Environmental education is an important basis of environmental conservation activities. Accountability has been recently noticed for public works that may affect environments, and it is now regarded as an ideal to construct public facilities by sharing knowledge and information and reaching agreement with the people involved in the work. With such a background, “communicating information” is now highly valued in Japan, where opportunities for providing information on the natural environment are increasing. The Aqua Restoration Research Center (ARRC) is investigating “exhibition” as one of its study topics, a means of transmitting organized information to a number of people at any time. This article describes information panels developed to exhibit river studies in an easy-to-understand manner. The panels were developed by reconsidering the fact that most exhibitions had been made only from the viewpoints of the exhibitors, and asked the visitors to examine and evaluate the panels.

Development of information panels for explaining studies at Aqua Restoration Research Center

Survey to understand the awareness of visitors toward rivers

The attitudes of visitors toward rivers must be understood in order to prepare effective information boards. Thus, a questionnaire survey was produced to understand the interests of visitors on river ecosystems before preparing the boards themselves.

The basic constituents of a river ecosystem were classified into three groups: space, water, and organisms. Of the constituents, the visitors were asked to mark those that interested them. Although the visitors varied in terms of their living environment, knowledge, and the group to which they belonged, they had common interests. They were all interested in constituents that are visible and easy to perceive, and were least interested in invisible elements that are difficult to see. The results suggest that expressing invisible elements in a easy-to-understand form is a key to exhibiting the relationships among river constituents.

Evaluation and examination using prototype panels

Prototype information panels were prepared for six study topics on the experimental streams. These were set up along the streams, and were evaluated by the visitors. The expressions of the boards, including the text, figures, and tables, were examined by asking the visitors’ questions to check whether they understood the studies’ objectives and content. The majority of the visitors mentioned that the boards contained too much information. Some suggested that the contents were too technical and were difficult to understand. Based on their comments, the questions used as titles and the expressions that led the readers to the answers (the points to be communicated), were revised. The amount of information was reduced by focusing on the points and reducing the text, figures, and tables by a half. The contents that the visitors considered difficult-to-understand were revised for the entire layout. Information that was difficult to visualize was supplemented with photographs. Illustrations and devices were added to express difficult river phenomena.

Characteristics of completed exhibition boards

Communicating technical contents in forms that are easy-to-understand

On the left-hand side of each board, a simple question and its answer were laid out. Important terms in the text were emphasized using large, bold letters. Technical terms were explained using Illustrations. Boards that contain information that can be checked by seeing the rivers were placed at the most appropriate sites by according to the visitors’ viewpoints. The right-hand side of each board displays detailed information in important sentence form in the following three sections: Study Points, Methods, and Results. Study Points give an overview of the background, ground, significance and objectives of the study. Photographs are used in the Methods section to enable readers to imagine the research activities and reduce the amount of text. Technical terms are explained in separate columns. The Study Results section describes only those points of the greatest importance. One simplified graph is used to minimize data. Making readers sense difficult-to-understand river-related phenomena

Movable mechanisms were installed on the panels for the readers in order to help them sense information that is difficult to recognize just by seeing the rivers and riverside. Such an exhibition method, which establishes a clear educational goal and guides readers toward understanding the essence of phenomena using various human senses, is called the hands-on method. The hands-on method was developed in science museums in the West, and is spreading throughout Japan. The hands-on method was introduced to display river studies in an easy-to-understand manner. The information panels are set along the rivers and enable visitors to see various changes of riverbed environments that are difficult to observe from the streamside and need to be observed for a long period of time to encounter unless the observer is very lucky. On one of the panels, when the front page is opened fish are shown as if the reader looks into the river. Another panel shows benthos hiding between stones and algae when a reader slides open the front page. Moving such mechanisms enable readers to learn how to watch river spaces, which vary in scale and environment. By rotating the front page, another panel looks at how a river changes before and after flooding, while another shows the self-purification effect of such floods. On another panel, readers pull a lever to produce a flood and see its effect on river algae, thus enabling readers to sense the changes in river flow.

Column

Much information that is indispensable for understanding river phenomena is hidden under water where it is difficult to be observed from above the water. Since it is difficult to observe under water and phenomena that occur infrequently, effective supplementary media are needed. The author has introduced panels and videos and is investigating effective methods for recording videos and arranging them in exhibition spaces for explaining the natural environments of rivers.