Assessing Young Children's Learning within an informal setting at Disney's Kids' Discovery Clubs

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Young children participating in a conservation behavior suggested at one of the Kids' Discovery Clubs.

At Disney's Animal Kingdom, inspiring guests to take conservation action is part of our mission. To that end, a series of child-focused activity stations were developed called the 'Kids' Discovery Clubs (KDC). Our goal with these stations is to provide opportunities for children (target ages 5-8 years old) to learn about animals and what they can do to help wildlife. The purpose of this study was to assess the efficacy of the KDCs in encouraging young children to learn about and to help wildlife.

Today children in the United States are spending less time in nature than ever before. With tremendous competition from television, the Web and video games, children appear to prefer to stay inside rather than venture outside where nature is less showy and slower-paced (Louv 2006). Yet, as conservation educators, we hope to positively influence our guests' knowledge, attitudes and behaviors about wildlife and wild places, even when those guests are only 5-8 years old.

When assessing learning in children 5-8 years old, knowledge may be in the form of recall and comprehension of information. According to Bloom's Taxonomy of Educational Objectives, there are six levels of cognitive thinking. The first and simplest level is knowledge. Knowledge, in this case, is described as recall of data. The second level is comprehension. This level includes the ability to translate information by describing it in one's own words (Bloom 1956). Therefore, when assessing learning in children 5-8 years old, increases in knowledge can be measured by the ability to both recall and comprehend information. In Piaget's developmental theory, children in the target age range are in transition from centration (focusing on one dimension of an object) to concrete operations where logical assumptions can be formed (Fitch 1995) which suggests that studying learning in this age range requires a process that allows for both centration and derived logic.

This study measures young children's learning in a fast-paced, free-choice, theme-park setting at education sites called the Kids' Discovery Clubs (KDC). The KDCs at Disney's Animal Kingdom are comprised of six, child-focused, exploration sites that provide activities for young guests aged 5-8 years and their families. Each site engages children with an activity that is wildlife focused and shares a conservation action geared to younger audiences.

Table 1 Description of the Kids' Discovery Clubs (listed by location in the park)

Asia: Children visit a listening station to identify the calls of siamangs that live in the Asian rainforest. The children push three buttons to hear the calls of three Asian forest animals, a frog, a tiger and a siamang. Through a process of elimination, they identify the siamang call and learn siamangs depend on the forest for survival. Educators suggest purchasing recycled homework paper to help protect forests.

Conservation Station: Children search for wildlife in 'our' backyard using a wildlife card and crayon to record their findings. They discover that many of these same animals live in their own backyard. Educators provide ideas on how to create backyard habitats, like hanging a bird house, for animals at home.

Camp Minnie-Mickey: A 'touch' log allows young guests to discover objects found in an Adirondack forest. Children reach into the 'knot holes' of a fabricated tree to identify four objects (bird nest, turtle shell, deer antler and pinecone) without any visual contact. Each of the objects is displayed on the top of the log to assist younger guests with their guesses. Educators suggest that children tell friends and family how important forests are to wildlife.

DinoLand USA: Children excavate assorted fossil puzzle pieces from a 'fossil-crate', similar to the job of real paleontologists. Children match puzzle pieces of dinosaur skulls and jaws. By examining the teeth on the puzzle pieces, young guests discover what dinosaurs ate millions of years ago. Educators intimate that children can help protect the animals that are alive today by recycling newspapers, cans and glass.

Africa: Children examine clues left behind by an animal (footprints and droppings) and make an 'educated' guess (through pictures) as to which animal it was. They check their answer by looking through binoculars 'aimed' at the correct animal. Educators encourage children to look for wildlife clues at home to learn about the animals in their area.

Discovery Island: Children have a close-up experience with the real, live animal-stars of the Bug Show. A tree-root 'stage' provides three flat surfaces for live animal containers with a variety (tarantula, cockroaches, lubber grasshopper, etc). Another element allows kids to 'see like a bug' by looking through a bug mask viewer. Educators suggest reading books on bugs to learn about all their cool features.

Typically, the interactions at each of these KDCs last about three minutes, although some are significantly longer. Each station is staffed by specially trained interns who have learned special specific skills to work effectively with young children and deliver age-appropriate, action-based conservation messages. Each message is meant to promote caring attitudes towards wildlife in young guests.

The purpose of this study was to assess the efficacy of the Kids' Discovery Clubs (KDC) in encouraging young children to learn about and to help wildlife. Specifically,

we wanted to know if brief, engaging experiences affect a child's animal knowledge and interest in adopting conservation behaviors. A primary challenge to making these assessments was to develop methodologies that were not only reliable and valid, but also fun and engaging for our subjects. Our research questions were:

- What knowledge and messages do children take way from a KDC experience?
- How interested are children in initiating a conservation activity after participating in a KDC activity?
- What barriers do parents encounter in assisting children with conservation activities?

Methodology

The assessment was conducted in Disney's Animal Kingdom Theme Park (near Orlando, Florida USA) with children ages 5-8 years old and their parents. A fun, activity-based approach was used to ensure that the assessment process was a seamless extension of the actual KDC experience and that the young children in our target age group could participate with very little assistance from their parents. The sample size of our study group included 552 interviews of children and their parents.

Testing involved asking children to point to photographs that symbolized what they had just learned such as 'At the Kids' Club, what clue did you use to track a rhino? Children were tested on both knowledge (what they just learned about animals) and their intent to adopt a conservation activity (i.e. their intent to do something that would help wildlife and wild places). For example, "If you could do one of these activities at home, which one would you choose?"

Pilot Testing of Study Materials

To test the reliability of all photographs used in the study, we pilot tested the materials with local children enrolled in Zoo Day Camp in our target age group. Our criterion for accepting a photograph was that 12 out of 14 children identified the picture correctly without the interviewer using any prompts. We also pretested all interview questions to be sure that our language was understandable for children ages 5-8 years old.

Study Group

In designing the study, we first identified three of the six KDC locations where we would conduct the assessment. The three locations were selected by: 1) the nature of the activity location (we needed sufficient room to place display boards used to collect data), and 2) by the number of guests visiting the site (we needed sufficient number of guests passing through the area to serve as potential subjects). Kids' Discover Clubs at Dinoland, Africa and Conservation Station were selected as study sites.

Children answered interview questions by pointing to a picture that represented their response.

Children were selected randomly for the study by being the 'next child' into the KDC area. After the KDC interaction, the interviewer approached a parent and said that we were studying our KDC and would they agree to having their child(ren) participate. If the parent agreed, the interviewer brought the child and parent to the interview site, located just steps away from the KDC site.

Data were collected by two members of the Disney's Animal Kingdom Education team (1 interviewer, 1 data recorder). To assess a child's knowledge, we used a simple multiple choice format that consisted of two knowledge questions that were verbally delivered to each child. A group of photos were displayed on a board as possible answers to the questions. Each photograph included the written word(s) that described the picture. The photos included one correct response, three incorrect responses and one response that showed a '?' and read 'I don't know.'

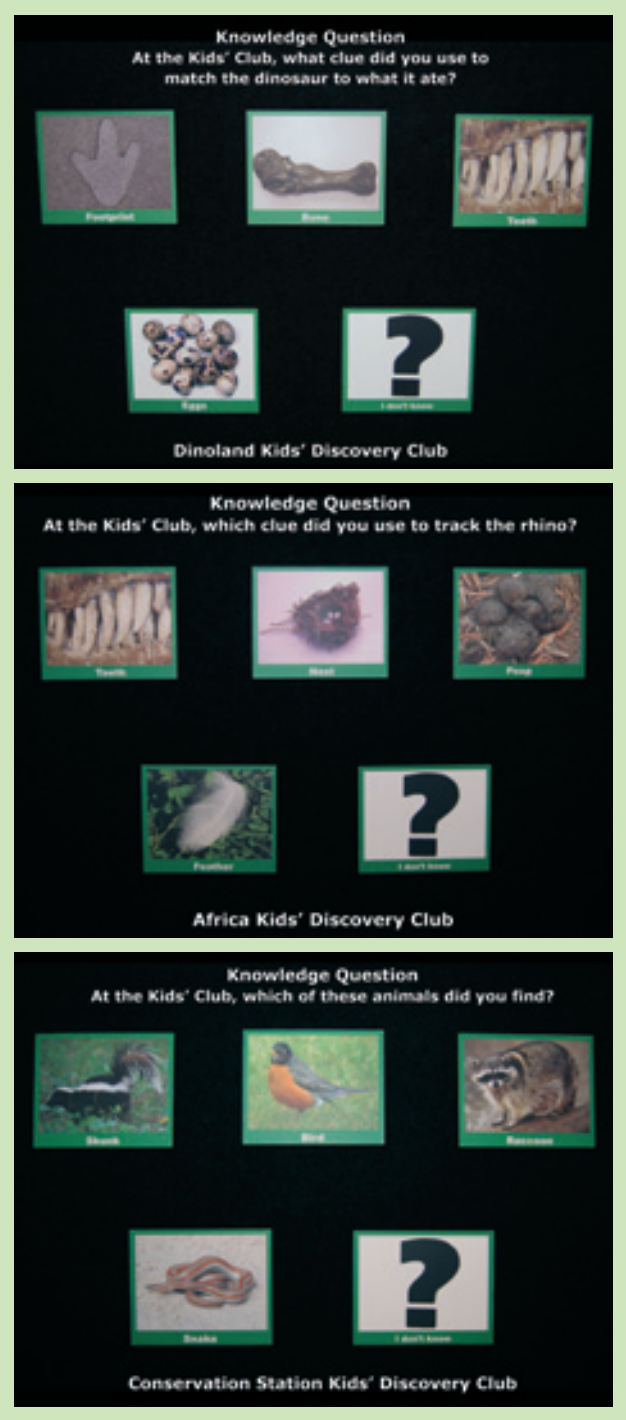
Each picture was placed on the vertical display board in random order and read aloud to the child. The pictures also included the written word(s) that described the picture. The child was asked to point to the picture that represented his/her response. The same methodology was used for the two conservation questions, however, in selecting a conservation activity card there were no incorrect responses and the cards included a 'nothing' and an 'I don't know' response.

Control Group

A control group of 132 children in our target audience was interviewed at the front of Disney's Animal Kingdom and asked nearly the same knowledge and conservation behavior questions using the same methods as the study group. This control group served to identify what children already knew about the content of our KDC and to assess conservation activities before participating at a KDC activity. Comparing the two groups allowed us to measure the change in knowledge as a result of the KDC activity. Because of the age of our subjects each question was repeated twice, once at the beginning and then again after reviewing the photo options.

Measuring Knowledge

Here are examples of the first knowledge questions and photo response options at the three KDCs:



Knowledge questions included one correct response, 3 incorrect responses and an "I don't know" card.

A second follow-up question was asked of children who answered the first knowledge question correctly. The second question was open-ended, more complex and addressed the comprehension of information. For example, the interviewer at Dinoland asked, "What do teeth tell us about what a dinosaur ate?"

Measuring Children's Interest in Adopting Behaviors

A second series of questions in the study focused on conservation activities (i.e., what children can do to help wildlife and wild places). The intent of these questions was to assess children's interest in implementing a conservation activity after participating in a KDC activity. Continuing with the format of using photographs, eight conservation activity cards were used in this part of the study. The selection of conservation activities for the response cards was based on the frequency that they were shared at the KDCs as part of regular programming previous to the study.

The child was asked "If you could do one of these activities at home, which one would you choose?" and "If you could do a second activity, which would you choose?". The child chose from the set of conservation activity cards that illustrated conservation activities that they could do to help wildlife and wild places.

Children selected conservation behaviors from a series of pictures that also included an 'I don't know' and a 'Nothing' card.

Parent Involvement

We made the assumption that children in this age group need the assistance of their parents to perform conservation behaviors (i.e. help wildlife and wild places). To identify any possible barriers that the parents had to the activities that their child chose (thus diminishing the chance of the child completing the behavior), the parent was asked if the first choice activity was one the child could do at home. If the parent expressed concerns, the interviewer asked about the second choice.

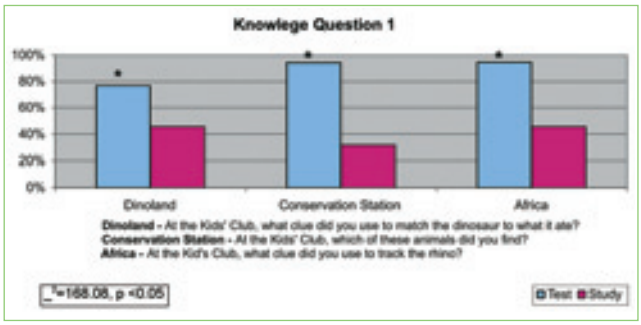
Once a conservation activity was identified with no parental barriers, the interviewer asked the child why that specific activity was chosen. The child was then given a self-addressed, stamped postcard that illustrated the chosen activity and the child was asked to return the postcard when the activity was completed.

We gave children a self-addressed, stamped postcard to return to us when they completed their conservation behavior.

Results and Discussion

The outcome knowledge of the children who experienced our KDCs was significantly higher than that of our control group. This suggests that young children 5-8 can recall and comprehend new wildlife information shared in a fast-paced, free-choice, theme-park setting conducted by trained educators.

Children's responses in the study group were significantly higher than those in the control group.



Children demonstrated an ability to not only recall information but also to comprehend or understand the information in a more complex way. When asked the comprehension questions below, children were able to provide a correct narrative response at the following percentages:

Dinoland:
What do teeth tell us about dinosaurs?
57% correct

—

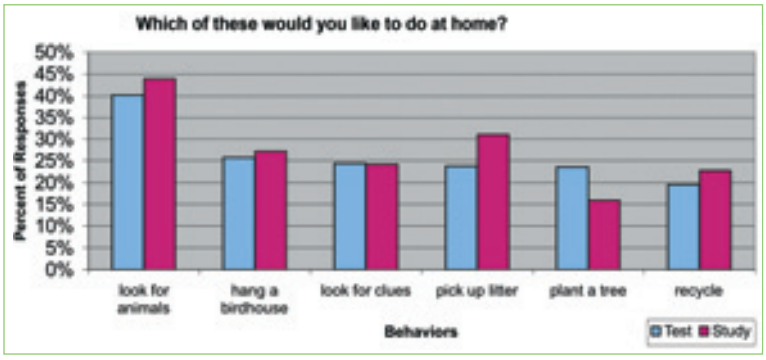
Conservation Station:
Tell me what you know about snakes.
55% correct

—

Africa:
What does poop tell us about animals?
39% correct

Further, our results showed that children want to help wildlife and have clear preferences for particular conservation activities. Their top selections were behaviors that bring them closest to animals including 'look for animals,' 'hang a birdhouse,' and 'look for animal clues.'

Children selected conservation behaviors that they found most appealing.



Through their open-ended responses, children were able to connect the activities that they chose with a positive impact on wildlife/environment. Most of the children's top reasons for selecting a conservation behavior indicated their interest in helping wildlife (see Table 2 for responses.) Their least favorite activity was 'collect pennies' which suggests that many of the 5-8 year olds did not understand how money helps wildlife. This behavior is probably better suited to older children who understand this connection.

By asking children to return the postcard after completing their conservation activity, we know that some of the children actually did carry out the activity that they selected. About sixty-two children, or 11 % of our sample group, returned postcards to us stating they completed the activity. So, in a small subset of children, we were able to demonstrate the completion of a conservation activity in a small subset of children. We observed that parents are very supportive of assisting their children with conservation behaviors that are simple and age appropriate. Very few parents in our study identified any barriers to the behaviors their children selected.

Conservation educators know that the positive results of this study are no accident. At every step along the way educators work diligently to deliver fun, engaging activities for young children. Extensive interpretive training, daily coaching, consistent delivery of age-appropriate conservation messages, and creating experiences that are fun, positive interactions, are critical to setting the stage for positive results.

Ultimately, this study supports our belief that if we want children to take action to help protect wildlife and the environment, we must offer conservation activities both within the zoo experience and in their home lives that the children enjoy and that their parents will support.

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Table 2 Summary of Children's Responses to "Why did you choose this activity (conservation behavior)?" (Listed in order from most popular behavior to least popular.)

Conservation Behavior Selected by Child	Top reason why selected	Percentage
1. Look for animals	I like animals	23%
	It's fun	21%
	Learn more about animals	21%
2. Hang a bird house	Caring for animals	52%
3. Look for animal clues	Learn more about animals/explore	59%
4. Pick up litter	Caring for animals	65%
5. Plant a tree	Caring for animals and the environment	47%
6. Recycle	Caring for animals and the environment	65%
7. Learn more	I like animals	37%
8. Collect pennies	Caring for animals and the environment	34%
	Children could not connect this action with a benefit to animals	32%