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Supporting Zoo Visitors' Scientific Observations through the Picture-story Show

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Abstract

The purpose of this study is to support zoo visitors' scientific observations through the picture-story show. The evaluation methods included interviews to assess whether zoo visitors acquire as viewpoints for observing animals through a picture-story show, video research to assess whether zoo visitors observe animals' behavioral and morphological characteristics. The results of this study indicate that thirty percent of all families acquired the behavioral and morphological characteristics of animals as viewpoints by watching a picture-story show. The results suggest that it is possible to offer zoo visitors viewpoints for observing animals scientifically by performing picture-story shows.

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1. Introduction

1.1. Theoretical background

Learning science in informal environments have gained attention in recent years because it facilitates opportunities for the acquisition of scientific knowledge and thinking, while also increasing interest in science

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across a wide range of ages, from children to adults (Bell, Lewenstein, Shous, & Feder, 2009; Tunnicliffe & Reiss, 2000). Zoos, the focus of this study, are expected to become informal environments for learning science (Tunnicliffe, 2004; Patrick, Matthews, Ayers, & Tunnicliffe, 2007). Scientific observation is one of the most important learning at zoos (Patrick & Tunnicliffe, 2013). However, zoo visitors do not observe animals scientifically. It has been noted that most people visit a zoo to spend leisurely time with their family and friends; they do not go there to learn about the animals (Namiki, 2005; Patrick & Tunnicliffe, 2013).

In order to improve this situation, the authors focused on the picture-story show, a traditional communication medium in Japan. It uses a box-shaped frame containing multiple pictures that depict scenes from a story; a performer describes the plot and reads characters' lines to a large audience while showing the pictures in chronological order. Several to a dozen sheets of pictures are drawn to depict the script and stacked in the order of the story. The story is told by displaying each picture and then pulling it from the side of the box to the back. The performer can watch the reaction of the audience and change at will how he/she acts, such as in the way pictures are pulled, the narrator's tone of voice, and the how the characters' lines are delivered.

The picture-story show can become a means to support zoo visitors' scientific observations for the following three reasons. The first is that the picture-story show is a medium that can communicate science. Matsui (2008) states that science is one of the fields for picture-story shows. Bell, Lewenstein, Shouse & Feder (2009) suggest that media related to science play a major role in informal learning. The second is that picture-story shows are a medium for a wide range of age groups (Kodomonobunkakenkyusho, 2011). Besides infants and children, adults come to the zoo as well. Therefore, it is necessary for the zoo to have a medium for communicating to a wide range of age groups.

The third is that picture-story shows are a medium that can convey messages clearly (Bingushi, Nozaki, & Kojima, 2012). It is possible that, by embedding viewpoints for observation as messages, educators at the zoo can clearly provide viewpoints for observation to the zoo visitors who watch the picture-story show. It has been noted that observation of animals' behavioural and morphological characteristics is promoted when visitors make observations with viewpoints (Namiki, 2009).

1.2. Purpose of the study

The purpose of this study is to support zoo visitors' scientific observations through the picture-story show. This study is guided by the following research questions: (a) Do zoo visitors acquire viewpoints for observing animals through a picture-story show? (b) Do zoo visitors observe animals' behavioural and morphological characteristics scientifically? (c) Do zoo visitors observe animals using the animals' behavioural and morphological characteristics as viewpoints that are acquired through a picture-story show?

2. Methodology

The study was conducted at the Asahiyama Zoo located in Hokkaido, Japan. A pioneer in exhibiting animals in a manner that shows their natural behaviours, the Asahiyama Zoo boasts a large number of visitors even when compared to other zoos around the world (Kosuge, 2006).

2.1. Subjects

The subjects were 15 families recruited from the general public (25 adults and 18 children). The most common family structure was two adults and one child. The average age of the adults was 38.4 ($SD = 9.9$), while the average age of the children was 3.0 ($SD = 1.0$).

2.2. Picture-story show

The picture-story show was an original work produced at the Asahiyama Zoo. The subject matter of the picture-story show was the behavioural and morphological characteristics of penguins observable at the Asahiyama Zoo. It covered the following seven characteristics of penguins: (a) feed for penguins (feed); (b) the four species of penguins kept at the Asahiyama Zoo (species); (c) the role of the nictitating membrane (nictitating membrane); (d)

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