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Study for Exhibition Development of Aquatic Life and Environments:
Focus on Video and Interactive Exhibits

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Japan is a small country surrounded by the sea, located in a rainy region of the world, and having many short and steep rivers. With the blessing of water, the Japanese people have cultivated an original culture, including world-famous Japanese food. In addition, the amazing number of aquariums in Japan is supported by the rich water environment. However, public awareness and an understanding of the problems concerning the aquatic environment of the world as well as of Japan are lacking. To develop younger human resources who can play important roles in the future ocean, the government has promoted ocean education, based in the Ocean Basic Act (2007) and the Basic Plan on Ocean Policy (2013). As well, in 1997, the River Law determined that river construction is no longer expected to function only as flood control and for water use, but also is to satisfy the ecological needs of plant and animal communities. To advance river construction, cooperation between the government and the public is needed, with sharing of scientific information regarding the natural environment.

In this study, I focused on exhibits in aquariums and museums as tools to disseminate information about aquatic life and environments. Specifically, I indicated the important points required to develop video and interactive exhibits, which have been proposed as effective tools to showcase water ecology. Finally, I used the important points to develop a complete travelling exhibition. Findings revealed in each chapter are as follows.

Chapter 1 Status and issues of video and interactive exhibits in aquariums and museums

The status of video and interactive exhibits in the aquariums and museums was reviewed, and the necessary issues were addressed. In association with the development of devices, video and interactive exhibits have come into use as aids to show detailed information about real animals and environments. To enhance video and interactive exhibits, scientific video recordings by curators should be promoted. In addition, techniques to visualize the video records as exhibits are needed. The evaluation of those exhibits is also needed.

Chapter 2 Visualization of aquatic life and environments—A case analysis from the development of video exhibits

Some important points about making video exhibits about aquatic life and environments were picked out from the development process of several exhibits. To record images, techniques such as view point setting, camera angle setting, and aquatic environment indicator recording were important. Since editing such as adding information, organizing information, and guiding visual lines

was important for comprehension, it should be used according to purpose and script. Since visitors' understanding of video contents depends on the projection methods used at an exhibition, audio-visual systems should be designed before the planning of the recording and editing.

Chapter 3 Development, installation, and evaluation of video and interactive exhibits

Practical study #1:

Content design showing microscale structure of an animal—Evaluating the value of interactivity

Interactive and non-interactive videos showing the body planning of a sea urchin were developed to determine whether the interactive contents were useful. Junior high school students felt that interactive videos were more interesting than non-interactive videos. In addition, interactive videos gave them more positive impressions.

Practical study #2:

Content design to induce discoveries from exhibits—Evaluating the video tools and its effects

To induce discoveries from exhibits about lungfish in aquarium tours, interactive video tools using mobile device-assisted Augmented Reality (AR) were developed. With using the tool, many visitors watched the video repeatedly. As a result, they deepened their awareness of the fish and the video contents. Video tools with AR can be effective for aquarium education.

Practical study #3:

Content design to help visitors identify fish behavior and the river environment—Evaluating the information obtained by visitors

Video exhibits showing fish behavior and underwater environments were developed and installed as a part of an exhibition. To verify visitors' comprehension of the video, a visitor survey was done among university students. Visitors understood key ecological points from the video exhibit, verifying that the exhibit performed as intended.

Chapter 4 Possible effectiveness of exhibition to promote ocean education—Application of this study to develop a travelling exhibition

Education about oceans is not always easy in schools located inland. Based on the knowledge from this study, a complete travelling exhibition of seafood was developed as a tool for ocean education. The contents designed for school usage were well-functioning and provided ocean awareness for users of all ages. Teachers in each school used this travelling exhibition for their specific purposes, indicating that the exhibition is a powerful tool for ocean education.