

Exploring the Current Education Design of Socio-scientific Issues in Zoo Exhibitions

Shiho Miyake
Kobe College, Japan

Research Focus

Zoos are ideal for public science education in which both children and adults can gain science literacy (Patrick & Tunnicliffe, 2013; Rennie, 2014). Japanese government and zoo professionals state that zoos have a potential to communicate with all people about biology, ecology and biodiversity, and human society (Maki & Watanuki, 2011; Ministry of Environment, 2016). Today, international biodiversity conservation initiatives and the Sustainable Development Goals [SDGs] expect social education facilities including zoos to promote public understanding of the environment (UNESCO, 2018). Therefore, expectations for the educational function of zoos have increased in recent years. Then, how are socio-scientific issues (SSI) realized in zoo exhibitions?

Methodology

The socio-scientific topics cover the controversial aspect of science (Kolstø, 2001; Sadler, Barab, & Scott, 2007). Examining what kind of socio-scientific topics exist is essential to create up-to-date science education.

The author visited eleven zoos in seven countries (Table 1): Australia (2), the Czech Republic (1), Japan (4), Austria (1), Ireland (1), Sweden (1), and the USA (1), and explored how their exhibitions to approach socio-scientific topics. The photographs taken by the author were used as the research sources.

Table 1. The visited zoos

(*Instead of specific names, 'zoo code' is given for this research)

Zoo code	Country	Established year	Area (ha)	Species	Entrance fee/adult
AHJ	Japan	1967	15.2	101	1000JPY (May, 2020)
DZI	Ireland	1831	28	400	17.5EUR (Sep, 2017)
KZJ	Japan	1975	47.8	60	580JPY(May, 2020)
OHJ	Japan	1951	8.1	130	600JPY (May, 2020)
PZC	Czech Republic	1931	60	676	200CZK(Sep, 2018)
SNU	U.S.A	1889	66	390	Free (Feb, 2018)
SSS	Sweden	1891	30	32	120SEK (Nov, 2017)
SVA	Austria	1752	17	700	20EUR (Nov, 2019)
TOJ	Japan	1915	11	200	500JPY (May, 2020)
TSA	Australia	1916	21	350	55AUD (July, 2017) *Ferry fee included
WSA	Australia	2006	0.7	N.A.	60AUD (July, 2017) *Aquariums entrée included

Findings & Conclusion

The topics of 'habitats & ecology', 'land scape', 'human impact', 'endangered species', and 'consumption & recycle' are extracted as socio-scientific issues. These suggest that the zoo exhibits create a space to recognize a real world of animals.

Habitats & ecology



Asian Elephant Family (PZC)

Rainforest for birds and amphibian (SVA)

Land scape



African savanna (DZI)



A red-crowned crane with an artificial leg (KZJ)

Human impact



A kangaroo on a road (TSA)

Endangered species

Red list level of Zebra (SNU)



NT(Near Threatened) Bongo (PZC)

Consumption & recycle

MSC/ASC certified products recommendation in sea lion show (TSA)



100% decomposed cup for juice (PZC)

[References]

- Kolstø, S.D. (2001). Scientific literacy for citizenship: Tools for dealing with the science dimension of controversial socioscientific issues. *Science Education*, 85(3), 291-310.
- Maki, S. & Watanuki, K. (2011). Zoo in the science and technology policy. *Journal of Industry-Academia-Government Collaboration*, 5, Japan Science and Technology Agency, Ministry of Environment (2016). Public function of zoos and botanical gardens.
- Patrick, P. G. & Tunnicliffe, S. D.(2013). *Zoo Talk*. Springer.
- Rennie, L. J. (2014). Learning Science Outside of School. In N.G. Lederman and S.K. Abell, *Handbook of Research on Science Education Volume II* (pp.120-144). Routledge.
- Sadler, T.D., Barab, S.A., & Scott, B. (2007). What do students gain by engaging in socioscientific inquiry? *Research in Science Education*, 37(4), 371-391.
- UNESCO. (2018). *Issues and trends in education for sustainable development*.

The above topics may teach us the past-present-future of animals and human relationships. In particular, providing how we should behave for the future leads to socio-scientific (Table 2). I will continue to study for discussing how we can learn from zoo exhibitions.

Table 2. SSI topics and educational points in zoo exhibitions

Topics in zoo exhibitions	Controversial points for SSI
Habitats & Ecology, Human impact	Fact (present): What's happening today?
Endangered species, Land scape	Reason (past): Why did it happen?
Consumption & recycle	Prospect (future): What will happen? How should we behave?