

The Primorsky Aquarium: Modern Trends in Its Educational and Awareness-Raising Activities

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ABSTRACT: The Primorsky Aquarium is a branch of the National Scientific Center of Marine Biology (Far Eastern Branch of the Russian Academy of Sciences). The Aquarium started educational activities right after its opening in October, 2016. By now, two educational projects, *Educational Environment* and *Growing up at the Aquarium*, have been carried out at the Primorsky Aquarium. The main goal of the *Educational Environment* project is to reinforce and deepen the knowledge obtained by pupils at school. Special emphasis is placed on school children’s self-directed work with data given on information displays at the Aquarium exhibits. The *Growing up at the Aquarium* project is designed to develop a cognitive interest in the science of marine biology in children aged five and older through knowing the natural environment at the Aquarium. Both projects are aimed at bringing up kind hearted and environmentally educated people who will take good care of our planet.



Fig. 1. Main building of the Primorsky Aquarium.

The Primorsky Aquarium is a branch of the National Scientific Center of Marine Biology, Far Eastern Branch of the Russian Academy of Sciences. The Aquarium was open to general public on September 3rd, 2016 (Fig. 1). Its significant feature is that this research and education center is included into the Russian Academy of Sciences, and its main goal is to create and display collections of marine and freshwater inhabitants for research and educational purposes.

The first educational project, *Lesson at the Aquarium*, was launched right after the opening of the Aquarium in October, 2016. Wednesday has been chosen for the work with organized groups of pupils, and on this weekday admission for other visitors is limited. The *Lesson at the Aquarium* has the same core idea as the Lesson at the Museum project does. In Russia museum lessons are extremely popular since they are intended to reinforce and deepen the knowledge of pupils about

some topics, with museum exhibits, or tank dwellers (if classes are conducted at the Aquarium exhibits), serving not only as a visual aid but also as a source of information for study purposes. Such lessons are an effective tool for socializing children, and they will help to ‘vitalize’ the educational process, captivate pupils interest, broaden their minds and enhance their cognitive abilities.

The integral part of the Aquarium is an educational block consisting of lecture rooms, learning laboratories, a movie theatre and a library equipped with modern equipment. A conference hall, classrooms and exhibit collections facilitate the implementation of unique educational programs on marine biology and ecology. The Aquarium serves as a teaching ground for preschool and school children and university students providing them with an opportunity to participate in scientific research process.

The concept of the *Lesson at the Aquarium*

project implies a single class or a series of classes held in the framework of a particular school subject on the basis of the Aquarium exhibits for the purpose of in-depth study of the subject. The lesson necessarily corresponds to particular themes from the school curriculum and includes additional research and creative tasks beyond the curriculum (Fig. 2).



Fig. 2. School children performing a task on their own.

On the basis of the Federal State Educational Standards a total of 13 lessons have been developed for children of primary, secondary and upper secondary schools on such subjects as Science, Biology and Geography: “Coral Reef Fishes”, “What is a Fish?”, “Life in Cold Water”, “Save the Tropical Rainforest”, “Four Homes for Fish”, “Tropical Rain Forest Community”, “Life in a Water Drop”, “Research Methods in Biology”, “Emerald Green Belt of Earth”, “They are So Different, Interesting and Sometimes Dangerous”, “Far Eastern Seas”, “Explore the Invisible World”, “Unwind the Spiral of Evolution”.

Distinctive features of the project classes are as follows:

- Classes are held at one or, rarely, two of the exhibits;
- Each lesson has its scenario reflecting the specifics of the exhibit and a developed worksheet;
- During the classes a special emphasis is made on self-directed work of pupils;
- Children have an opportunity to work with educational films (the ‘Evolution of Life in the Ocean’ and ‘Rivers and Lakes’ exhibits), microscopes (the ‘Microworld’ exhibit), a touch pool and interactive displays (‘The Sea of Japan’ exhibit);
- Pupils are enabled to perform research in the learning laboratories.

Being conducted at the Aquarium exhibits, the classes give children a chance to see live marine and freshwater animals in conditions most similar to the

ones of their natural habitats. The content of the Aquarium exhibits corresponds to the themes of the lessons and includes topics on nature protection and commercial fishery. To investigate microorganisms and cellular texture of different organisms, the Aquarium has learning laboratories with modern microscopy equipment.

The Aquarium classes are to be attended by an organized group of school children accompanied by their teacher and one parent. The classes are provided free of charge by specialists of the Environmental Education Center of the Aquarium. If pupils want, they can reinforce the obtained knowledge at workshops or laboratory practical on the studied topic. The following structure of a lesson is considered the most efficient: a short lecture acquainting children with the exhibit, questions on the topic and individual work by pupils performing the worksheet tasks. At the end of the lesson children discuss their results and fill in a feedback form. On average, over 400 schoolchildren take lessons at the Aquarium exhibits every Wednesday (Fig. 3). During the implementation of the project almost 20,000 children have taken part in it.



Fig. 3. A secondary school pupil doing self-directed learning beside the information display.

To date, the *Lesson at the Aquarium* has developed into the *Educational Environment* project and gained larger audience. On Wednesdays the Aquarium is visited by groups of preschoolers for whom our specialists hold entertaining excursions (Fig. 4).

In March, 2018, the *Educational Environment* project was joined by organized groups of children with disabilities. Among them there are visually and hearing impaired children and children with autism and Down syndrome. Before their visits qualified specialists conduct a long-term training, with a visiting program being developed. In addition to the educational component, the project gives an excellent opportunity to socialize these children.



Fig. 4. Children aged 5+ during an entertaining excursion at the Aquarium exhibit.

The Aquarium is developing cooperation with secondary and higher educational institutions of Vladivostok and Primorsky krai. While young and school children take classes held by the Aquarium specialists, university students specializing in such fields as Biology, Ecology, Ichthyology, Architecture and Engineering are given lectures by their teachers at the Aquarium exhibits (Figs 5, 6).



Fig. 5. Students reinforcing the studied material with the help of information displays.



Fig. 6. Foreign students having classes in the Aquarium's lecture room after their visit to the exhibits.

The Russian language classes conducted at the Aquarium are extremely popular among foreign students studying Biology in various universities of

Vladivostok. The significant feature of this language program is its applicability: students study the specialty language being surrounded by aquatic inhabitants. Such interactive lectures contribute to a better assimilation of both vocabulary and biological knowledge.

The second large scale project of the Primorsky Aquarium, *Growing up at the Aquarium*, began its work in October 2018. Its main idea is to raise humanity in children aged 5–15 through the creation of an educational space which is focused on the manifestation of such qualities such as kindness, empathy, compassion, responsibility, and helps to develop in children personal responsibility and cognitive interest in the science of marine biology.

The *Growing up at the Aquarium* project objectives are as follows:

- To acquaint children with science as a way of knowing the world;
- To generate conditions for cultivating environmental literacy among children aged 5–15;
- To create conditions for raising children's awareness about the unicity of aquatic inhabitants and forming careful attitude to them;
- To provide necessary conditions for nurturing in children aged 5–15 the best human qualities, team working skills and personal responsibility in interaction with Nature on the basis of their cognitive interest in marine biology;
- To produce an emotive environment for children with disabilities;
- To implement programs, the content of which is based on the child's cognitive interest in marine biology in the context of its continuous study.

The project implies the continuous study of marine biology and consists of 4 learning stages, each of them is designed for children of particular age and will be held from October to May. At each stage children get information from various fields of marine biology.

The first of them is "Belyok" ('belyok' is the Russian name for a newborn pup of the Baikal seal), an environmental biology studio for children aged 5 to 7, which started its work 3 years ago. Here children get acquainted with such professions as biologist-divers, marine mammal trainers, marine biologists, paleontologists, ichthyologists that are related to providing the aquatic dwellers of the Aquarium with comfortable living conditions (Fig. 7).

One of the main goals of the kids' studio is to instill a positive attitude to the environment in children and lead them to understanding of intrinsic value of any living being. Since most studio alumni want to know more about the aquatic world and its

inhabitants, they pass to the new learning stages of the *Growing up at the Aquarium* project.



Fig. 7. Preschoolers getting acquainted with the profession of ichthyology in the Research Building for Adaptation of the Primorsky Aquarium.

The second learning stage, “Young ichthyologist”, is aimed at children aged 7–8. During the classes children will “dive” into the world of aquarium fish to become familiar with their behaviors. The pupils will learn how to produce conditions favorable to certain fish species and collectively choose plants and fishes to add to their common fish tank which will be later placed at one of the Aquarium’s exhibits. This stage is designed to plunge a pupil into research activity and involve him into the process of creating a habitat comfortable for his/her pet fish. A child who knows special aspects of keeping of aquatic inhabitants will never do any harm to them and learn what ‘taking care of someone’ means.

The following stage, a “Man and Sea” art studio, is designed for children at the age of 9–10. Its purpose is to cultivate empathy in a child. Pupils will learn about the harmony of the surrounding world and see the beauty of marine inhabitants. With the help of collaborative and individual art projects children will understand how to tell people about the problems of the World Ocean, and what each individual can do to protect it. The participants will express their feelings through creative art works and share their experiences with peers within scheduled meetings (Fig. 8).

“Aqua Laboratory”, the fourth stage of the project, invites school children aged 11 and older and is intended to develop personal responsibility and team working skills in children. The classes will be held in the Aquarium’s learning laboratories equipped with research microscopes. Children will study microscopic organisms constituting plankton and investigate a complex life cycle of marine invertebrates and specifics of their anatomy (Figs 9, 10).



Fig. 8. Children depicting the world of aquatic animals.



Fig. 9. The world in a water drop can be seen using a light microscope.

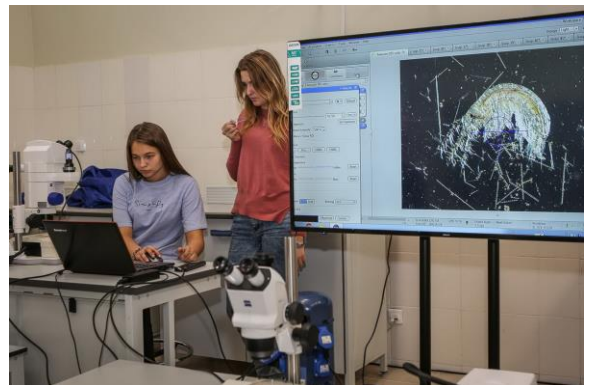


Fig. 10. Modern research equipment used in educational projects of the Primorsky Aquarium.

One of the “Aqua Laboratory” sections is dedicated to the evolution of life in the ocean. Using the paleontological collection and exhibits of the Aquarium, pupils will trace how arthropods, mollusks and chordates have been changing in the course of millions of years. The stage also includes paleontological excursions to the Zhitkov Peninsula of Russky Island where Triassic layers crop out. A separate section of the program deals with dinosaurs and ichthyosaurs, and the final part of the stage is dedicated to man and his place on Earth.

The *Growing up at the Aquarium* classes are provided free of charge by specialists of the Environmental Education Center of the Primorsky Aquarium and take place several times a week.

The project is designed to bring up small biologists, starting with children of preschool age.

And even if in future the project alumni choose some other professions, not connected with natural sciences, they will turn into environmentally educated people taking good care of our planet.

The website of the Primorsky Aquarium is www.primocean.ru.