

Science literacy is boosted in Beijing

Final declaration of international conference maps the way forward

By ZHANG ZHIHAO and ZHANG YANGFEI

China will work with other nations and international science organizations to facilitate the sharing of resources and practices for promoting scientific literacy around the world, a declaration adopted on Wednesday in Beijing said.

The Beijing Declaration for Promoting Public Science Literacy Across the World was adopted by attendees during the closing ceremony of the World Conference on Science Literacy, which began on Monday.

More than 1,000 scientists and representatives from 38 countries and regions, as well as 23 international scientific organizations and 58 national scientific institutes, attended the conference, according to the organizer, the China Association for Science and Technology.

"Science and technology are bringing fundamental changes into all aspects of human production and life at an unprecedented rate, breadth and depth," the declaration said.

"Science literacy not only involves mastery of scientific knowledge and methods but also demands respect for the pursuit of the scientific spirit and evidence-based scientific thinking," it said.

The declaration calls for working together to close the gap in scientific literacy between different countries, and build a coordinated working mechanism to improve global scientific literacy and fulfill the United Nation's 2030 Agenda for Sustainable Development.

The declaration also called for countries to prioritize the improvement of scientific literacy across different races, genders and borders, so that more people can truly reap the benefits of scientific development. Youths,

“Science and technology are bringing fundamental changes into all aspects of human production and life at an unprecedented rate, breadth and depth.”

The Beijing Declaration for Promoting Public Science Literacy Across the World

females and impoverished communities should be the key target demographics in such efforts, it said.

"Increasing scientific literacy can refresh ideas of the people, expand their potential, allow them to fulfill their value and contribute to society," Han Qide, honorary president of CAST, said at the ceremony.

"China wishes to actively engage in international cooperation and working mechanisms, to help reduce the gap in scientific literacy around the world and to inject positive energy for scientific development and a better world," Han said.

Craig Cormick, president of Australian Science Communicators, called the Beijing declaration "very focused, clear and aspirational", with reachable targets and goals.

"I'm very impressed with the scale that China can devote to solutions," he said. "China makes a dedicated goal in improving science literacy, and it has the key political support and government programs to achieve that goal."

Rosalind Mist, head of policy and education at the Science Policy Centre of the Royal Society in the United Kingdom, said the Beijing declaration highlighted how all nations should work together to improve science education for everyone, especially girls and women.

Guy Labine, chairman of the board of directors of the Association of Science and Technology Centers, noted that the triennial International Science Summit also has a declaration on scientific literacy. "It will be interesting to see how the two declarations work together to advance the popularization of science," he said.

"China has a strong interest in increasing the quality and role of science centers, and making science more accessible and accepted by the population. I have witnessed the significant growth of science centers and science learning in China, it is really admirable and impressive at the same time."

According to CAST, the number of dedicated science museums in China grew from 280 in 2006 to 409 in 2014. The number of museums with science and technology sections grew from 239 in 2006 to 724 in 2014.

Gordon McBean, a geology professor at the University of Western Ontario in Canada, said the Beijing declaration is a call to action for other international organizations to improve scientific literacy around the world together.

McBean said it is very important for different countries to share their experiences and practices when increasing scientific literacy. Scientists and science communicators, such as teachers and the media, also need to work together and better communicate scientific knowledge to the general public, especially to young people, McBean said.

Contact the writers at zhangzhihao@chinadaily.com.cn

Inspiring words



Wang Yang (left), chairman of 13th National Committee of the Chinese People's Political Consultative Conference, and Shi Taifeng (right), Party secretary of the Ningxia Hui autonomous region, unveil a congratulatory plaque in Yinchuan, Ningxia, on Wednesday. The words are an aspirational message from President Xi Jinping celebrating the region's 60th anniversary and looking ahead. WANG ZHUANGFEI / CHINA DAILY

REFRESHING NINGXIA

Sand control project pays off in Ningxia

YINCHUAN — The distance between the southern edge of the Tengger Desert and the city of Zhongwei in northwest China's Ningxia Hui autonomous region was once just a few kilometers, but it has been expanding over the past several years.

Tengger, the fourth-largest desert in China, is mostly in the Inner Mongolia autonomous region and stretches to parts of Ningxia and Gansu province.

Residents of Zhongwei, who have suffered from desertification and land degradation for decades, said that in the 1950s, when the desert was around 5 kilometers away, even a gentle breeze would blow dust and sand into their homes.

The situation has improved significantly. Desertification is under control and the distance between the desert and Zhongwei has been pushed back to more than 20 kilometers — and a World Bank desertification control project has played an important role.

The Changliushui project started in 2013, with a World Bank loan of 300 million yuan

(\$44 million) to address desertification and land degradation.

"First, we established straw checkerboards to halt the movement of shifting sand dunes. Then we sowed grass seeds and planted shrubs. Eventually, we turned the desert into an oasis," said Tang Ximing, who is in charge of the project.

The checkerboards are low straw barriers arranged in squares that help block wind and provide some shade.

Lin Xiuxia, 45, a resident of Heilin village, has been making straw checkerboards for more than three years.

"Making straw checkerboards is a laborious and difficult task. Women usually wrap scarves around their faces and heads tightly to avoid sunshine and sand, while men wear straw hats," Lin said.

From March to October, Lin and other residents work around 12 hours per day in the desert. "Sometimes, we need to eat five meals a day, because it requires so much physical effort."

But Lin and her colleagues'

hard work has been repaid with a good income and a better living environment.

In the village, more than 200 residents make straw checkerboards. They work not only in Zhongwei but also in Inner Mongolia, the Xinjiang Uygur autonomous region and Shaanxi province. The average annual income is around 70,000 yuan per person.

"It's not only a desertification control project. It has become a poverty alleviation project as well," said Tang, adding that the Changliushui project has paid local residents more than 70 million yuan over the past six years.

As the project continues, straw checkerboards placed years ago are now covered by thriving sandy soil plants.

"I was born and grew up in the city. Desertification control is vital to sustain the city's development. We have received assistance from international society; therefore, we should work harder," Tang added.

The 52-year-old invented a seeding machine that can plant seeds in the desert with

a higher survival rate and lower labor cost.

The straw-checkerboard mode has prevented the desert from engulfing the city, and the city's environment has become much better.

The project aims to bring 23,000 hectares of the desert under control when it ends in 2019. So far, more than 20,000 hectares have been harvested.

The Changliushui project is part of the World Bank's desertification control and ecological protection project in Ningxia, one of the most ecologically fragile areas in northwestern China. The region has been struggling with drought, wind and sand, water and soil loss and soil salinity.

Statistics showed that the desertified land in the region reached nearly 3 million hectares in 2012, accounting for 57.2 percent of the total area of the region.

The World Bank approved a loan of \$80 million to help control desertification and land degradation in Ningxia. Since 2013, projects covering an area of over 55,000 hectares have been started in Zhongwei, Lingwu, Qingtongxia and Wuzhong cities, as well as Yanchi county.

"Ecologically fragile areas in northwest China are always economically less-developed areas. Introducing international aid programs can obtain supplementary financing for indigenous ecological improvement projects," said Li Zhigang, director of the Ningxia management center for international forestry cooperation projects.

"The significance of the World Bank's project goes beyond ecological benefits. It has also increased local residents' incomes and accelerated social development," Li added.

XINHUA

Experts call for emphasis on STEM education in China

By ZHANG YANGFEI zhangyangfei@chinadaily.com.cn

Experts at the World Conference on Science Literacy called for building a comprehensive STEM education system to inspire Chinese primary and middle school students and foster a critical thinking mindset.

Hu Weiping, professor and director of the key lab of Modern Teaching Technology at Shaanxi Normal University, said an increasing number of companies and schools have been engaged in STEM activities — meaning science, technology, engineering and mathematics — but they tend to focus more on products rather than the young talent.

"Our country's STEM education needs to be systematically designed through a series of efforts, including policymaking, curriculum reform and teaching innovation," he said.

Hu said that even though the National Natural Science Foundation of China has been funding education projects since 2017, projects related to technology or science education are not on the list.

"Without funding there won't be input from scientists or anyone else," Hu said. "That's why I have called on the foundation to start working on this issue, so that more experts will be encouraged to

“The core aim of school activities should be making students able to think, not making products.”

Hu Weiping, professor and director of the key lab of Modern Teaching Technology at Shaanxi Normal University

do more research on curriculum reform to stimulate technological innovation."

He also urged schools to inject more STEM content into daily courses instead of extracurricular activities, because some of the most common extracurricular activities, such as making robots or participating in science competitions, don't require individual deep thinking or designing.

"The core aim of school activities should be making students able to think, not making products," he said.

China's STEM education also faces a major challenge with a shortage of both professional science teachers and proper science training for existing teachers. About 80.5 percent of teachers

involved in STEM subjects received no serious science education, and many were at a middle or high school education level, Hu said.

Hu also urged Chinese educators to formulate different plans outlining teaching methods and goals that cater to different grades. Key scientific theories and capabilities should be taught through daily lectures, and educators should form an effective teaching method based on projects and evidence that can train students to think critically.

Schools should also set up an evaluation system to assess how students have progressed in scientific literacy, he said.

Ren Youqun, a professor in the educational information and technology department at East China Normal University, also stressed the importance of STEM education as society heads toward a digital future.

He said China's primary and middle schools should integrate more projects and interdisciplinary knowledge into textbooks, and students should improve their problem-solving and teamwork skills.

Ren proposed that the learning process should be thoroughly evaluated, and schools should start setting up innovation laboratories and facilitate an education environment that is applicable to both online and offline teaching scenarios.



Villagers Zhou Hong (left) and Lin Zhifu make straw checkerboards to block the advance of the Tengger Desert in the Ningxia Hui autonomous region, in June. LU YING / XINHUA

Professor braves storm to reach class on time

By CANG WEI in Nanjing cangwei@chinadaily.com.cn



Wang Ke, a professor from Southeast University in Nanjing, Jiangsu province, won applause online for keeping his promise to students by traveling 737 kilometers by taxi in heavy rain brought by Super Typhoon Mangkhut to make it to class on time.

Wang was in Guangzhou, Guangdong province visiting friends when the typhoon hit on Sunday. He planned to go back to Nanjing by plane on Sunday morning, but found that airports, high-speed railways and buses had all been shut down because of the extreme weather.

"I had worked and lived in Fujian, a province often hit by

summer typhoons, for 13 years and was familiar with them," Wang said. "But I didn't expect Typhoon Mangkhut would be this strong. I thought I could leave Guangzhou in the morning before the storm landed in the afternoon."

Wang thought about taking a taxi to the nearby airport in Changsha, Hunan province, but few taxi drivers wanted to go out of the city in the wind and rain.

"I was lucky to find a driver for a ride-hailing service who was brave. He found a friend and the two took turns driving the taxi."

On their way to the Changsha airport, they found that many highways with speed limits of 120 kilometers per hour had been closed, so they had to take provincial-level highways at 60 to 80 km/h.

"It was quite an experience," Wang said. "The traffic lights swayed in the fierce wind. We saw many trees blown down or broken. We could feel that sometimes the car was drifting. It was like taking a boat in the ocean."

Sometimes they had to drive at 20 km/h. After 13 hours, they arrived at the Changsha airport at 0:20 am.

Wang paid 4,600 yuan (\$670) to the two drivers and thanked them. He caught a flight and completed his 23-hour journey back to Nan-

jing, managing to arrive at the university in time.

"It's not because I have high moral standards," said Wang. "I just thought that the students' schedule shouldn't be changed because of me."

"My parents were also teachers. My father jumped into floodwaters to save the lives of three students, and my mother used to take good care of a physically challenged student for years. I learned from them that teachers should value and care about their students."

According to Southeast University, Wang hasn't been responsible for a schedule change in 28 years.

Guo Jun contributed to this story.