact of the iSaveSpecies interactives, two types of participants were sought; those who used the iSaveSpecies kiosk and those who did not.

To answer the evaluation questions, two different methods were used; a structured, intercept interview and a questionnaire. Using a continuous ask format, visitors who interacted with one of the iSaveSpecies kiosks were invited to participate in the interview as they completed the interactive. The interviews asked adults to describe what they did at the kiosk (s), and what they gained from the interaction in regards to scientific inquiry and environmental conservation.

The second method was a questionnaire. Since each kiosk had different goals for participants, separate questionnaires were designed and administered for each of the kiosks. While each questionnaire used the same demographic, conservation, and affect questions; each kiosk questionnaire had different inquiry questions. To better understand the impact of the kiosks, data were collected from those who did and those who did not engage with the kiosk. Visitors were asked to complete the questionnaire after they had passed the iSaveSpecies kiosk. Interview scripts and questionnaires can be found in Appendix A.

All data for the two methods of the study were collected with different groups of visitors. Data gathering was impacted by the uniqueness of the zoo's animal viewing area, including the placement of the kiosks within the viewing area.

Data were analyzed collectively. Interview responses were entered into an Excel spreadsheet and coded based on the question and the objectives of the interactive kiosks. During analysis, categories of visitor responses about their knowledge were developed inductively through the coding process (i.e., they emerged from the data itself rather than being prescribed). No demographic information was collected for visitors interviewed.

All questionnaire data were entered into an Excel spreadsheet. Quantitative data were transferred into SPSS for analysis. Open-ended data were coded using coding rubrics developed for this study. Quantitative data were analyzed descriptively and, where appropriate, inferential statistics were used to test specific questions or hypotheses about the data.

Findings

Participants

Visitor participants in this study completed either an interview or a questionnaire. Those who completed interviews are referred to as "interviewees" throughout this report, those who completed questionnaires are referred to as "respondents." Table 1 illustrates the visitors in each category.

Table 1. Visitor participants by study method

Zoo	Number of Interviewees	Number of Respondents
Atlanta	19	220

Every effort was made to gather data for each interactive kiosk. Table 2 itemizes the frequency of visitors interviewed per kiosk. While the majority of visitors typically commented on only one kiosk, one visitor commented on more than one. No demographic information was collected for visitors interviewed.

Table 2. Exit Interviews completed for each interactive kiosk (n=19)*

Interactive Kiosks	Number of Interviewees
Which Gorilla Are You?	9
What Do Gorillas Do All Day?	5
Conservation Poster	6

*One interviewee discussed two exhibits

Separate questionnaires were designed and administered for each of the kiosks. Table 3 has a breakdown of questionnaires completed by kiosk. Data indicate that respondents were likely to be white (68%) females (66%) traveling through the zoo with family (73%). Almost one quarter of the respondents (23%) were frequent visitors, visiting two or more times each year, many were first time (43%) or infrequent (34%) zoo visitors, visiting once or less per year. More than half of the respondents (57%) spent 5 – 15 minutes with the gorillas. The respondents were unlikely to be zoo members (77%). Appendix B contains tables for each of the demographic questions included in the questionnaire.

Table 3. Questionnaires completed for each interactive kiosk (n=220)

Interactive Kiosks	Number of Respondents
Which Gorilla Are You?	70
What Do Gorillas Do All Day?	72
Conservation Poster	78

Inquiry Skills

Overall, visitors interacting with the iSaveSpecies kiosks reported using inquiry skills more often than those who did not interact with the iSaveSpecies kiosk during their visit to the gorilla area at Zoo Atlanta. The skills most often used by those who interacted with the kiosks were talking with others in their group about what they observed or did, and asking questions about what they observed.

How We Know

Table 4 contains a list of inquiry skills divided by those who interacted with a kiosk (either on this visit or a prior visit) and those who did not interact with any of the kiosks. Inquiry skills most often used by visitors include:

- Talking with others in my group about what I observed or did
- Asking questions about what I observed

For the majority of inquiry skills, questionnaire respondents who interacted with the iSaveSpecies kiosks were more likely to report using inquiry skills than respondents who did not use the iSaveSpecies kiosks. Using a Mann-Whitney U test, a statistically significant positive difference was found with the following skills:

- Asking questions about what I observed
- Recorded information about an animal's behavior (on a touch screen or on paper)
- Compared research results with others

There were two skills used by a greater percentage of those who didn't interact with a kiosk, observing a single animal carefully and making a prediction about an animal's behavior. A statistically significant difference was found with one these skills:

- Observing a single animal carefully for more than a few seconds

Table 4. Respondent's use of inquiry skills separated by interaction with kiosks

	Interact (Frequency/%) n=123	No Interact (Frequency/%) n=97	z	p
Talked with others in my group about what I observed or did	91 (74%)	64 (66%)	-1.289	.197
Asked questions about what I observed	61 (50%)	26 (27%)	-3.425	.001***
Observed a single animal carefully for more than a few seconds	32 (26%)	38 (39%)	-2.076	.038*
Participated in research by answering questions	29 (24%)	16 (17%)	-1.290	.197
Discovered that I am similar to an animal	22 (18%)	14 (14%)	-.686	.493
Compared myself to an animal	21 (17%)	14 (14%)	-.530	.596
Made a prediction about an animal's behavior	19 (15%)	24 (25%)	-1.722	.085
Recorded information about an animal's behavior (on a touchscreen or on paper)	17 (14%)	5 (5%)	-2.123	.034*
Compared research results with others	10 (8%)	2 (2%)	-1.963	.050*

N=220

***statistically significant to .001

*statistically significant to .05

Overall, the kiosks appear equally effective at encouraging the use of specific inquiry skills, additional analysis revealed that inquiry skills were reported consistently among the kiosks; however, a high percentage of visitors talked with others in their group about what they observed, regardless of kiosk use. Table 5 includes the complete analysis.

Table 5. Respondent's use of inquiry skills separated by interaction with each kiosk

Inquiry Skills	Poster		Do All Day		Which Are You	
	No Interact n=26	Interact n=52	No Interact n=39	Interact n=33	No Interact n=32	Interact n=38
Talked with others in my group about what I observed or did	20 (77%)	32(71%)	24(62%)	24 (73%)	20(63%)	30(79%)
Asked questions about what I observed	10(39%)	23(44%)	8(21%)	17(52%)	8(25%)	21(55%)
Compared research results with others			5(13%)	17(52%)		
Observed a single animal carefully for more than a few seconds			2(5%)	10(30%)		
Made a prediction about an animal's behavior			38(97%)	32(97%)		
Recorded information about an animal's behavior (on a touchscreen or on paper)			24(62%)	19(58%)		
Compared myself to an animal					14(44%)	21 (55%)
Discovered that I am similar to an animal					14(44%)	22(58%)
Participated in research by answering questions					16(50%)	29(76%)

Regarding skills visitors felt they had not engaged in, the issue may be a matter of question semantics. Respondents may have not asked questions about what they observed or they may have felt that they needed to ask a question of a zookeeper or a docent. Those who did not indicate they recorded information about an animal's behavior may not have realized that answering the questions while interacting with the kiosk was recording information.

An essential inquiry skill is the ability to ask questions that lead to investigations. To get a sense of a visitor's ability to do this, questionnaire respondents and interviewees were asked "Based on your viewing in the primate area, what questions do you have about the gorillas?" and "How could someone investigate this?" about half of visitors completing questionnaires (109 of 220) and interviews (13 of 19) shared a question and only 65 visitors who completed questionnaires and 13 visitors interviewed shared how they would investigate this question. These low numbers may be due to the visitor's inability to articulate a question or formulate an investigation about gorillas when they are focused on closed-ended questions or lack time because other members of their party desire to move to another exhibit. Additionally, respondents might not have found the environment conducive to writing a question and/or investigation scenario.

To determine if a question were investigable, responses to the question and investigation were examined collectively. In addition to the original categories of simple/uninvestigable and investigable; two additional question themes emerged, animal contentment and conservation. A question was considered investigable if the visitor proposed to investigate their question by observing the gorillas. For example, two respondents may both have written "What do the gorillas eat?" as their question. If the respondent followed up with an investigation that included watching the gorilla eat, the question was classified as investigable. If the visitor shared they would investigate by asking someone, the question was classified as simple/uninvestigable.

The majority of the questions were considered simple or uninvestigable (95 or 78%). To better understand visitor's interest, the simple questions were further coded into four categories: behavior, age, environment, and personal. Although the majority of those who answered this question (both questionnaire and interview) shared only one question, a few guests wrote several. Simple/uninvestigable questions were most likely about the gorillas age (20) behavior patterns (31), personal information (44), and their natural environment (5). Personal questions included those that asked questions about specific gorillas and family relationships, such as "What is the baby's name?", "Will other family groups be initiated at Zoo Atlanta?", "What is their relationship to Willie B?", and "How many babies are born here each year?" Behavior-related questions, including: "How do they sleep?", "When do they eat?", and "Is there a specific pattern for playing?"

There were 14 investigable questions, including: “If they encounter GA indigenous snakes: How do they react?” which would be investigated by “Observe, which is improbable at best” and “What are you thinking” which would be investigated by “probably through extensive observation or sign language.” Additionally, there were seven questions that focused on the gorilla’s contentment, including “Dos gorillas sufren de depresion al estar en cautiverio?” and “How is stress on the animals measured and monitored on a daily basis?” There were four conservation-related questions, including, “What can I do as an elementary school teacher to help w/ gorilla conservation?” and one question that was coded to Other, “Do they use conditioner?”

STEM Content

Visitors who interacted with the iSaveSpecies kiosks reported they felt more knowledgeable about how to study gorillas, might like to study gorillas, and felt they could help gorillas than visitors who did not interact with the kiosks. Interviewed visitors who explored the Do All Day kiosk felt the kiosk provided opportunities to “became more personal w/ the animal” and that the Atlanta Zoo gorillas spent their time grooming and resting. Interviewees who completed the Which Are You kiosk shared that “some gorillas are like people, they have the same personalities.”

How We Know

On a scale where 1 represents Strongly Disagree and 7 represents Strongly Agree, questionnaire respondents who interacted with an iSaveSpecies kiosk were more likely to agree with statements that they were more knowledgeable about how to study gorillas, might like to study gorillas, and felt they could help gorillas. Analyzing the data with an independent samples t-test, statistically significant differences were found with the following statements:

- I am more knowledgeable about how to study gorillas
- I understand gorillas better
- I visit Zoo Atlanta to learn and/or support conservation
- I am more aware that gorillas need to be protected.

The statement with the highest mean score for both groups was “I am more aware that gorillas need to be protected,” indicating the majority of the visitors had an understanding that the gorillas need to be protected that they gained from their zoo visit or other sources. See Table 6.

Interviewed visitors who explored the Do All Day kiosk felt the kiosk “Made you look at one gorilla, [I] became more personal w/ the animal.” Interviewees found that the Atlanta Zoo gorillas spent their time grooming and resting. A nine year old girl who completed the Which Are You kiosk shared that she learned that “some gorillas are like people, they have the same personalities.” A seven year old girl stated “some mean looking gorillas are really nice,” and an eight year old boy shared, “I’m like Chumba, a strong risk-taker up for challenges.” Finally, a ten year old girl who created a poster shared she learned the sounds gorillas make.

Table 6. Respondents feelings regarding STEM content separated by interaction with kiosks

I feel . . .	No Interaction Mean	Interaction Mean	Mean Difference	T	df	sig
I am more knowledgeable about how to study gorillas	3.62	4.52	0.906	-3.59	183	.000***
I understand gorillas better	4.01	4.76	0.746	-2.96	181	.004**
I visit Zoo Atlanta to learn and/or support conservation	3.93	4.64	0.711	-2.48	182	.014*
I am more aware that gorillas need to be protected	4.86	5.43	0.576	-2.32	182	.022*
I might like to study gorillas (behavior, personality, etc.)	3.79	4.34	0.554	-1.89	179	0.06
I can help gorillas	4.2	4.69	0.491	-1.95	180	0.053
I can investigate gorilla behavior through careful observation	4.29	4.77	0.474	-1.914	182	0.057
I would like to work to help save gorillas in the wild	3.78	4.25	0.469	-1.6	180	0.112

N=220

n for No Interaction ranges from 83-85

n for Interaction ranges from 97-101

***statistically significant to .001

**statistically significant to .01

*statistically significant to .05

Conservation Efforts

Zoo Atlanta visitors interacting with the iSaveSpecies poster kiosk were more likely to report they understood general great ape conservation efforts than visitors who did not use the iSaveSpecies poster kiosk. Specific conservation actions do not appear to be influenced by the Poster kiosk; visitors most likely receive these messages throughout the zoo.

How We Know

Statistically significant differences were found between respondents who interacted with the iSaveSpecies poster kiosk and those who did not, using a Mann-Whitney U test, for the following statements:

- Learned about an animal or conservation issue
- Shared what I learned with others

The poster kiosk appeared to raise visitor awareness of gorilla behavior and habitat. Table 7 illustrates visitors’ knowledge of conservation issues divided by interaction with the poster kiosk. Interviewees interacting with the poster stated “Zoo Atlanta helps protect gorillas in the wild,” and another said, “we should help them.”

Table 7. Visitors’ knowledge of conservation issues separated by interaction with kiosks

	No Poster Frequency (%)	Poster Frequency (%)	Z	p
	N=168	N=52		
Learned about an animal or conservation issue	13 (8%)	42 (81%)	-11.011	.000***
Shared what I learned with others	11 (7%)	26 (50%)	-9.734	.000***

N=220

***statistically significant to .001

Respondents were asked to rate their level of agreement with a set of conservation-themed statements, where 1 represents Strongly Disagree and 7 represents Strongly Agree. (See table 8.) Data were analyzed for two groups, those who interacted with the Poster kiosk on this visit or a prior visit and those who did not interact with the Poster kiosk. Questionnaire respondents interacting with the iSaveSpecies poster kiosk were more likely to agree with statements that they might like to study gorillas and they visit Zoo Atlanta to learn and/or support conservation.

The statement with the highest mean score for both groups (above 5.0) was “I am more aware that gorillas need to be protected,” indicating visitors understand that the gorillas need to be protected, either from this or prior zoo visits, or from messages received outside the zoo.

Table 8. Respondents feelings regarding conservation measures separated by interaction with the poster kiosk

I feel . . .	No Poster Mean	Poster Mean	Mean Difference	t	df	P
I might like to study gorillas (behavior, personality, etc.)	3.99	4.44	0.45	1.259	179	.210
I visit Zoo Atlanta to learn and/or support conservation.	4.23	4.62	0.394	1.141	182	.255
I would like to work to help save gorillas in the wild	3.98	4.24	0.265	.753	180	.452
I can help gorillas.	4.41	4.65	0.242	.790	180	.431
I am more aware that gorillas need to be protected.	5.13	5.31	0.183	.610	182	.542
I understand gorillas better	4.40	4.45	0.048	.157	181	.875

N=220

n for No Poster ranges from 141-144

n for Poster ranges from 39-42

Specific conservation actions do not appear to be influenced by the Poster kiosk; three of the four specific conservation action statements were rated lower by those who interacted with the poster than those who did not. See Table 9. Additionally, three of the four statements were below the midpoint for both groups. Cell phone recycling was the highest rated specific conservation measure among all visitors: those who interacted with the poster kiosk and those who did not— possibly because visitors receive this message multiple times from multiple sources or the zoo directed visitors to this action. Finally, messages throughout the zoo encourage donation, so visitors most likely received this message multiple times from multiple sources.

Table 9. Visitors likelihood of completing specific conservation actions

	No Poster Mean	Poster Mean	Mean Difference	t	df	p
Create a conservation poster and e-mail it to someone.	2.64	3.23	0.593	1.632	186	.104
Recycle my cellphone or tell friends or family they should recycle.	5.09	5.02	-0.064	-.170	186	.865
Donate to organizations that support gorilla conservation or ask others to do so.	3.79	3.68	-0.12	-.346	184	.730
Donate to this zoo for gorilla conservation or ask others to do so.	3.89	3.65	-0.241	-.691	185	.491

N=220

n for No Poster ranges from 146-149

n for Poster ranges from 39-41

Value Added

Visitors who used the iSaveSpecies kiosks found that the kiosks added value to their visit.

How We Know

Respondents who indicated they interacted with a kiosk were asked to rate their level of agreement with a set of value-added statements, where 1 represents Strongly Disagree and 7 represents Strongly Agree. See Table 10. All statements were found to be above the midpoint, indicating visitors were generally pleased with the kiosks. The interviews found that the majority of interviewees were with family groups (18 of 19) and respondents appeared to appreciate that the kiosk was an activity they could do with others in their group. Respondents also indicated they had fun and that the interactive was appealing and provided a different way to engage with the animals.

Table 10. Respondents who interacted with a kiosk feelings regarding value added statements

	Mean	Std. Deviation
I had fun with the touchscreen interactive activity.	5.56	1.439
The touchscreen interactive was appealing	5.55	1.449
The touchscreen interactive activity provided me a different way to engage with the animals	5.5	1.528
The touchscreen interactive provided an activity I could do with others in my group	5.41	1.472
The touchscreen interactive provided me with new information	5.31	1.523
Stopping at the touchscreen interactive was worth my time	5.21	1.597
I will look at gorillas differently because of the touchscreen interactive activity	4.86	1.677

n ranges from 76-80

Conclusions

The overarching question for this summative evaluation was:

Do the iSaveSpecies kiosks achieve their desired (collective) outcomes?

To answer this question, five sub-questions were asked to allow for analysis of the impact of iSaveSpecies interactive kiosks on the different outcomes.

- Did visitors who engaged with the iSaveSpecies inquiry kiosks report they have used basic science inquiry skills during their zoo visit?

To some degree. Closed-ended questions indicate the kiosks appear to be effective in promoting basic inquiry skills and increasing visitors' knowledge of gorillas. Visitors who interacted with a kiosk were more likely to talk with others in their group about what they observed or did, ask questions about what they observed, record information about an animal's behavior, and compare research results with others.

However, an essential inquiry skill is the ability to ask questions that lead to investigations. While responses to a close-ended question indicated respondents asked questions about what they observed, they were less likely to share a question they had about the gorillas in response to an open-ended follow-up question on the questionnaire. Additionally, when asked how they would

investigate their question, those who responded favored finding the answer on the internet or asking a zoo employee, rather than observing the gorilla. The low number of responses, the high number of simple/uninvestigable questions, and the visitors' passive investigation techniques may be due to lack of time at this exhibit. Another factor, the high percentage of visitors in this sample who were infrequent zoo visitors, might also limit visitor's time with the questionnaire as research indicates that infrequent visitors to a museum or zoo try to see as much as possible and spend less time with any individual exhibit. Finally, respondents might not have found the environment conducive to writing a question and/or investigation scenario.

- Did visitors who engaged with the iSaveSpecies interactive kiosks have a better understanding of the STEM content related to the iSave Species kiosks?

Yes, visitors who interacted with the iSaveSpecies kiosks reported they felt more knowledgeable about how to study gorillas, understand gorillas better, are more aware that gorillas need to be protected, and visit Zoo Atlanta to learn and/or support conservation. Interviewed visitors who explored the Do All Day kiosk felt the kiosk provided opportunities to "became more personal w/ the animal" and that the Atlanta Zoo gorillas spent their time grooming and resting. Interviewees who completed the Which Are You kiosk shared that "some gorillas are like people, they have the same personalities."

- Did visitors who engaged with the iSaveSpecies conservation poster kiosk understand great ape conservation efforts?
- Did visitors who engaged with the iSaveSpecies conservation poster kiosks report involvement in specific conservation actions?

To some extent. Zoo Atlanta visitors who interacted with the iSaveSpecies poster kiosk were more likely to report they understood general great ape conservation efforts than visitors who did not use the poster kiosk. However, the mean scores for specific conservation actions were fairly neutral; with the mean scores for the majority of statements rated below the midpoint.

Additionally, research indicates visitors come to zoos and other informal learning spaces holding a set of prior knowledge, the conservation knowledge and beliefs regarding gorillas need to be protected and recycling cell phones shared by respondents may have been informed by their current zoo visit, a print source, website, or visit to their cell phone store.

- Did visitors who engaged with the iSaveSpecies interactive kiosks feel it added value to their zoo visit?

Yes, mean scores for those who used the iSaveSpecies kiosks were all well above the midpoint. Respondents indicated they had fun and found a different way to engage with the animals. The kiosks provided visitors on opportunity to participate in an activity they could do with others in their group.

Appendix A: Data Collection Instruments

Zoo Atlanta Interview

This zoo has recently installed some new interactive kiosks in this area and we are trying to better understand who uses these and what visitors might gain from these experiences. May I ask you a few questions about your experience in the gorilla area. It will take about ten minutes and your participation is voluntary and your responses are completely confidential.

Begin by showing visitor screen shot cards and asking the following questions for each of the 3 kiosks (A, B, C).

A	1. During your visit today, do you remember seeing this exhibit? Y N 2. Did you, or anyone in your group, interact with the exhibit (push buttons, read information, etc)? Y N If yes, what did you do?
3. If yes to question 2, who in your group interacted with the exhibit. 4. What did you learn, if anything, from this exhibit?	
B	1. During your visit today, do you remember seeing this exhibit? Y N 2. Did you, or anyone in your group, interact with the exhibit (push buttons, read information, etc)? Y N If yes, what did you do?
3. If yes to question 2, who in your group interacted with the exhibit. 4. What did you learn, if anything, from this exhibit?	
C	1. During your visit today, do you remember seeing this exhibit? Y N 2. Did you, or anyone in your group, interact with the exhibit (push buttons, read information, etc)? Y N If yes, what did you do?
3. If yes to question 2, who in your group interacted with the exhibit. 4. What did you learn, if anything, from this exhibit?	

Talk to me about how this/these experiences [with the kiosks] relate to investigating gorillas or how to understand them better?

Based on your viewing in the primate area, what questions do you have about the gorillas?

How could someone investigate this?

This zoo is committed to conserving animals in the wild. Did these experiences introduce you to or remind you of things you might do to help the primates?

Zoo Atlanta
Which Gorilla Are You?

This zoo has recently installed new interactive kiosks in this area and we are trying to better understand who uses these kiosks and what visitors might gain from these experiences. The survey will take you about five minutes to complete. Your participation is voluntary and your responses are completely confidential.

During your visit today, about how much time did you spend with the gorillas?

- Less than 3 minutes
- 3 – 5 minutes
- 5 – 10 minutes
- 10 – 15 minutes
- 15 + minutes

During your visit today, do you remember seeing this touchscreen interactive? Yes No



Did you, or anyone in your group, interact with the exhibit (push buttons, read information, etc.)? Yes No

Who in your group interacted with the exhibit? #Adult _____ #Youth _____

Please circle the best answer if you did any of the following during your visit at the gorilla area:

- | | | |
|---|-----|----|
| Participated in research by answering questions | Yes | No |
| Compared myself to an animal | Yes | No |
| Discovered that I am similar to an animal | Yes | No |
| Asked questions about what I observed or did | Yes | No |
| Talked with others in my group about what I observed or did | Yes | No |

Did you or anyone from your group already interact with this touchscreen on an earlier visit to the zoo?

- Yes No

Based on your viewing in the gorilla area, what is a question you would like to ask about the gorillas?

How could someone investigate your question?

How likely are you to participate in these conservation actions, where 1 represents very unlikely and 7 represents very likely?

	Very Unlikely				Very Likely		
Create a conservation poster and e-mail it to someone.	1	2	3	4	5	6	7
Recycle my cellphone or tell friends or family they should recycle.	1	2	3	4	5	6	7
Donate to this zoo for gorilla conservation or ask others to do so.	1	2	3	4	5	6	7
Donate to organizations that support gorilla conservation or ask others to do so.	1	2	3	4	5	6	7

We would like to know if that interaction changed the way you feel about science and conservation. Please rate the extent to which you agree with the following statements using a scale from 1 (strongly disagree) to 7 (strongly agree).

I feel . . .	Strongly Disagree				Strongly Agree		
I am more knowledgeable about how to study gorillas.	1	2	3	4	5	6	7
I can investigate gorilla behavior through careful observation.	1	2	3	4	5	6	7
I am more aware that gorillas need to be protected.	1	2	3	4	5	6	7
I can help gorillas.	1	2	3	4	5	6	7
I might like to study gorillas (behavior, personality, etc.)	1	2	3	4	5	6	7
I understand gorillas better	1	2	3	4	5	6	7
I would like to work to help save gorillas in the wild	1	2	3	4	5	6	7
I visit Zoo Atlanta to learn and/or support conservation.	1	2	3	4	5	6	7

• If you used the touchscreen interactive today, please answer the question below. **If not, please skip to the next page and tell us a little about yourself.**

We would like to know if the touchscreen interactive **added value** to your experience with the gorillas. Please rate the extent to which you agree with the following statements using a scale from 1 (strongly disagree) to 7 (strongly agree).

	Strongly Disagree				Strongly Agree		
Stopping at the touchscreen interactive was worth my time	1	2	3	4	5	6	7
The touchscreen interactive was appealing	1	2	3	4	5	6	7
The touchscreen interactive provided an activity I could do with others in my group	1	2	3	4	5	6	7
I had fun with the touchscreen interactive activity.	1	2	3	4	5	6	7
The touchscreen interactive activity provided me a different way to engage with the animals	1	2	3	4	5	6	7
The touchscreen interactive provided me with new information	1	2	3	4	5	6	7
I will look at gorillas differently because of the touchscreen interactive activity	1	2	3	4	5	6	7

Please tell me a little about yourself.

Are you a member of Zoo Atlanta?

- Yes
- No

About how often do you visit Zoo Atlanta?

- Today is my first visit
- I haven't visited for many years
- Once every few years
- About once a year
- 2-4 times per year
- 5+ times per year

Who are you with today?

Including you, how many people are in your group today?

Adults _____ # Children _____

Are you

- Male
- Female

What is your race/ethnicity? (Please check all that apply)

- African American/Black
- American Indian/Native Alaskan
- Asian/Asian American
- Latino(a) or Hispanic
- Native Hawaiian/Pacific Islander
- White, Non-Hispanic

What are the ages of the adults in your group? [Check all that apply]:

- 18-29
- 30-39
- 40-49
- 50-59
- 60+

What are the ages of the children in your group (if any)? [Check all that apply]:

- Infant – less than 2 years old
- 2 – 4 years old
- 5 – 7 years old
- 8 – 12 years old
- 13 – 17 years old

Thank you for taking the time to help us today!

Zoo Atlanta
Help Save Gorillas! Poster

This zoo has recently installed new interactive kiosks in this area and we are trying to better understand who uses these kiosks and what visitors might gain from these experiences. The survey will take you about five minutes to complete. Your participation is voluntary and your responses are completely confidential.

During your visit today, about how much time did you spend with the gorillas?

- Less than 3 minutes
- 3 – 5 minutes
- 5 – 10 minutes
- 10 – 15 minutes
- 15 + minutes

During your visit today, do you remember seeing this touchscreen interactive? Yes No



Did you, or anyone in your group, interact with the exhibit (push buttons, read information, etc.)?

- Yes No

Who in your group interacted with the exhibit?

#Adult _____ #Youth _____

Please circle the best answer if you did any of the following during your visit at the gorilla area:

- | | | |
|---|-----|----|
| Learned about an animal or conservation issue | Yes | No |
| Shared what I learned with others | Yes | No |
| Asked questions about what I observed | Yes | No |
| Talked with others in my group about what I observed or did | Yes | No |

Did you or anyone from your group already interact with this touchscreen on an earlier visit to the zoo?

- Yes No

Based on your viewing in the gorilla area, what is a question you would like to ask about the gorillas?

How could someone investigate your question?

How likely are you to participate in these conservation actions, where 1 represents very unlikely and 7 represents very likely?

	Very Unlikely				Very Likely		
Create a conservation poster and e-mail it to someone.	1	2	3	4	5	6	7
Recycle my cellphone or tell friends or family they should recycle.	1	2	3	4	5	6	7
Donate to this zoo for gorilla conservation or ask others to do so.	1	2	3	4	5	6	7
Donate to organizations that support gorilla conservation or ask others to do so.	1	2	3	4	5	6	7

We would like to know if that interaction changed the way you feel about science and conservation. Please rate the extent to which you agree with the following statements using a scale from 1 (strongly disagree) to 7 (strongly agree).

I feel . . .	Strongly Disagree				Strongly Agree		
I am more knowledgeable about how to study gorillas.	1	2	3	4	5	6	7
I can investigate gorilla behavior through careful observation.	1	2	3	4	5	6	7
I am more aware that gorillas need to be protected.	1	2	3	4	5	6	7
I can help gorillas.	1	2	3	4	5	6	7
I might like to study gorillas (behavior, personality, etc.)	1	2	3	4	5	6	7
I understand gorillas better	1	2	3	4	5	6	7
I would like to work to help save gorillas in the wild	1	2	3	4	5	6	7
I visit Zoo Atlanta to learn and/or support conservation.	1	2	3	4	5	6	7

If you used the touchscreen interactive today, please answer the question below. **If not, please skip to the next page and tell us a little about yourself.**

We would like to know if the touchscreen interactive **added value** to your experience with the gorillas. Please rate the extent to which you agree with the following statements using a scale from 1 (strongly disagree) to 7 (strongly agree).

	Strongly Disagree				Strongly Agree		
Stopping at the touchscreen interactive was worth my time	1	2	3	4	5	6	7
The touchscreen interactive was appealing	1	2	3	4	5	6	7
The touchscreen interactive provided an activity I could do with others in my group	1	2	3	4	5	6	7
I had fun with the touchscreen interactive activity.	1	2	3	4	5	6	7
The touchscreen interactive activity provided me a different way to engage with the animals	1	2	3	4	5	6	7
The touchscreen interactive provided me with new information	1	2	3	4	5	6	7
I will look at gorillas differently because of the touchscreen interactive activity	1	2	3	4	5	6	7

Please tell me a little about yourself.

Are you a member of Zoo Atlanta?

- Yes
- No

About how often do you visit Zoo Atlanta?

- Today is my first visit
- I haven't visited for many years
- Once every few years
- About once a year
- 2-4 times per year
- 5+ times per year

Who are you with today?

Including you, how many people are in your group today?

Adults _____ # Children _____

Are you

- Male
- Female

What is your race/ethnicity? (Please check all that apply)

- African American/Black
- American Indian/Native Alaskan
- Asian/Asian American
- Latino(a) or Hispanic
- Native Hawaiian/Pacific Islander
- White, Non-Hispanic

What are the ages of the adults in your group? [Check all that apply]:

- 18-29
- 30-39
- 40-49
- 50-59
- 60+

What are the ages of the children in your group (if any)? [Check all that apply]:

- Infant – less than 2 years old
- 2 – 4 years old
- 5 – 7 years old
- 8 – 12 years old
- 13 – 17 years old

Thank you for taking the time to help us today!

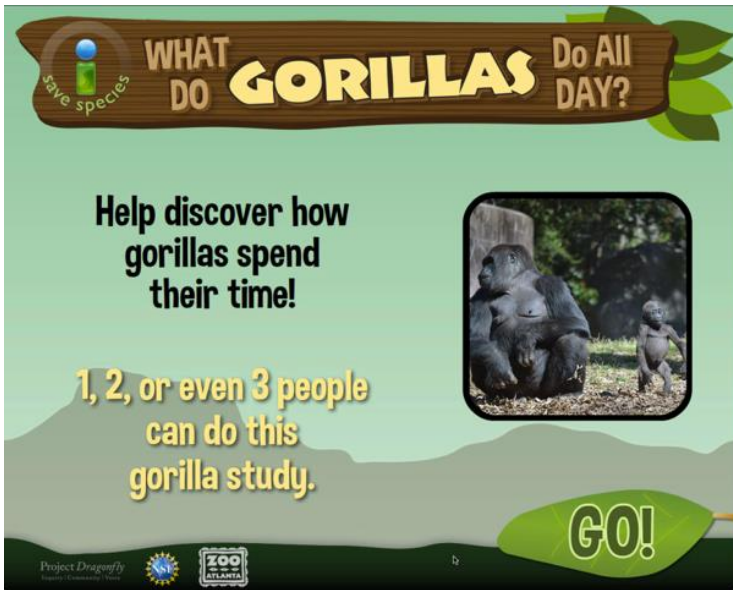
Zoo Atlanta
What Do Gorillas Do All Day?

This zoo has recently installed new interactive kiosks in this area and we are trying to better understand who uses these kiosks and what visitors might gain from these experiences. The survey will take you about five minutes to complete. Your participation is voluntary and your responses are completely confidential.

During your visit today, about how much time did you spend with the gorillas?

- Less than 3 minutes
- 3 – 5 minutes
- 5 – 10 minutes
- 10 – 15 minutes
- 15 + minutes

During your visit today, do you remember seeing this touchscreen interactive? Yes No



Did you, or anyone in your group, interact with the exhibit (push buttons, read information, etc.)?

- Yes No

Who in your group interacted with the exhibit?

#Adult _____ #Youth _____

Please circle the best answer if you did any of the following during your visit at the gorilla area:

- | | | |
|--|-----|----|
| Observed a single animal carefully for more than a few seconds | Yes | No |
| Made a prediction about an animal's behavior | Yes | No |
| Recorded information about an animal's behavior (on a touchscreen or on paper) | Yes | No |
| Compared research results with others | Yes | No |
| Asked questions about what I observed | Yes | No |
| Talked with others in my group about what I observed or did | Yes | No |

Did you or anyone from your group already interact with this touchscreen on an earlier visit to the zoo?

- Yes No

Based on your viewing in the gorilla area, what is a question you would like to ask about the gorillas?

How could someone investigate your question?

How likely are you to participate in these conservation actions, where 1 represents very unlikely and 7 represents very likely?

	Very Unlikely				Very Likely		
Create a conservation poster and e-mail it to someone.	1	2	3	4	5	6	7
Recycle my cellphone or tell friends or family they should recycle.	1	2	3	4	5	6	7
Donate to this zoo for gorilla conservation or ask others to do so.	1	2	3	4	5	6	7
Donate to organizations that support gorilla conservation or ask others to do so.	1	2	3	4	5	6	7

We would like to know if that interaction changed the way you feel about science and conservation. Please rate the extent to which you agree with the following statements using a scale from 1 (strongly disagree) to 7 (strongly agree).

I feel . . .	Strongly Disagree				Strongly Agree		
I am more knowledgeable about how to study gorillas.	1	2	3	4	5	6	7
I can investigate gorilla behavior through careful observation.	1	2	3	4	5	6	7
I am more aware that gorillas need to be protected.	1	2	3	4	5	6	7
I can help gorillas.	1	2	3	4	5	6	7
I might like to study gorillas (behavior, personality, etc.)	1	2	3	4	5	6	7
I understand gorillas better	1	2	3	4	5	6	7
I would like to work to help save gorillas in the wild	1	2	3	4	5	6	7
• I visit Zoo Atlanta to learn and/or support conservation.	1	2	3	4	5	6	7

If you used the touchscreen interactive today, please answer the question below. **If not, please skip to the next page and tell us a little about yourself.**

We would like to know if the touchscreen interactive **added value** to your experience with the gorillas. Please rate the extent to which you agree with the following statements using a scale from 1 (strongly disagree) to 7 (strongly agree).

	Strongly Disagree				Strongly Agree		
Stopping at the touchscreen interactive was worth my time	1	2	3	4	5	6	7
The touchscreen interactive was appealing	1	2	3	4	5	6	7
The touchscreen interactive provided an activity I could do with others in my group	1	2	3	4	5	6	7
I had fun with the touchscreen interactive activity.	1	2	3	4	5	6	7
The touchscreen interactive activity provided me a different way to engage with the animals	1	2	3	4	5	6	7
The touchscreen interactive provided me with new information	1	2	3	4	5	6	7
I will look at gorillas differently because of the touchscreen interactive activity	1	2	3	4	5	6	7

Please tell me a little about yourself.

Are you a member of Zoo Atlanta?

- Yes
- No

About how often do you visit Zoo Atlanta?

- Today is my first visit
- I haven't visited for many years
- Once every few years
- About once a year
- 2-4 times per year
- 5+ times per year

Who are you with today?

Including you, how many people are in your group today?

Adults _____ # Children _____

Are you

- Male
- Female

What is your race/ethnicity? (Please check all that apply)

- African American/Black
- American Indian/Native Alaskan
- Asian/Asian American
- Latino(a) or Hispanic
- Native Hawaiian/Pacific Islander
- White, Non-Hispanic

What are the ages of the adults in your group? [Check all that apply]:

- 18-29
- 30-39
- 40-49
- 50-59
- 60+

What are the ages of the children in your group (if any)? [Check all that apply]:

- Infant – less than 2 years old
- 2 – 4 years old
- 5 – 7 years old
- 8 – 12 years old
- 13 – 17 years old

Thank you for taking the time to help us today!

Appendix B: Demographic Tables

Table 11. Amount of time spent with gorillas

	Number	%
Less than 3 minutes	12	6%
3 – 5 minutes	40	19%
5 – 10 minutes	83	38%
10 – 15 minutes	42	19%
15 + minutes	39	18%

N = 216

Table 12. Zoo membership

	Number	%
Yes	50	23%
No	169	77%

N = 219

Table 13. Visit frequency

	Number	%
Today is my first visit	94	43%
I haven't visited for many years	32	15%
Once every few years	25	12%
About once a year	15	7%
2-4 times per year	23	11%
5+ times per year	27	12%

N = 216

Table 14. Others in respondent's group

	Number	%
Family	115	73%
Friends	14	9%
Family & Friends	13	8%
Couple	11	7%
Alone	3	2%
Group	2	1%

N = 158

Table 15. Number of Adults in Respondent's Group

	Number	%
1	47	21%
2	102	47%
3	31	14%
4	23	10%
5	7	3%
6	6	3%
7	2	1%
8	0	0%
9+	1	1%

N = 219

Table 16. Number of Children in Respondent's Group

	Number	%
0	0	0%
1	50	31%
2	65	40%
3	20	12%
4	20	12%
5	3	2%
6	0	0%
7	1	1%
8	0	0%
9	0	0%
10+	4	2%

N = 163

Table 17. Respondent's Gender

	Number	%
Male	73	34%
Female	144	66%

N = 217

Table 18. Respondent's Race/Ethnicity

	Number	%
African American/Black	26	12%
American Indian/Native Alaskan	5	2%
Asian/Asian American	13	6%
Latino(a) or Hispanic	28	13%
Native Hawaiian/Pacific Islander	3	0%
White, Non-Hispanic	160	74%

N = 217

Table 19. Ages of adults in respondent's group

	Number	%
18-29	76	35%
30-39	80	37%
40-49	55	25%
50-59	43	20%
60+	34	16%

N = 218

Table 20. Ages of children in respondent's group

	Number	%
Infant – less than 2 years old	24	11%
2 – 4 years old	51	23%
5 – 7 years old	68	31%
8 – 12 years old	75	34%
13 – 17 years old	51	23%

N = 219