

Actions and Progress of Russian Marine Education

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Abstract— With the support of Russia's relevant maritime education policies, maritime education in universities, middle and elementary schools also the public ocean education have been widely carried out. Marine education in elementary and middle schools has specialized courses. Outside the school there are special educational places such as aquariums, and there is also a special marine school. In universities, marine education is mainly carried out through the combination of school and enterprise and the integration of science and education. The social public marine education has penetrated Russia, which is driven and implemented by multiple parties. The experience and achievements of Russian maritime education has reference significance in the world.

Keywords— Russia, marine policy, marine education, progress.

Russia borders the Arctic Ocean to the north, the Pacific Ocean to the east, and the Atlantic Ocean to the west. The coastline is 32,000 kilometers long, which is more than twice the land boundary, so the ocean is of great significance to Russia. In the history of Russia's national development, maritime strategy has always played a very important and unique role. In line with its maritime strategy, Russia has successively formulated a series of maritime policies, many of which involve maritime education, in order to emphasize the supporting role of maritime education in Russia's maritime strategy. With policy support, the maritime education of Russian universities, middle schools, and elementary schools and the public ocean education have been comprehensively promoted and achieved good results. The national marine awareness and marine literacy have been greatly improved.

I. OVERVIEW OF RUSSIA'S MARITIME EDUCATION POLICY

In the process of determining the marine strategy, Russia attaches special importance to the formulation of relevant marine policy documents. A series of marine policy documents set the direction and goals for the country to carry out marine activities. The following policies are the most typical ones.

On August 10, 1998, Decree No. 919 of the Government of the Russian Federation approved the federal goal plan "World Ocean". The plan states that "because the provision of skilled personnel for all types of marine activities (including scientific research) is the highest priority, the goal of the World Oceans Program should be to retain and restore personnel; improving the fund-raising system for educational institutions to allow the simultaneous use of budget and non-budget funds and the resources generated by the commercial activities of these institutions; strengthening the material and technological foundation, developing the production and social infrastructure of educational institutions."¹

On July 27, 2001, President Vladimir Putin of the Russian Federation approved the "The marine doctrine of the Russian Federation for the period till 2020", which stated that "protection and improvement of the training, education and

upbringing of young people". The staffing regulations stipulate that "it is essential to staff all types of marine activities: creating conditions for maintaining and attracting qualified personnel in the management of seafarers and maritime activities; maintaining and developing educational institutions specializing in various marine activities; expand children's maritime schools, youth seafarers clubs and river transportation networks, and regard education as serving in the Russian Navy and Initial preparations for the work; provide state support for the maintenance and operation of the training ship, and provide the material and technical foundation."²

On August 30, 2019, Russian Prime Minister Dmitry Medvedev approved a new version of the Russian Federation's Maritime Activities Development Strategy, which is the "Russian Federation Maritime Activities Development Strategy to 2030". In Annex 5 of it, it is proposed that "on the basis of educational organizations located in the coastal territories of the Russian Federation, implement a regional program for the modernization of the vocational education system to train experts and implement the basics in the field of maritime activities. And additional professional education programs; Ensure the protection of maritime cultural and historical heritage in the main coastal territory of the Russian Federation; implement projects and programs aimed at maintaining maritime traditions, develop patriotic youth education, and prepare for the work and services of the Russian Navy (including navy)."³

The above policies and regulations on marine education have made detailed provisions on the preparation of marine education teachers, the objects of marine education, the institutions of marine education, the objectives and content of marine education, which provide a policy basis for the development of marine education in Russia.

² Морская доктрина Российской Федерации на период до 2020 года[EB/OL].https://www.mid.ru/foreign_policy/official_documents/-/asset_publisher/CptlCkV6BZ29/content/id/462098

³ ПРИЛОЖЕНИЕ № 5к Стратегии развития морской деятельности Российской Федерации до 2030 года[EB/OL].<http://government.ru/docs/all/123507/?page=3>

¹The World Ocean[EB/OL].<https://fas.org/nuke/guide/russia/doctrine/CDONEW22.htm>

II. PRACTICE AND PROGRESS OF RUSSIAN MARINE EDUCATION

Marine education in Russia is fully implemented in schools and covers the whole society.

1. Marine education practice in elementary and middle schools

The marine education in elementary and middle schools mainly takes aquariums as an important educational place. Aquariums are usually the starting point for elementary school students to learn about the ocean and play an important role in the enlightenment of their ocean consciousness. Primorsky aquarium is the third largest aquarium in the world, with a total internal space of more than 37,000 m².⁴ In the aquarium, there are five research laboratories, two production laboratories that provide basic and applied research and educational activities for elementary and middle school students. Primorsky aquarium provides many other types of marine education activities, as shown in Table a.⁵

Project Name	Project Description
The growing up at the aquarium project	Stage 1 – Belyok, an environmental biology club for children aged 6 to 7 years; Stage 2 - Sea Guardians, an ecology club for children aged 8 to 9 years; Stage 3 - Ichthyology Club for children aged 10 to 11 years; Stage 4 – AQU Alaboratory, a marine biology club for children aged 14 to 17 years
Environmental and science-related holidays	Welcome visitors to the Primorsky Aquarium to celebrate environmental and science-related holidays. The festive events aim to draw the public’s attention to some theme or issue through attractive, entertaining and emotion-packed content, to inform people about a problem and evoke an emotional response from them, thus changing their attitude to the problem.
Programs for special guests	Primorsky Aquarium has been conducting a monthly charity event, called Ocean of Hope. Each time it is organized either for 2 orphans, or for 2 children with disabilities. The event program includes a free-of-charge tour of the exhibits, a music and dance performance and a dolphin encounter, which is available only for special guests.
Workshops and lab sessions for children	It offer children a number of paid training workshops that enable them to try their hands at the Aquarium-related jobs.
Public lectures	Aquarium specialists exhibit “Lectures 5+” to children and their parents and public lectures of the series “42. Brief and to the Point” are regularly delivered to young and older visitors.

Table a Marine education activities in Primorsky Aquarium

Secondly, the Russian Federation children's center, the Shtormovoy camp in Orlyonok, is also an important place for marine education activities in elementary and middle schools. Students and their teachers collect shells and algae at the beach, catch fish, write observation materials, go out to play in the ocean, watch tiny marine animals through a microscope, read and discuss, and carry out marine education through project research. The agency believes that for the study of marine life, the main goal of learning about marine life is not to remember its name and a lot of incomprehensible

⁴ Primorsk Aquarium is One of the World’s Largest Scientific and Educational Complexes[EB/OL].<http://primocean.ru/en/present-and-future.html>

⁵ Environmental Education[EB/OL].<http://primocean.ru/en/education-and-awareness.html>

knowledge, but to try to understand marine life and the world in which it lives. The goal of education is to "development of environmental awareness", that is to say, we must understand the ocean firstly, and then learn to love the ocean, care about the ocean and respect the ocean, and establish a connection with the ocean. In the last 16 years, over 160 000 children have attended Living Black Sea and Marine Life Courses. The organization's textbooks, training tools and visual tools on the Black Sea marine biology have been used in many schools in the Black Sea region, such as “Life of the Black Sea” and “Diary of a Young Ocean Explorer”.⁶

In addition, Russia’s WWF has developed interactive courses for Russian elementary and middle school students, telling students in an interesting way that the ocean is important to all biological life on our planet and the necessity of maintaining the beauty and health of the ocean. They prepared different material packages for elementary and middle school students, and awarded each participant a diploma at the end of the course. The ritual way of graduation can not only leave a deep impression on students, but also enable them to actively participate in teaching activities and maximize the teaching effect.⁷

Moreover, Russia also has a special marine education school. The MOVBD “Warrior” organization started to create a modern private elementary and middle education institution “ANO Ocean School” in September 2016. The school develops students’ cognitive interest in marine related occupations through classroom activities and extracurricular practice. To integrate navigation education with general education, physical education, physics, history and other disciplines, improve students’ marine knowledge quality, and provide them with general and professional education courses so that students have good basic quality to support their subsequent development. Through the development of a maritime profile training system, the school helps students to form an overall orientation in the career of sailor, military secret service or civil service in their youth, while complying with the wishes of graduates to choose majors. “ANO Marine School” clearly defined that the core of the educational process is to train naval cadets, but cultivating “people” and making students grow into “people” is the most important theme in its education process. In the training process, students should not only satisfy their personal development to the maximum extent, but also fully tap their potential to ensure that each student can achieve the best level in terms of intelligence, spirit, morality, psychology and physical development according to their own development rules.⁸

Marine education in Russian elementary and middle schools completes the transfer of marine knowledge through comprehensive practical teaching activities, while at the same time not losing student interest, enthusiasm and autonomy, stimulating students’ awareness of the ocean, exploring the ocean and protecting the ocean, so as to truly achieve the goal

⁶ О наших занятиях - ЖИВОЕ ЧЕРНОЕ МОРЕ[EB/OL].<http://blacksea-education.ru/e5.shtml>

⁷ МОРЯ РОССИИ: УГРОЗЫ И СОХРАНЕНИ[EB/OL].<http://xn--h1aakialaja0l.xn--p1ai/>

⁸ Морская школа[EB/OL].http://www.moovbd-voin.com/?page_id=996

of innovating the marine curriculum and carrying forward the Marine spirit.

2. Marine education practice in university

Russian university marine education mainly undertakes the mission of cultivating marine professionals, delivering qualified personnel for the Navy, and engaging in marine scientific research. Admiral Nevelskoy Maritime State University (MSU) trains maritime experts through a scientific system of basic education and applied research. In order to organize the educational process of the university, the school has 7 teaching buildings, a training and technology center, more than 80 laboratories, 8 specialized reading rooms and a library. The university also has sophisticated modern simulators, including ship control and maneuver trainers, communication system simulators. These infrastructures can ensure that military trainees and students receive adequate practical training, operate experimental base equipment and simulators, and fully participate in practice. Admiral Nevelskoy Maritime State University has also carried out many other types of activities related to the ocean, such as holding a seascape photography contest, holding an opening ceremony for the ocean course location named "Brigantine", holding a marine robotics competition project, organizing students to visit commercial ports and docks.⁹

In addition to guaranteeing basic education in classroom and practical activities for students, Russian universities also carry out marine education activities through scientific research. Pertsov White Sea Biological Station of Lomonosov Moscow State University (WSBS MSU) is an education and research center that aims to conduct marine scientific research and summer field courses in the White Sea.¹⁰ During the student internship, students start with an introductory course on biodiversity and marine biology, and gradually turn to higher education courses such as invertebrate science, ichthyology, oceanography, mycology, agriculture, comparative physiology, embryology, marine geology.¹¹ In addition, WSBS MSU also has a molecular biology laboratory, an aquarium building, a boat, a diving team, a library, a laboratory that can accommodate hundreds of people, including basic scientific equipment, laboratory glassware, and binoculars. The unique geographical location and biodiversity make WSBS a venue for independent and collaborative research throughout the year. Well-equipped laboratories, modern research ships, comfortable housing and mutually supporting researchers ensure the highest productivity of fieldwork.¹²

In addition, Russia regularly holds special marine education research forums. The first "Marine Research and Education (MARESEDU-2012)" conference was held on October 24, 2012. The conference convened leading scientists in the forefront of world ocean research and trained a new generation of marine scientific researchers and university teachers. The first MARESEDU has aroused many

enthusiastic responses and positive feedback. Since then, the conference has been held once a year.¹³ On October 28-31, 2019, The 8th International Conference on Marine Research and was held in Moscow, jointly organized by Lomonosov Moscow State University Marine Research Center (LMSU MRC), UNESCO-MSU Training and Research Centre for Marine Geology and Geophysics supported by Faculty of Geology, Faculty of Biology and Faculty of Geography, Lomonosov Moscow State University, Pertsov White Sea Biological Station, and P.P. Shirshov Institute of Oceanography.¹⁴ The main topics of this conference include: discussing the development status and prospects of comprehensive marine research in the world; issues of reasonable natural management and water biodiversity protection; scientific achievements in the field of marine geological exploration and ecological monitoring; marine and coastal ecosystems Issues of sustainable development, etc. More than 400 representatives from 75 organizations attended the meeting. The event presented a total of 236 reports on this major field. In addition to the main conference, the event also held three scientific and educational lectures. The "Marine Research and Education" conference is of great significance to promote world marine cultural exchanges, promote marine scientific research, and publicize marine education.

3. Actions of Social Ocean Education

The subjects of the implementation of public marine education in Russia are diverse, including government departments, as well as many social organizations and non-profit organizations.

The Ministry of Natural Resources and Environment of the Russian Federation announced information on volunteer activities of the All-Russian Movement for the Federal Project "Protecting Unique Water Bodies" in 2019. The number of participants reached 342,625, and the total length of the coastline was 9,470,228 km.¹⁵ In addition, as part of the United Nations Environment Programme's Regional Oceans Program, the Marine Debris Regional Action Plan under the Northwest Pacific Action Plan (NOWPAP) is being gradually implemented. The 2008 NOWPAP International Coastal Cleanup (ICC) and training seminar was held in Vladivostok, Russia from November 26 to 28. Local Russian students, NGOs, media and public representatives also participated in the event. There were a total of 12 lectures in the training seminar, each introduced cases of coastal cleanup activities in NOWPAP area, and shared the experience of other regions. After the meeting, a training of on-site beach garbage cleaning was conducted in Schitovaya Bay. After the on-site training, they also exchanged in the form of group discussion about the annual ICC activities in NOWPAP area.¹⁶

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МАТЕРИАЛЫ
КОНФЕРЕНЦИИ Конференция 2019 [EB/OL]. <https://www.maresedu.com/materials>

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Международная научно-практическая конференция [EB/OL]. <https://www.maresedu.com/>

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Поддержка добровольчества и СОНКО [EB/OL]. https://www.mnr.gov.ru/activity/directions/podderzhka_dobrovolchestva_i_sonko/

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2008 Международные мероприятия по очистке прибрежных районов и учебный

⁹ About Us [EB/OL]. <http://en.wsbs-msu.ru/doc/index.php?ID=13>

¹⁰ Обзор Морского университета [EB/OL]. http://msun.ru/ch/edu_ch_general

¹¹ Student Practice [EB/OL]. <http://en.wsbs-msu.ru/doc/index.php?ID=14>

¹² About Us [EB/OL]. <http://en.wsbs-msu.ru/doc/index.php?ID=13>

In addition to coastal cleanup activities, many non-profit organizations in Russia also play an important role in public ocean education. On the Russian island of Sakhalin, the “Boomerang” club created a marine animal rescue team called “Friends of the Sea”. Its mission is to protect marine mammals and their environment in the Sakhalin region. The main focus of the activities include marine animal rescue, raising awareness and carrying out educational campaigns for the people of Sakhalin, assisting in scientific research on marine mammals, and assisting in the development of marine mammal protection and management systems.¹⁷ They are committed to improving the environmental awareness and behavior of the residents of Sakhalin Island, and launching publicity and education campaigns for adults and children to cultivate love and respect for nature, especially the ocean. By urging people to understand the marine mammals that live alongside them, so that people can see the interconnection between people and the marine environment, so as to achieve the purpose of cleaning the ocean, paying attention to the ocean, and treating the marine environment more carefully. The “Friends of the Sea” organization devotes a lot of time and energy to training programs, and divides people into different education programs for members outside the group and members within the group. In addition, the organization also narrows the distance between people and the sea through various types of marine activities, such as selecting the most popular marine mammals in Sakhalin and organizing “Whale Night” activities on World Ocean Day, holding children's drawing activities.¹⁸

Russian social institutions and non-profit organizations carry out various forms of marine education activities to enhance the public's understanding of marine knowledge, and at the same time guide the public to actively participate in marine protection, so as to form a good social atmosphere of knowing, understanding and loving the ocean.

III. ENLIGHTENMENT ON RUSSIAN MARINE EDUCATION

1. Russian marine education has strong policy support

The policy support of Russian Marine education is one of its notable features. The implementation of “The marine doctrine of the Russian Federation for the period till 2020” plan guarantees the country's support for maritime educational institutions and organizations, maintains and operates training ships, and provides a solid material and technical foundation for the development of maritime educational institutions. The Russian government strongly supports the development of maritime research work and the development of maritime expedition research, to a large extent, to ensure its scientific and information support needs for the development of

семинар[EB/OL].<https://www.unenvironment.org/nowpap/zh-hans/news-and-stories/story/2008nianguojihaiyanqingjiehuodongjipeixunyantaozhui>

¹⁷ Обучающие программы[EB/OL].<https://mmrescue.ru/company/obuchayushchie-programmy/>

¹⁸ Обучающие программы[EB/OL].<https://mmrescue.ru/company/obuchayushchie-programmy/>

maritime activities.¹⁹ The new version of the “Russian Federation Maritime Activities Development Strategy to 2030” approved by Russia in 2019 stipulates the development direction of Russia in the field of maritime activities. “In terms of staffing, education and training in the field of maritime activities, it is necessary to train, attract and retain qualified personnel in the field of maritime activities; develop and improve the professional personnel training system used in the maritime field; establish the material and technical foundation of educational institutions, to implement educational programs in the field of maritime activities”.²⁰ A country's ocean policy is a manifestation of a country's will and interests, and it is also the basis for any ocean activities. Russia has continuously improved regulations on marine scientific research, promoted the vigorous development of marine scientific research activities, and provided scientific and technological support for the development of marine undertakings.

In addition, to promote maritime activities, the Russian government has set up a number of large-scale national projects to develop and utilize the world's marine resources and space, modernize the expeditionary fleet, equip it with modern navigation equipment and scientific instruments, and provide adequate financial support for carrying out maritime scientific research. The highest (forecast) financing amount received from the federal budget for the “2016-2031 Federal Target ‘World's Ocean’ Program” is 87.020 billion rubles. In accordance with the maritime policy, the Russian government has continuously increased its funding for maritime research and provided a material basis for the establishment of scientific facilities and technological development for maritime research. This has reference significance for other countries to carry out marine education.

2. Marine education in middle and elementary schools has been widely carried out

In the maritime education of middle and elementary schools in Russia, aquariums are often used as places for maritime education and play an important role in it. Russia has Moskvarium, the largest aquarium in Europe, as well as seven other aquariums including Primorskiy. These aquariums not only provide viewing, but also offer various marine education courses for students, so that they can learn more about the ocean when they get close to it, which is often easier to impress students than boring classroom lectures. Marine education should break through the limitations of traditional classrooms. Only by getting out of school, getting to know the ocean and getting close to the ocean, can students be inspired awareness of ocean and call on them to love ocean and protect the ocean environment.

In addition, marine education in middle and elementary schools aims at the age characteristics of students and designs marine teaching materials that conform to their psychological characteristics. For example, the DVD “Life of the Black

¹⁹ Морская доктрина Российской Федерации на период до 2020 года[EB/OL].<http://docs.cntd.ru/document/902010411>

²⁰ ПРИЛОЖЕНИЕ № 1к Стратегии развития морской деятельности Российской Федерации до 2030 года[EB/OL].<http://government.ru/docs/all/123507/?page=2>

Sea”, through animation and video media, stimulate students' awareness of the ocean and explore the ocean. Russian marine education guides students to combine marine knowledge with daily study and life, and creatively carry out activities of interest and specialty. Marine education is not limited to book knowledge, and can develop more targeted and characteristic courses for students. Extend the knowledge, meet the individual needs of students, make full use of modern education technology to enrich the content of the course, and awaken the students' ocean consciousness. This kind of marine education that meets the individual needs of students is inspiring for the development of marine education in other countries.

3. University marine education in Russia reflects the characteristics of school-enterprise cooperation and integration of science and education

The NEVA commercial maritime theme exhibition in Russia is a good example of university marine education.²¹ Enterprises, scientific research institutions, and universities communicate with each other and make use of each other's human resources and technical resources for complementary development. Our universities can also learn from this training model, strengthen cooperation and exchanges with marine enterprises, so that students can understand the latest contemporary marine industry needs, and establish a “school-enterprise cooperation” project to provide college students with more practical opportunities. At the same time, companies can also enter universities to conduct publicity and talent introduction, participate in the teaching process, and integrate marine education theory with production through presentations and on-site lectures by corporate technical personnel. Promoting research by learning, assisting production by research, and combining production, teaching and research to achieve the extension and diversified development of the school education knowledge chain. Through the combination with production practice, especially the marine characteristic industry, the interdisciplinary teaching mode is deepened.

The integration of science and education is another characteristic of university marine education. As one of the maritime powers, Russia attaches great importance to ocean research, and its ocean research capabilities are at the world's leading level. The university has established a variety of scientific research organizations to participate in federal and university science and technology programs through marine scientific research, implement national budgets, participate in competitions, and receive grants. The school regularly organizes scientific conferences on marine education, encourages students to participate in scientific discussions on related marine issues, and organizes students to visit marine science and technology investment exhibitions and marine intellectual property

²¹ Russian maritime education and excellence celebrated at NEVA 2015 on IMO World Maritime Day[EB/OL].<https://transtec-neva.com/russian-maritime-education-and-excellence-celebrated-at-neva-2015-on-imo-world-maritime-day/>

protection centers to learn about the frontiers of marine science. In addition, Russian universities, domestic and foreign scientific research institutes and international universities cooperate in marine education to conduct research and training in a brand-new form. Students and young scholars can directly participate in research and scientific programs, and be provided rich lectures and practical exercise opportunities. Encourage multi-party cooperation between universities and research institutes, actively introduce outstanding marine talents from universities, and further promote the scientific development of Russian marine education. The practice of integrating science and education to train professionals in marine disciplines can be a reference for university marine education in other countries.

4. Public ocean education permeates the whole society

Effective public participation is the foundation of marine protection. The Russian government and related public organizations have carried out a number of “clean coastline” marathons, and guided the public to participate in the country's marine undertakings through various marine cultural projects and marine protection activities. In addition, there are many non-profit organizations in Russia that have played an important role in the popularization of ocean knowledge, such as the “Friends of the Sea” organization and the Russian WWF. Marine biodiversity conservation policies should be formulated by national institutions, regional governments, and ecologists and scientists in cooperation, but nature conservation organizations can act as catalysts in this process.

Compared with governments and academic organizations, they have a smaller and more cordial distance from the general public. They can introduce the marine environment to different groups of people and publicize marine knowledge in terms that the public can understand according to the education status of local residents.

Knowledge can not only be learned in schools, but by participating in activities such as practical activities and expert lectures of such organizations, existing educational methods and technologies are applied to marine ecological education, calling people to pay attention to the ocean and protect the marine environment.

The cooperation between the government and non-profit organizations to carry out marine education is another characteristic of Russian marine education. This point is worth learning for other countries.

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