

Exploring How to Communicate with Zoo Visitors: The Impact of an Elephant Story on Zoo Visitors' Awareness toward Environmental Issue

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Abstract

This study investigates how a picture story based on an Asian elephant promoted public awareness of a nature conservation issue for zoo visitors. A picture story was created based on an Asian elephant at Tennoji Zoo in Osaka and a story-telling demonstration event was organized. The results of the story impact survey for the audience suggest those three types of impacts; 1) Sympathy for the actual individual elephant evoked in the audience, 2) Shock about the real facts of elephants' habitats, and 3) A cue to think of the complex, symbiotic relationship between humans and wildlife.

Keywords: informal science education; environmental awareness; biodiversity and conservation; zoo; visitors' impact; picture story

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Purpose of Research

This study aims to develop a methodology to communicate with the public about biodiversity and conservation awareness. Biodiversity and conservation are fundamental issues that need to become relevant to people worldwide in order to develop a sustainable environment and society (UNESCO, 2013). According to the Conference of Parties in 2010 (Secretariat of the Convention on Biological Diversity, n.d.), the Aichi Biodiversity Targets were announced (UNESCO, 2013), following which the United Nations Decade on Biodiversity between 2011 and 2020 [the UNDB 2011-2020] was announced to promote worldwide development strategy of biodiversity and conservation at both local and global levels. The Ministry of Environment of Japan formulated the national strategic plan in 2012 to organise a network of governmental bodies and private sectors (Nature Conservation Bureau, 2012). However, few people in Japan know about the national strategic plan and have a priority attitude towards retaining environmental diversity (Cabinet Office, 2014). This highlights the urgency for developing an operative and intelligible tool for the public, which imparts awareness about and arouse interest in biodiversity and conservation issues. To solve this problem, the author has developed a pilot educational tool of a picture story to spread awareness about biodiversity and conservation issues by focusing on an Asian elephant based on collaborative work with a zoo. The purpose of the study is to investigate how the story and its demonstration influenced zoo visitors' impression of the pilot educational tool and the related environmental issue.

Rationale

Intelligible Content: The Problem of Asian Elephants and their Habitats

One important issue in relation to this topic involves the negative effects of the symbiosis between wildlife and humans (WWF, 2015). The loss of habitat of Asian elephants is a worldwide concern, because Asian elephants are listed as endangered species in the IUCN Red List (International Union for Conservation of Nature and Natural Resources, 2016). One reason for the occurrence of the habitat loss is the expansion of human settlement. Because elephants and humans are increasingly coming into contact, the likelihood of human-wildlife conflict is spreading (WWF, n.d.). Japanese people consume a large amount of palm oil as food and in daily life, which make the issue of elephants and their habitat loss. Therefore, this topic is important for the Japanese to approach the problem of biodiversity and conservation. Moreover, elephants are one of the most popular animals in zoos. There are 121 elephants in 89 zoos in Japan, of which 82 are Asian elephants (e.g. Japanese Association of Zoos and Aquariums, 2012;

Sapporo Maruyama Zoo, 2014). Therefore, a tool that conveys the problem of Asian elephants should be effective to achieve an understanding of biodiversity and conservation.

Intelligible Tool: Picture-story as an Informal Science Educational Tool

Picture stories are a useful medium for science education, as they enable readers to transform their experiences into knowledge (Avraamidou & Osborn, 2009). These experiences, which are represented in stories, promote the acquisition of community values by children (Schank & Berman, 2002). Furthermore, organizations such as the Children's Book Council and the National Science Teachers Association (2015) in the United States, as well as the Royal Society (2015) in the United Kingdom, have recognized numerous outstanding science education picture books. Similarly, private Japanese companies that promote environmental corporate social responsibility, such as Konica Minolta (2015) and the All Nippon Airways Group (n.d.), have awarded creative and practical picture stories that promote environmental awareness. As environmental awareness is an aspect of global citizenship (UNESCO, n.d.), the creation of picture stories is a potentially effective means of disseminating environmental knowledge and promoting environmentally responsible behaviour.

Intelligible Place

Rennie (2014) says that these institutions such as zoos, aquariums, and botanic gardens play a significant role in conveying messages about conservation and the environment. Children and families enjoy visiting zoos and retain long-term impacts of their experiences, although their visits more likely have a range of social agendas rather than learning agendas (Falk & Dirking, 2000). Parents often enjoy social outing at zoos (Falk & Dirking, 1992). Clayton, Fraser & Saunders (2009) suggest that a visit to the zoo appears to be a positive emotional experience that arouses the interest of visitors in learning more about animals. The study by Patrick & Tunnicliffe (2013) shows that zoos have an educational function for both children and adults to gain science literacy. In fact, several zoos worldwide have recently investigated the development of learning activities and educational resources to raise awareness of endangered wildlife species among visitors (Haydon, 2014; San Diego Zoo, 2015). These studies on exploring the educational function of zoos suggest that we need to develop an alternative research methodology or research measure to understand zoos as a conservation learning place.

Procedure

The author, with the assistance of four college students, developed a pilot tool in order to increase biodiversity and conservation awareness about the endangered Asian elephant. The research scheme

consisted of the following three steps: 1) Development of the pilot educational tool of a picture story about an Asian elephant, 2) Demonstration of the picture story to zoo visitors, and 3) Obtaining feedback from the visitors. The three steps are detailed below.

Development of the Pilot Educational Tool of a Picture Story about an Asian Elephant

When we visited the Tennoji Zoo in Osaka, we met an Asian elephant named Rani-Hiroko. Her keeper told us that she had lost her mother in the habitat forest in Indonesia when she was a baby. The keeper's story suggested that her mother was killed in the forest because of a conflict with the inhabitants of a village. Based on the keeper's story, we created a picture story. Three characteristic features of outstanding science picture books were emphasized in the creation of the story: visual simplicity, narrative, and mysteries of the world (Miyake & Nogami, 2015). The story, entitled *The Story of an Asian Elephant Called Rani-Hiroko*, narrates how she came to the zoo and covers the topic of elephant habitats (Kato et al., 2015).

Demonstration of the Picture Story to Zoo Visitors

We organised a story-telling demonstration at Tennoji Zoo in November 2015. The demonstration was conducted five times in front of the Asian elephant exhibit. Visitors listened to the approximately 10-minute long story in a group of 20-30.

Obtaining Feedback from the Visitors

After each story demonstration was completed, the audience was asked about their impressions of the story content and the demonstration. Participation in the feedback was voluntary. The feedback form consisted of nine questions that aimed to evaluate the story's effectiveness in familiarizing visitors using a five-point response scale.

- Q1. Did you know some Rani-Hiroko's early backgrounds and the environmental problems in her natural habitats?
 Q2. Did you find the story's contents easy or difficult to understand?
 Q3. Did you find the story's design interesting or boring?
 Q4. Did you find the story sympathetic or indifferent?

Q5. Did you find the story educational or entertaining?

Q6. Did you find the underlying problem in the story environmental in nature or social?

Q7. Did you find the story's scope to be international or local?

Q8. Did you find the story a tragedy or a pleasant narrative?

Q9. Did you find the story appropriate to adults or to children?

Results

A total of 74 participants provided feedback. In the five-point scales '1-2' and '4-5' points were regrouped respectively into 'a' and 'b' in Table 1. The point '3' was not used as an object of the result, as it could be interpreted both as 'both not being applied' and 'both being applied', according to the question content. The results of the visitors' evaluation are indicated in Table 1 content.

With respect to Q1, 78.4% of the participants indicated that prior to hearing the story, they neither knew why Rani-Hiroko had come to the zoo, nor were they aware of the environmental problems faced by Asian elephants in their natural habitats. Q2-Q4 attempted to gauge the audience's general understanding and attitudes toward the story. Overall 77.0% reported that the story was easy to understand (Q2), 63.5% felt that it was interesting (Q3), and 82.4% were empathetic toward Rani-Hiroko's plight (Q4). Hence, the picture story succeeded in familiarizing visitors with Rani-Hiroko and for the environmental issues underlying her situation. For Q5, 75.7% of the respondents indicated that the story was educational or intellectual in nature rather than entertaining. In response to Q6, nearly half (48.6%) of those surveyed felt that the story's underlying problem was environmental, 16.3% suggested it was social, and 32.4% believed that it was both environmental and social. These responses demonstrate that the story aided visitors in understanding the complex, symbiotic relationship between humans and wildlife. In addition, more than half of the participants (63.5%) maintained in response to Q7 that the story was international in scope, whereas 9.5% asserted that it was domestic. Q8-Q9 sought to gauge respondents' perceptions of the story. With respect to Q8, 70.3% perceived the story to be tragic; in terms of Q9, 86.5% believed that the story was appropriate for adults as well as children.

Table 1. Results of the Feedback Questions

	Impressions (%)			
	a	b		
Q1	Did Not Know	(78.4)	Knew Beforehand	(10.8)
Q2	Easy to Understand	(77.0)	Difficult to Understand	(6.8)
Q3	Interesting	(63.5)	Boring	(8.1)
Q4	Sympathetic	(82.4)	Indifferent	(5.4)
Q5	Educational	(75.7)	Entertaining	(9.5)
Q6	Environmental	(48.6)	Social	(16.2)
Q7	International	(63.5)	Local	(9.5)
Q8	Tragic	(70.3)	Joyful	(8.1)
Q9	For Adults	(63.5)	For Children	(12.2)

Conclusions: Impact on the audience

The impact of the story and its demonstration on the audience is discussed below:

1) Sympathy for the actual individual elephant evoked in the audience

The visitors formed a sympathetic impression and were affected by the tragedy in the story. People were sympathetic toward Rani-Hiroko's plight. In addition, the story was easy to understand and the respondents thought of it as educational and not entertaining material. These issues suggest that this picture story led to the development of a cognitive understanding of the relationship between elephants and humans.

2) Shock about the real facts of elephants' habitats
Most of the respondents did not know the background story about the habitat loss of Asian elephants prior to viewing our demonstration. Additionally, the audience suggested that the story was enjoyable for adults as well as children. It is noteworthy that our story successfully conveyed the real facts of elephants' habitats and had a big impact on adult audiences about environmental biodiversity.

3) A cue to think of the complex, symbiotic relationship between humans and wildlife

The responses to Q6, in particular, reveal that the story helped the visitors understand the complex, symbiotic relationship between humans and wildlife. For example, nearly half (48.6%) of the audience felt that the story's underlying problem was environmental, 16.3% suggested it was social and the other 32.4% believed that it was both environmental and social. However, it is still unclear how the audience think of the problem in the story. Further detailed investigation will be necessary to obtain a clear suggestion about the relationship of environmental and social impression about the story.

These results suggest that our picture story had some impact in familiarizing participants about the relationship between humans and wildlife. Picture stories are typically accepted as children's educational tools; however, this study demonstrates that picture stories can produce favourable results among adults as well. In order to form the concept of biodiversity and conservation, it is necessary to explain the situation of other animals as well as elephants. The author intends to conduct research at the zoo in order to raise awareness of environmental issues.

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