



澳門科學館  
CENTRO DE CIÊNCIA DE MACAU  
MACAO SCIENCE CENTER

# ANNUAL REPORT 2022





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## Curator's Note



In 2022, Macao Science Center (MSC) was honored as a "National Science Popularization and Education Base" and a "National Scientist Spirit Education Base", respectively, making it the only science and technology venue across Hong Kong, Macao and Taiwan regions to be awarded both the two national education bases. This fully demonstrated the support and recognition of the State for MSC's continuous efforts, and highlighted our important responsibility to play the role of the two education bases. MSC has been adhering to the four missions, namely, "promoting science popularization and education among local adolescents", "establishing a new landmark to complement tourism development in Macao", "providing a regional platform for

science education, convention and exhibition" and "facilitating the spread of novel technologies and science communication". It strives to become a bridge connecting the public and science as well as a cultural and tourism landmark, and make a contribution to improving the scientific literacy of all residents. MSC integrates multiple resources to provide adolescents with diverse scientific exploration experiences. Through acquiring scientific knowledge, mastering a scientific mindset, and applying scientific methods and skills, adolescents' interest in science are stimulated to create a sound atmosphere for innovation and exploration. In addition, taking into consideration the needs of school education and the development of science and technology industry, MSC together with schools and industries, promotes the development of science education to be higher quality, more innovative, more multidimensional and more integrated, and strives to become the cradle of innovative talents in the future.

As a result of the COVID-19 pandemic, 2022 was full of challenges as well as opportunities in terms of the implementation of plans. In 2022, a number of special galleries were set up for science popularization with different themes, including *Macao Vast!* created by the local team in Macao, *Special Exhibition of Data Science – Internet of Things* in the era of AI application, and *Sanrio Characters* fearing green, low-carbon technology and brand creativity. Additionally, a series of activities such as the National Science Day, national and regional science popularization competitions, branded science popularization courses, MSC-school collaboration plan, the Stars Project and the science teacher training plan were also carried out, among which the first phase of the "Science Popularization and Education Program for Students" for primary and secondary students across Macao has also been launched.

In the coming year, MSC will continue to update the content and exhibits of the exhibition halls, doing so to meet the needs of the overall development by taking "data science" as the core and combining the themes of "biodiversity", "green low-carbon technology", "sustainable development" and "spirit of scientists". MSC will carry out the "Plan for Youth Science Village", build maker spaces, network laboratories and digital manufacturing laboratories, introduce professional science popularization instructors from the scientific field, and provide innovative experience projects and scientific research projects.

With this Annual Report, MSC presents the main achievements of the past year. We'd like to ask for your comments and continuous support so that we can continue to achieve innovation and improve our work. Finally, let us bid farewell to 2022 with a grateful heart and look forward to a promising 2023 with confidence and a sense of mission.

Curator of Macao Science Center  
Dr. Pan Sio

December 31, 2022



# 01

Reorganizing the organizational structure  
and formulating a medium- and long-term  
development plan

## 1. Reorganizing the organizational structure and formulating a medium- and long-term development plan

The members of the new Board of Directors and the Supervisory Committee of Macao Science Center Limited took office on April 1. As the new management body members took office, MSC would continue to uphold the four missions -- "promoting science popularization and education among local adolescents, establishing a new landmark to complement tourism development in Macao, providing a regional platform for science education, convention and exhibition and facilitating the spread of novel technologies and science communication". It would actively cooperate with the SAR Government's education and youth policies, fully leverage its function as a science popularization and education base, and contribute to the promotion of science literacy and the development of scientific and innovative talent for all. At the same time, MSC would use its own advantages to promote the development of moderately diversified tourism and economy in Macao, and strengthen the cooperation among Guangdong, Hong Kong and Macao, so as to better integrate into the overall development of the nation.



Photo of members of the new management body of MSC

### Members of the Management Body of MSC

Shareholders	President: Kong Chi Meng (on behalf of the Macao Special Administrative Region) Vice-President: Chan Wan Hei (on behalf of the Science and Technology Development Fund (FDCT)), and Kuan Chan, Victoria Alexa (on behalf of the Macau Productivity and Technology Transfer Center)
Board of Directors	President: Mok Ian Ian Vice-President: Wong Ka Ki Directors: Sio Hon Pan, Vong Iat Hang, Tam Kam Weng, Mak Pui In and Zheng Jiezhao
Supervisory Committee	President: Kuan Ho Weng Members: Wang Chuang and Ung Chi Keong
Consultative Committee	President: Iu Vai Pan Members: Mok Kai Meng, U Seng Pan, To Wai Ming and Lao Kun Wa



## 1.1 Medium- and long-term development plan

**MSC will strive to achieve the following objectives in an orderly manner:**

- (1) To implement the spirit of the *National Action Plan for Scientific Literacy (2021–2035)*, and actively carry out multidimensional public education activities for science popularization, so as to make the scientific literacy indicators meet the objectives of the Action Plan.
- (2) To deepen the multi-level connection with basic education, and improve teachers' scientific and technological expertise in line with the development plan of science education in the *Medium- and Long-term Planning for Non-Tertiary Education (2021–2030)*, so as to make MSC the cradle of future science and innovation talents.
- (3) To make full use of the advantages and platform resources as the "National Science Popularization and Education Base" to fulfill the mission of the national education base, and become an excellent organizational institution that organizes activities on the National Science Day.
- (4) To make full use of the advantages as the "National Scientist Spirit Education Base" to fulfill the mission of the national-level education base, set up relevant facilities and build a team to promote scientist spirit in Macao SAR with the stories and spirits of Chinese scientists, innovation and scientific research teams in terms of patriotism, innovation, pragmatism, dedication, cooperation and education as the themes.
- (5) To apply for the three-star operation label, the highest level of "Green Building Design Label", for the buildings of MSC, and become a science popularization and education base for green low-carbon buildings.
- (6) To actively participate in the organization of national and international science popularization venues, support the construction of science popularization venues across the country, contribute our own experience, jointly train science popularization professionals and share science popularization resources. To carry out in-depth cooperation with science and technology enterprises, build more diversified and practical science popularization projects with relevant resources, create revenue projects such as science popularization research and learning services, with the purpose of becoming a national representative science popularization venue and cultural tourism landmark.

## 1.2 Development path and work focus

MSC will put its work focus on: The plan for renewing exhibition halls, the plan for optimizing green and low-carbon scientific and technological facilities, the plan for optimizing building spatial functions, the implementation of the "National Science Popularization and Education Base" plan, and the exhibition and teaching activities of the "Scientific Spirit Education Base".

The plan for renewing exhibition halls involves three main subjects: Data science, biodiversity and green low-carbon technology. Specifically, data science includes topics such as AI, the Internet of Things, 5G wireless communication, network security and blockchain, corresponding to the curriculum framework of science and technology education for primary and secondary students. With high-tech content, especially the scientific research achievements of tertiary institutions in Macao, it serves as the overall concept of exhibition hall planning in combination with the functions of MSC-school collaboration and related science popularization competitions. In accordance with the science and technology education courses of the country and Macao, the exhibition hall theme and exhibit planning will correspond to the five science and technology education topics of "material science, life science, earth and space science, technology and engineering science and data science".

With the advantages of hardware and software supporting facilities, MSC will continue to promote the work of high-tech and scientific communication and strengthen the scientific literacy of the public.

### · Green Building Design Label and Operation Label

Green Building Labels consist of design and operation labels. MSC obtained the Three-star Certificate of Green Building Design Label (highest level) in September 2016, and carried out a number of optimization projects from 2017 to 2022. In 2023, MSC will strive to obtain the Three-star Certificate of Green Building Operation Label.

At the 75th Session of the United Nations General Assembly in 2020, China put forward the important policies and targets of achieving peak carbon emissions by 2030 and carbon neutrality by 2060, referred to as "double carbon" targets. As a national science popularization and education base, MSC is committed to promoting science popularization and education; therefore, since 2022, double carbon education has been included in teacher training activities. About 70 people from 14 schools participated in the projects on "Carbon Emission I, II and III". Moreover, MSC also produced *Carbon Emission*, a series of science popularization videos, which was broadcast on the online education resource platform in 2022 to strengthen the understanding of all sectors of society on sustainable development.

- 30 60-

# 碳达峰 碳中和

咸林智慧运维



## 澳門科學館綠色建築標識的進程

### 第二階段

向中國綠色建築與節能委員會申請評審設計標識

於12月16日澳門科學館獲頒發“中國綠色建築設計標識 -- 三星級”

隨即開始調研有關綠色營運的相關項目

### 第四階段

計劃在2022及2023年度進行相關優化工程及綠色營運項目

優化工程完成後收集一年的營運數據製作申報文件

2015

2017

2023

### 第一階段

於3月初步探討能有條件取得中國綠色建築設計標識

收集各種資料及數據，優化工程的初步設計，製作申報文件

### 第三階段

開展相關優化工程，於12月完成了相關增設水錶工程

受到颱風天鴿影響，2018至2019年進行鋁質幕牆板更換工程及海堤修繕總工程而暫緩計劃

2020年受疫情影響而暫緩計劃

2016

2021

### 第五階段

收集一年的營運數據向中國綠色建築與節能委員會申報評審營運標識

目標預計第四季完成計劃

# 02

Listed as an important place for national science popularization and education, and actively giving play to the advantages as "two bases"

## 2. Listed as an important place for national science popularization and education, and actively giving play to the advantages as "two bases"

### 2.1 "Two bases" awarding

In March 2022, the *First List of Accredited National Science Popularization and Education Bases for 2021–2025* issued by the China Association for Science and Technology has been announced. MSC was listed as one of the "National Science Popularization and Education Bases". On May 30, the China Association for Science and Technology and the Ministry of Science and Technology organized the online main event for 2022 National Science and Technology Workers Day, announcing the *List of Accredited Scientist Spirit Education Bases for 2022*, and MSC was included in the first batch of National Scientist Spirit Education Bases, marking that MSC has become the only science and technology center across Hong Kong, Macao and Taiwan regions that has won both the above two honors.

On September 22, Mr. Xu Yanhao, Deputy Secretary of the Party Committee of the China Association for Science and Technology (CAST) and member of the Standing Committee of the National People's Congress (NPC), presented a plaque to MSC as the "National Science Popularization and Education Base" and "National Scientist Spirit Education Base".



## 2.2 Carrying out activities on the National Science Day

### · Activities on the National Science Day

In response to the 2022 National Science Day launched by the China Association for Science and Technology in September across the country, MSC organized 65 activities in September, with more than 5,000 participants. The topics included: Expert lectures on national scientific and technological achievements, lectures on Zhuhai–Macao science and technology innovation, science popularization dramas on Chinese scientist spirit, experiential science demonstrations, Starry Night astronomical science popularization activities, science–music crossover performances, and night tour to MSC, as well as a series of activities such as MSC–school collaboration and teacher training. Activities during the whole month covered 80 schools in Macao, accounting for 60% of the total.

On September 17, the National Science Day, MSC was opened with free admission to attract more students to participate in scientific research and exploration, and a series of wonderful activities were held on that day to enrich teenagers' extracurricular science popularization learning experience; the National Science Day attracted more than 2,500 people to participate in various activities.



Science in the Future – Lecture on National Science and Technology Development and Achievements



Experts Walk Into the Community – Science Popularization Worker Training and Lecture on Zhuhai–Macao Science and Technology Innovation (9th issue)



· "Building Dreams with Science Innovation" on National Youth Science Day

The activity of "Building Dreams with Science Innovation" on National Youth Science Day of 2022 was jointly held by the Science Popularization Department of China Association for Science and Technology (CAST), the Bureau of Science Communication of Chinese Academy of Sciences, and the Youth Science and Technology Center of CAST. In order to support the activity of "Building Dreams with Science Innovation" on National Youth Science Day of 2022, MSC organized a science popularization activity called "Ringing Out the Summer and Ringing in the Science Popularization Week" from August 20 to 28, in which, there were 12 science popularization activities, including: A small scientific experiment workshop, scientific demonstration, a science popularization theater, a parent-child workshop, outdoor astronomical observation and VR interactive experience, with a total of 2,153 participants. Students made good use of various science popularization and education resources in MSC to enrich themselves and learned science popularization knowledge closely related to life.



Bubble demonstration of "Building Dreams with Science Innovation" on National Youth Science Day

In addition, on the afternoon of September 17, MSC launched a science popularization live stream to adolescents and the public on the seven platforms, including TikTok account of "Building Dreams with Science Innovation", Beijing Science and Technology Newspaper (<http://www.bkweek.com/>), <https://www.yizhibo.com/>, Weibo, Baidu, YouTube and Facebook, with the theme of "MACAO VAST – Interpreting Light, Sound and Shadow", in which, the participants visited the Planetarium, the Space Science Gallery and "MACAO VAST – Visual Experience Hall" and their interest in science was stimulated.

· Little Reporters of "Building Dreams with Science Innovation"

In order to support the activity of "Building Dreams with Science Innovation" on National Youth Science Day of 2022, MSC organized a science popularization activity called "Ringing Out the Summer and Ringing in the Science Popularization Week" in late August, in which primary and middle school students were invited to serve as "science reporters" to share their knowledge, experience and feelings with the public during the activity.



Little reporters of "Building Dreams with Science Innovation"

## 2.3 Outstanding organizers and activities on the National Science Day

On December 22, 2022, the Office of the China Association for Science and Technology issued the *Notice on the Commendation of Relevant Organizers and Events for the 2022 National Science Day*. 949 organizations were awarded as outstanding event organizers and 1,025 events were awarded as outstanding events for the 2022 National Science Day. MSC was selected as one of the outstanding organizers of the 2022 National Science Day, while the "MSC-School Collaboration Plan" and the "Science Popularization: Ringing Out the Summer and Ringing in the Science Popularization Week" organized by MSC were also awarded as outstanding events for the 2022 National Science Day.

## 2.4 Deepening scientist spirit education

After listed in the first batch of "scientific spirit education bases" in China, MSC will actively promote scientist spirit by launching various science popularization activities such as the new science popularization repertoire with the theme of Chinese scientist spirit and the academic science popularization drama competition, so as to promote the public, especially primary and secondary school students to understand outstanding scientists, so that the next generation will develop a love of science, a pursuit for innovation, a respect for knowledge and a dedication to science from an early age.

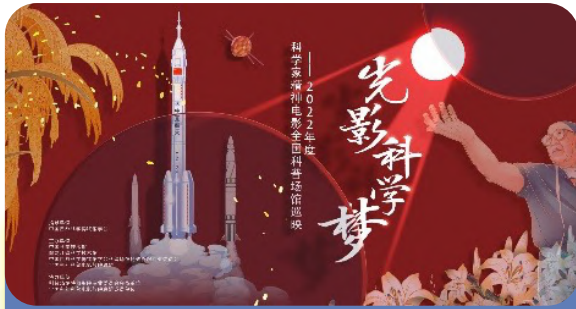
In 2022, MSC introduced the touching deeds and outstanding achievements of Chinese scientists with the theme of Chinese scientist spirit on the online program, podcast series and electronic publication *S-TEAM* Issue, and the exhibition area and educational activities were also launched in the 15th exhibition area.

### · **"Science Dreams in Light and Shadow" – 2022 national tour of scientist spirit films in national science popularization venues – Macao Station**

This year, the Professional Committee for Science Popularization Venues and Special-Effect Theaters of Chinese Association of Natural Science Museums, together with national science popularization venues, jointly held the 2022 national tour of scientist spirit films in national science popularization venues of the "Science Dreams in Light and Shadow", and specially carried out the "Macao Station" tour, which was held at MSC. MSC collected six high-quality films on scientist spirit: "*Madam Ye*", "*Poetry and Truth*", "*The Soul of Hybrid Millet*", "*Qian Xuesen*", "*Yuan Longping*" and "*I Am A Doctor*", and seven animated microfilms in the series "*Science Idols*" produced by the China Science and Technology Museum. The public welfare exhibition period began in October, and by December, there had been 19 public performances, with 433 audience. In addition



to the public sessions, MSC also invited members of local associations and institutions of higher learning and student groups to watch the films. From October to December, there were 22 group appointments and 1,127 people made appointments to watch the films. Many participants thought that the event was quite educational; in addition, the microfilms on scientist spirit were shown 424 times, with a total of 11,730 people watching.



Themed picture of "Science Dreams in Light and Shadow"



Posters of scientist spirit films of "Science Dreams in Light and Shadow"



The Macao Youth Federation organized more than 60 young people from all walks of life to enjoy the scientist spirit film of "Science Dreams in Light and Shadow", "Qian Xuesen"



The Macao Youth Federation organized more than 60 young people from all walks of life to enjoy the scientist spirit film of "Science Dreams in Light and Shadow", "Qian Xuesen"



The Liaison Department and Recreation Department of the Macao Chamber of Commerce organized 30 directors and members as well as 30 students from Qingzhou Primary School to watch the scientist spirit film, "Yuan Longping", at MSC



The Macao Federation of Trade Unions organized 100 members to watch the "Science Dreams in Light and Shadow" in 2022 Scientist Spirit Film

### · Planning a long-term gallery on scientist spirit

In 2022, MSC displayed the Chinese Scientist Spirit Education Zone and set up a long-term gallery on the theme of Chinese scientist spirit to continuously and actively promote Chinese scientist spirit to young people and the public. MSC incorporated the scientist spirit into its science popularization activities, SMC-school collaboration and thematic exhibitions, allowing young people to acquire scientific knowledge and practical skills, while developing a love of science, a pursuit for innovation, a respect for knowledge and a dedication to science.

The long-term gallery of "Chinese scientist spirit" will be divided into three areas: The exhibition area of Chinese scientist spirit in the new era, the multimedia interactive exhibition area, and the Macao scientist team exhibition area. It is planned to open to the public in the middle of 2023.

## 2.5 Brand building activities

### · Starry Night Activities for Astronomical Popularization

Starry Night refers to a series of activities for astronomical popularization held by the Planetarium of MSC. The series has been held for years and found favor in the eyes of citizens. It was designed to popularize astronomy and raise people's awareness and interest in astronomy in such forms as dome lectures and outdoor observation. In 2022, a total of 20 Starry Night Activities for Astronomical Popularization were held, attracting 2,870 participants.



Starry Night: Wonder of the Sky



Starry Night: Mid-Autumn Moon Viewing

· **Astronomical activities: Planetarium Plan**

The "Planetarium Plan" is a branding initiative of the Planetarium of MSC to share quality and professional resources and integrate public experience, art performance and dome space, which is designed to meet the specific needs of students and professional groups of different ages in Macao for dome vision and knowledge transformation. In 2022, the Planetarium held a total of 29 Planetarium plans customized for organizations, with a total of 1,747 participants.



天文專題計劃：“星空下的樂章”音樂會



天文專題計劃：澳門樂團音樂會  
“科學音樂搞搞震—音樂·宇宙中的萬花筒”

· **Dome shows of the Planetarium**

The Planetarium of MSC was awarded the highest resolution 3D planetarium in the world by the Guinness World Records and its 8K3D dome system attracts citizens and tourists as a special carrier. In 2022, the Planetarium continued to insist on the business philosophy of "Dome Show + Multi-media Matrix" and "Dome Show + Audience Segmentation". The new dome shows *Super Salvador*, *The Great Undersea Adventure of Barney and Beenie* and *Grandpa & Zoe – Mission: Light 3D* were released in May, August and December, respectively. These films ensured that the basic visual needs of science popularization were consistently conveyed in the Planetarium's dome space, so as to meet the aspirations and expectations of the public for natural science knowledge.

In 2022, there were 1,194 public shows, 143 reception groups and 6,495 group services; in particular, there were 53 social welfare groups, 77 non-tertiary education institutions and 13 tertiary education institutions.



# 03

Expanding important out-of-school classrooms for science popularization and education, and connecting basic education at multiple levels

### 3. Expanding important out-of-school classrooms for science popularization and education, and connecting basic education at multiple levels

MSC has been actively interacting with local schools for a long time, launching customized curriculum projects. In connection with basic education, MSC provides science popularization and education resources for schools in Macao and becomes an important out-of-school classroom for science popularization and education. In 2022, MSC received 45,195 students, an increase of 75% over the previous year, including:

- Cooperating with the Education and Youth Development Bureau (DSEDJ) to launch Science Popularization and Education Program for Students
- Providing customized MSC-school collaboration activities in deep combination with school science and technology courses;
- Cooperating with the University of Macau to jointly organize educational activities with developing students' scientific exploring thinking as the core.

#### 3.1 Deepening MSC-school collaboration

##### · Science Popularization and Education Program for Students

In order to develop the ability of primary and secondary school students to explore and solve problems with science, enhance their scientific literacy and interest, and promote schools to make full use of resources such as the venues and facilities of MSC to support science and technology lessons, from the 2022/2023 academic year, DSEDJ and MSC carried out the "Science Popularization and Education Program for Students" in an orderly manner. The first phase of the program was targeted at P1 and S1 students in the 2022/2023 academic year. The Program supported schools to take their students to conduct science exploration activities in diversified forms at MSC in the form of a science day. The themes and contents of the Program were designed based on the curriculum guidelines of science and technology for primary and secondary schools in Macao. The four main activity themes for P3 students included optics, heat and cold, plants, astronomy and aerospace. The activities for P1 students covered astronomy, aerospace and earth science. In the first half of the 2022/2023 academic year, there were 29 schools and departments in total, with 2,585 students enrolled.



互動數據及圖表



P3 students participated in the Science Popularization and Education Program for Students

Participating schools	29
Participating classes	79
Participating students	2,585

### · MSC–school collaboration

Through cooperation with primary and secondary schools across Macao, MSC has carried out a variety of science popularization activities to improve the level of science popularization and education for the adolescents in Macao. In 2022, MSC continues to build a multi-level education program linked to basic education, making it an important out-of-school classroom for science popularization and education. Since the beginning of the new school year, MSC has further deepened the mode and connotation of "MSC–school collaboration". To meet the needs of different schools, MSC has "tailored" activity plans for students and provided different types of out-of-school science programs to schools in a customized mode, so as to develop students' interest and thinking in science. MSC has continuously developed the MSC–school collaboration plan. In 2022, the total number of students participating in the plan was 42,610, and there were 96 participating schools; the number of participants in the course at MSC was 35,886, and that outside MSC was 6,724.

	2021	2022	Year-on-Year Growth
Participating students	25,821	42,610	65.0%
Number of activities	669	1,210	80.9%
Participating schools	82	96	17.1%



## 3.2 Supporting teachers' professional development

MSC actively cooperates with DSEDJ to carry out various types of teacher training. In 2022, more than 2,610 teachers were trained, an increase of nearly 50% compared with last year. It is expected that MSC will become a teaching and research base for teachers in the field of science and technology.

## · Teacher training

With the purpose of promoting science popularization and education for adolescents, in addition to direct contact with young people, MSC also regularly provides in-service teachers with different types of training courses to assist teachers in applying what they have learned to daily teaching, so as to achieve the goal of promoting science popularization and education for young people. There are two types of teacher training. The first is to carry out professional development training courses for teaching staff through cooperation with DSEDJ, including the addition of multimedia production, programming and other courses in accordance with the basic academic requirements formulated by DSEDJ. The second type is relative flexible, including the MSC-school training matching the MSC-school collaboration, the targeted training on teaching facilities and tools, or the courses offered by MSC according to its own needs.

The first type of teacher training courses was conducted 82 times throughout the year, with 1,662 teachers participating.

The second type of teacher training courses were held 30 times in the whole year, with 602 teachers participating.



School-based training courses – science popularization film production (Jianying)

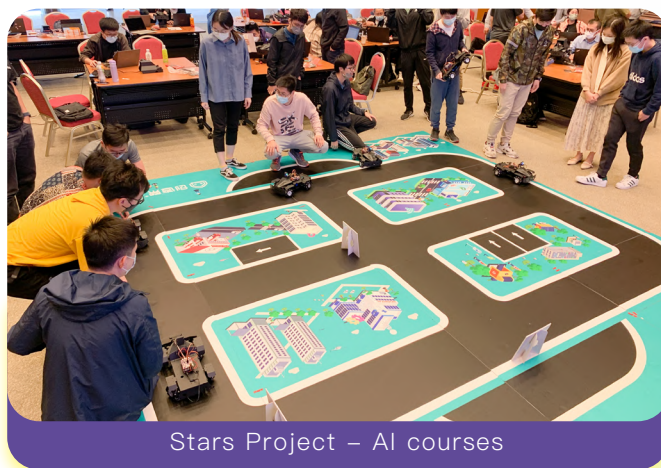


Teacher training courses – LEGO® Education Simple Machine

## · Stars Project

MSC has launched the "Campus STEM Stars Project" since 2020, which aims to provide various science education resources and teacher training for primary and secondary schools in Macao, so as to assist teachers to prepare sufficient resources and teaching content, such as hardware and editing software for filming science videos, LEGO® educational kits, micro:bit kits, and DJI RoboMaster TT drone kit. In 2022, MSC launched brand-new serial courses on AI of "Stars Project", including unmanned driving, image recognition and voice recognition.

	2021	2022	Year-on-Year Growth
Participating teachers	1,776	2,614	47.2%
Number of training projects	120	123	2.5%
Participating schools	89	100	12.3%



Stars Project – AI courses

### 3.3 Supporting schools to carry out science popularization

MSC continued to make good use of its space, improve laboratory equipment, increase classroom education space in response to the needs of science popularization and education, and continued to develop online resources to support teachers and schools to carry out science popularization and education.

#### · Special galleries and gallery update

In terms of exhibits, MSC prioritized interactive exhibits that are knowledgeable, scientific and fun, and showcased new developments and achievements in innovation and technology in Macao through different exhibition themes. The updated exhibition items in the exhibition hall corresponded to the topic of the textbook, *The Requirements of Basic Academic Attainments*, so as to implement the exhibits as the teaching materials for specific grades in the out-of-school classrooms, and also facilitate the promotion and publicity to the public and parents. In 2022, MSC held the following special exhibitions on different topics:



Special Galleries of MSC	Other Exhibitions
Special Exhibition: Data Science – Internet of Things Duration: October 2021 – May 2022	Mak Mak Macao Coloring Journey Duration: April 2022 – October 2022
Sanrio Characters Green Technology Carnival Duration: December 2021 – February 2022	Award Ceremony and Work Display of Creative 3D Models Design Competition 2022 Duration: November 18 – December 6, 2022
	Annual Western Calligraphy Exhibition – Techniques in the Age of Science and Technology Duration: December 10, 2022 – January 9, 2023
MACAO VAST -- Visual Experience Hall Duration: August 2022 – February 2023	The Exhibition of 'Cubes' Duration: December 2, 2022 – December 16, 2022
	Children's Painting Competition Exhibition on "Together for a Shared Future" Duration: December 10, 2022 – January 10, 2023

**Gallery update:** The data science hall was opened in December 2022, in which a smart space area was set up in the Gallery to display Macao's most advanced smart classrooms, demonstrate how intelligent identification and big data analysis can help teachers and students solve learning problems, and provide A.I. teaching content and virtual experiences. There were also various interactive experiences that simulated data computation, conversion, transmission, encryption and decryption through games.

### · Mechanical Workshop

In addition to designing and making exhibits and teaching aids, the Mechanical Workshop is also used to provide assistance to different schools in robot production and competition. At present, the Mechanical Workshop has gradually become a comprehensive classroom for STEM education, and supports schools in training and preparation for robotics competitions. Besides, through the MSC-school collaboration plan, local schools can use the workshop equipment of MSC to assist teaching. In 2022, the total number of the Mechanical Workshop borrowed was 341, and the total number of people served was 6,813.



Students competing in the Mechanical Workshop

### · Online educational resources and podcast platform

The "online education resource platform" provides education resources for teachers and students, and supports schools to carry out science popularization and education. Self-made science popularization and education films are also one of the characteristics of MSC. As at December 31, 516 science popularization and education films had been produced, an increase of nearly 1.6 times with the same period last year.



澳門科學館  
線上教育資源平台

In 2022, MSC cooperated with several institutions to shoot and promoted science popularization films to a wider social group. The MSC's official channel on YouTube reached and was viewed by 695,118 viewers throughout the year. Due to the popularity of the podcast platform among young people, MSC also added a new podcast platform to produce various programs with sound as a medium to convey scientific information to young people. Up to now, the podcast platform has had 68 episodes with 1,581 downloads.

During the June 18th COVID-19 Outbreak in 2022, in order to enable students to continue to learn science popularization knowledge through online platform at home, MSC launched a new science popularization class on the YouTube channel of the MSC Online Educational Resource Platform and the MSC WeChat subscription, and launched short films of science popularization and education regularly every day. The short films and podcast episodes featured a wide range of topics and kept pace with the times, so they were suitable for primary and secondary school students or the public interested in scientific application knowledge to watch and listen.

	2021	2022	Year-on-Year Growth
Number of science popularization films	200	516	158%
Number of podcast episodes	–	68	–
Participating schools	89	100	12.3%

### 3.4 Promoting STEAM scientific exploration and education activities

Comprehensive education is a cross-field and subject-based integrated teaching method, focusing on the education of science (S), technology (T), engineering (E) and mathematics (M), and also art (A) later, which is called STEM education or STEAM education. Different from the traditional cramming teaching, comprehensive education is used to guide students to think, and cultivate active learning in combination with comprehensive knowledge and skills, so as to solve problems encountered in the real world. As a base of science popularization and education, MSC is closely connected with primary and secondary schools in Macao through different types of science popularization activities, and becomes an important out-of-school classroom for students to "learn by playing, learn by doing", and find answers to questions through exploration.

#### · Training and workshop

MSC has launched a number of STEAM activities in recent years, including IoT x Scratch Weather Report, LEGO Freeze Frame Animation Workshop, STEAM Easter Egg Challenge, Friday Picture Book Amusement Park for Science Popularization, Special Activities on Space Day of China 2022 Space Community Promotion Activity, Night Tour at MSC, and various types of science popularization lectures and other activities. Besides, MSC has cooperated with many institutions, such as DSEDJ, Macao Public Library and Cultural Affairs Bureau, to cultivate the ability of participants to solve problems through hands-on operation. In 2022, 324 STEAM-related theme activities were launched, with a total of 7,872 participants. In order to make activities more acceptable, the instructors of MSC continuously improved their teaching ability, participated in a number of trainings, such as the DJI Referee Certification Course, and STEM.org Certification, and widely absorbed knowledge, so as to improve their teaching ability.



Parents and children in the Parent-Child Workshop of "STEAM Easter Egg Challenge" Children in the "Science Magic" Course



Parents and children in the Parent-Child Workshop of "STEAM Easter Egg Challenge" Children in the "Science Magic" Course



Instructors of MSC continued to participate in training to improve their teaching ability.

#### · Various science popularization activities

MSC prepared various science popularization activities for visitors of different ages, including science popularization dramas, workshops, science popularization demonstrations, VR multimedia interactive exhibits experience, and expert lectures.

#### Science popularization dramas and drama tour guide

Science popularization theater put an emphasis on the combination of scientific knowledge, scientific ethics and scientific history, especially the relationship between science and technology and the environment, stimulating the curiosity and interest of the audience in science, and improving the interaction between the audience and exhibits. Dramas launched in 2022: *Fighting Sugar Bugs*, *Pippi's Dream of Mars*, *The World of 0 and 1*, and *Meteorological Science Popularization Theater Tour – Tri-color Rain*. In 2022, the total number of participants reached 9,718, and the number of people who participated in drama tour guide and science popularization dramas amounted to 2,207 and 7,511, respectively.

#### Parent-child workshops

In order to strengthen parent-child communication, increase children's interest in science and stimulate their imagination through activities, MSC held various types of parent-child activities, including IoT x Scratch Weather Report, LEGO Freeze Animation Workshop, Sundial and Gnomon Workshop, Chronometer Workshop, DNA workshop, Electromagnetism Workshop, Martelberg Hemisphere Workshop, STEAM Easter Egg Challenge, Special Activities on Space Day of China 2022 Space Community Promotion Activity, and Workshop of the International Children's Day series. In 2022, there were 229 sessions with 3,181 participants.

### Science popularization demonstration at MSC

In order to enable visitors to learn the principles and knowledge of various sciences in a lively way in the interaction, MSC conducted a science popularization demonstration in the gallery, including robot dance, Rubik's Cube robot, SOS, Dome, Newton's three laws, the awakening of the science force, soaring, optics, bubbles, liquid nitrogen, acoustics, and static electricity. In 2022, there were 2,420 sessions with 24,864 participants.

### Interactive experience

Immersive experience can improve the interaction effects of participants. MSC had a number of VR multimedia interactive exhibits related to science, which can enhance the public's awareness of the theme through "personal" experience, such as experiencing the world of the Internet of Things in "virtual shopping", and learning how to respond to disasters in "VR experience of disaster prevention and mitigation". The experience devices included the VR experience in the Atrium, the VR forklift and VR gondola in Gallery 4, and the VR interactive experience, the VR experience of disaster prevention and mitigation and the treadmill, the Maker network route, the virtual shopping mall, and the smart car in Gallery 6. In 2022, there were 1,810 sessions with 19,425 participants.

### "All About Science" Expert Lectures

In order to fulfill the mission of facilitating the spread of novel technologies and science communication, the "All About Science" Expert Lectures were launched by inviting renowned experts in science and technology to deliver science popularization lectures inside the dome, disseminating the achievements of today's scientific research and cutting-edge scientific and technological thinking to the public and visitors, and established a brand of science lecture, "All About Science".



Mr. Ai Siyuan, one of the pioneer VR enthusiasts, gave an expert lecture on "The Coming of the Metauniverse?" at the Planetarium in April



Students formed teams and completed various science challenges in the Gallery Center



Science Drama: Pippi's Dream of Mars



Acoustic Science Popularization Demonstration

### · Science Exploration Adventure Camp

澳MSC and the University of Macau jointly organized the "Science Exploration Adventure Camp for Primary and Secondary Schools" to provide educational science experiences, enhance students' exploration skills and demonstrate the role of MSC as a science popularization and education base. The activity was targeted at P4–P6 and S1–S3 students. Students formed teams and completed various science challenges in the Gallery Center. In 2022, there were 2 sessions with 101 teachers and students from 8 schools participating.

### · SKY KIDS

SKY KIDS is a unique brand of parent–child astronomical activities for children aged 6 to 12 at the Planetarium of MSC. Each activity consists of an interactive dome drama and a workshop. Through the immersive dome experience, lighting and atmosphere system and the staging of the dome space, actors interacted with parents and children to make learning fun, and to convey scientific knowledge and popularize basic science to children. The workshop is designed to help children experience the process of scientific experimentation and exploration in the process of handicraft, and stimulate their interest in science while finishing their works. A total of 4 sessions and 8 groups of SKY KIDS activities were held in 2022, with 360 participants.



SKY KIDS activity theme: "Hello Mars!" let children explore the mysteries of Mars and experience the course and achievements of China's Mars exploration mission.

## 3.5 Becoming a "place of heroes" in the science popularization competitions

MSC has been committed to encouraging participants to explore interesting scientific knowledge during competitions. In 2022, there were 9 competitions held at MSC, involving 4,241 students and 48 schools.

### Campus Weather Monitoring Competition in 2021–2022

Duration: September 8, 2021 – April 26, 2022

Date of award ceremony: April 26, 2022

No. of groups: 2 (from lower and upper secondary school groups)



Photo of the award ceremony

### 2022 Youth Science Video Contest

Duration: February 18, 2022 – November 30, 2022

Date of award ceremony: December 17, 2022

No. of groups: 3 (from primary, and lower and upper secondary school groups)



Pooi To Middle School won the first prize of the upper secondary school group for "About AI"

### One Museum, One Story: Expressing the Power of Museums through Sound

Duration: February 23, 2022 – April 18, 2022

Date of award ceremony: May 29, 2022

No. of groups: 3 (from primary, and lower and upper secondary school groups)



Photo of the award ceremony

### RoboMaster 2022 Macao Youth Robotics Competition

Duration: February 23, 2022 – April 18, 2022

Date of award ceremony: June 5, 2022

No. of groups: 3 (from primary, and lower and upper secondary school groups)



Photo of the award ceremony

### CEM Clean Energy City Challenge

Duration: January 16, 2022 – October 10, 2022

Date of award ceremony: October 30, 2022

No. of groups: 2 (from lower and upper secondary school groups)



Photo of contestants with their works exhibited at MSC

### The 3rd Macao Joint School Science Exhibition in 2022

Duration: April 1, 2022 – October 23, 2022

Date of award ceremony: October 23, 2022

No. of groups: 2 (from lower and upper secondary school groups)



Photo of the award ceremony

### The 10th Macao International Innovation and Invention Expo in 2022

Duration: July 29, 2022 – October 15, 2022

Date of award ceremony: October 15, 2022

No. of groups: 2 (from lower and upper secondary school groups)



Photo of student winners

### 2022 Guangzhou–Hong Kong–Macao Youth Science and Technology Exchange Activity (Sky Soccer)

Duration: December 17 – December 18, 2022

No. of groups: 46

Date of award ceremony: December 18, 2022

No. of groups: 1 (from primary school group)



During the activity



## Stars Project – Low-carbon City Programming Machinery Challenge

Date: December 11, 2022

No. of groups: 46

No. of groups: 2 (from primary and lower secondary school groups)



Students racing against competition time

	2021	2022	Year-on-Year Growth
Number of competitions	6	9	50%
Participating students	1,346	4,240	215%
Participating schools	40	62	55%

### · Building a national science popularization competition platform

MSC has been committed to deepening the work of science popularization and education base. For example, it has built a platform for young people in Macao to participate in the national science popularization competitions. In 2022, adolescents from Macao achieved good results in a number of national competitions. From March to June 2022, MSC organized the 2022 Youth Science Video Contest and selected 20 entries from local students and one film produced by the Education Department of MSC to participate in the Second International Contest on Popular Science Video Creation for the Promotion of Public Scientific Literacy. Finally, nine films won the prize. More than 10,000 entries from 19 countries and regions around the world participated in this international competition. The organizing committee of the competition invited experts from different places to conduct several rounds of review on the content, scientificity, production level and communication of the entries, and finally selected five first prizes, 10 second prizes and 35 third prizes after a fierce competition. Films from Macao accounted for 20% of the first and second prizes, and 17% of the third prizes, making Macao one of the most awarded regions in the competition.

The "RoboMaster 2022 Macao Youth Robotics Competition", co-organized by MSC and the RoboMaster Macao (International) Association in the first half of 2022, attracted more than 20 secondary schools and more than 700 students. A total of 22 teams were recommended for promotion to the national competition, and achieved excellent results with the efforts of all people. In the "2022 the 5th National Youth AI Innovation Challenge – Special Competition and National Challenge on Creative Smart Manufacturing of Open-source Hardware", the lower secondary school group won one silver medal and four bronze medals; the upper secondary school group won two gold medals, one silver medal and one bronze medal. In the "2022 the 6th National Youth Drone Competition – Robot Master Obstacle-crossing in Maze of Rotorcraft Competition", three contestants from the secondary school group won the second prize, the third prize and the excellent prize, respectively; in the upper secondary school group, there were two winners of the first prize and one winner of the excellent prize, and these winners were also awarded with the runner-up and fifth place of the national championship.

# 04

Building a tourism card of landmark buildings in Macao and carrying out multi-brand activities

## 4. Building a tourism card of landmark buildings in Macao and carrying out multi-brand activities

In 2022, Macao's tourism industry was still affected by the COVID-19 pandemic, leading to the number of visitors to MSC not reaching the expected target. Nevertheless, MSC continued to maintain close cooperation with the Macao Government Tourist Office (DST) and tourism industry partners to launch science popularization and education activities when the pandemic was less serious, and hold activities on festival days to attract the public. MSC strove to increase the flow of visitors to develop local tourism industry.

### 4.1 Tourism Cooperation Program

As a tourism card of landmark buildings in Macao, MSC is not only a must-visit place for tourists in their travel to Macao, but also a good place for local residents to visit during the holiday.

MSC has developed a cooperation program with the tourism industry. As at December 31, there had been 17 travel agencies, hotels and airlines participating in the cooperation program. In 2022, a total of 9,336 travelers visited through this program, with a year-on-year decrease of nearly 31%.

The "Light up Macao 2022" activity sponsored by DST was held from December 9, 2022 to January 8, 2023. The light and shadow installations at MSC included: A light carving performance (Frozen Bloom), a lighting installation (World of Quantum), an interactive game (Harp in the Moonlight) and snowflake lamps. These tourism activities added luster to the small city and left unforgettable memories to tourists and residents.

### 4.2 Various and wonderful festival activities

In order to celebrate each festival with the public, MSC regularly organizes online and offline activities to add festival atmosphere to visitors, so as to attract the public to visit and pay attention to the social media of MSC. In 2022, more than 6,900 people participated in the festival activities.



Online and Offline Activities Held During Festivals		Number of Participants (Approximately)
1.	Easter Painting Workshop	400
2.	Easter Coloring Activity	1,200
3.	WeChat activity on "Rolling Easter Egg Competition"	900
4.	Zongzi Treasure Hunt in Summer & WeChat activity on "Where can Zongzi run?"	1,700
5.	Handicraft activities at the Mid-Autumn Festival	200
6.	WeChat activity on "Mooncake Puzzles"	530
7.	"Gifts for Following"	850
8.	Halloween Costume Party	300
9.	WeChat mini game on "Happy Halloween Party"	630
10.	WeChat mini game "The Treasure Hunt of Santa Claus"	220

### 4.3 Science popularization and research with learning and interest

MSC has become a destination of "Stay, Dine and See Macao" program and "Educational Student Tours – Macao Science Tour" held by DST, providing diversified science popularization and education activities for primary and secondary students. In collaboration with the General Association of Chinese Students in Macao, MSC recruited a number of local tertiary students and trained them as science commentators to lead science tours for teachers and students and provide guided tours of the exhibition. The "Stay, Dine and See Macao" program was held in April, May, June, August, October, November and December, attracting 810 visitors and 27 tourist groups to MSC; the activity of "Educational Student Tours – Macao Science Tour" held in June and December attracted 4,261 visitors and 131 tourist groups to visit MSC.

*(Affected by the June 18th COVID-19 Outbreak, DST suspended all local tourism activities of "Stay, Dine and See Macao" program and "Educational Student Tours – Macao Science Tour".)*



# 05

Building a regional science popularization, education and exhibition platform, and actively holding various exhibition activities

## 5. Building a regional science popularization, education and exhibition platform, and actively holding various exhibition activities

As a platform for regional science popularization, education and exhibition, MSC has made every effort to provide and continuously improve the software and hardware support over the years to better support science promotion and youth education activities, and actively held more regional and representative scientific seminars and exhibitions. In recent years, in response to the impact of the pandemic, the mode of exhibition activities has changed. Virtual and physical meetings have gradually integrated, and online and offline simultaneous activities has increased. In the future, MSC will also increase its efforts to develop online functions and try to do a good job in the exhibition platform.

### 5.1 Convention Center highlights

#### "Macao Youth Innovation Challenge" for 2021/2022 Academic Year

The "Macao Youth Innovation Challenge for the 2021/2022 Academic Year", sponsored by DSEDJ, hosted by the Macau Institution of Engineers, co-organized by the University of Macau and supported by MSC, was successfully held from April 2 to 3. The challenge had a positive role in promoting science popularization and education, cultivating teenagers' scientific and technological innovation spirit and practical ability, jointly promoting the development of science popularization and education in Macao, and continuously improving the overall scientific literacy of teenagers.



#### Press Conference on "Macao One Account" 2.0

In response to the need of the society for convenient electronic services, the SAR Government continued to optimize the mobile application and web version of the "Macao One Account", and held the Press Conference on "Macao One Account" 2.0 on April 11 at MSC, officially launching the fully upgraded Version 2.0. With "user-oriented, optimized experience, and convenient service" as the core, "Macao One Account" 2.0 brought new experience to the public with a restructured system and clear layout. MSC showed the operation of the "Macao One Account" 2.0 system on site in an on-line form.



### Special Event on 2022 Space Day of China

The event, sponsored by DSEDJ, hosted by the Association for Promotion of Science and Technology of Macau, and supported by MSC and supported by MSC and Chinese Society of Astronautics was successfully held on April in the Convention Center. There were various aerospace science popularization activities on that day, including expert lectures, planetarium films, aerospace science popularization drama "Pippi's Dream of Mars", aerospace picture books, parent-child workshops of building block assembly and model competitions. Nearly 130 students attended the event, and about 6,000 students from 25 schools watched the live streaming and recorded streaming.



### RoboMaster 2022 Macao Youth Robotics Competition

The competition was held in the Convention Center from May to June, hosted by the RoboMaster Macau (International) Association, co-organized by MSC and the Smart City Alliance Association of Macau, and hosted by WellWin Technology Limited. The event was composed of seven different theme events, including robot contests, various applications of drones, and SCM maker programming. The competition attracted 13 schools, 20 teams and more than 100 students.





## Commemorating the 103rd Anniversary of the May 4th Movement Launch Ceremony/Online Seminar on the Spirit of the May 4th Movement

The event was co-hosted by DSEDJ and the Youth Commission Preparatory Office in memory of the "May 4th" Youth Day, and supported by MSC, attracting 600 on-site and online participants. Loving the motherland and loving Macao is a core value of the whole community. Macao youth have always had a strong sense of national identity and national pride. Youth plays an extremely important role in promoting social development.



## Youth From All Walks of Life in Macao Symposium on "Studying and Implementing President Xi Jinping's Important Speech"

The Macao Youth Federation and the General Association of Chinese Students in Macao held a Symposium on "Studying and Implementing President Xi Jinping's Important Speech" at the Convention Hall of MSC on May 11, to thoroughly study and implement the spirit of President Xi Jinping's important speech at the Celebration of the "100th Anniversary of the Founding of the Communist Youth League of China".



### Children's Play Fair for International Children's Day

In order to celebrate the International Children's Day on June 1, a number of government departments, public institutions and civil society organizations jointly organized a series of activities with the theme of participation rights stipulated in the United Nations Convention on the Rights of the Child, so as to arouse social attention to the rights and well-being of children, and at the same time let the public feel the festival atmosphere and celebrate the Children's Day.



### "Knowing Drugs" Community Education Exhibition

In order to improve the public's understanding of the scourge of drugs, related penalties and drug treatment services, and arouse people's attention to the problem of drug abuse and emotional behavior of teenagers, the "Knowing Drugs" Community Education Exhibition, sponsored by the Sin Meng Charity Association and sponsored by the Macao Foundation, was started at the Lobby Exhibition Gallery of MSC on June 18.



## 2022 Macao Radio Direction Finding Competition

The "2022 Macao Radio Direction Finding Competition" sponsored by the Macao Chuangxin Technology Council was held in the Meeting Room of MSC on September 16. The organizer hoped to promote the development of science popularization activities in Macao, improve students' scientific and technological knowledge, and enable students to adapt to scientific and technological life and pay more attention to physical exercise through the competition. In the future, this beneficial competition will be promoted.



## 2022 International Day of Sign Languages and International Week for the Deaf

The Macao Deaf Association held a community promotion activity on September 18 at the Heart-shaped Tree Square of MSC, which was sponsored by the Social Welfare Bureau (IAS) and borrowed from MSC. The activity started with the sign language song and the sign language theater for the deaf. There were also booth interactive games and sign language workshops.



### Science in the Future – Lecture on National Science and Technology Development and Achievements

To support National Science Day, MSC launched a series of diversified "Science for the Future" activities in September, including a lecture on "Science for the Future – National Science and Technology Development and Achievements" at the Convention Hall on National Science Day. Prof. Kam-Weng Tam and Prof. Pui-In Mak of the University of Macau and Mr. Lao Kun Wa of Pui Ching Middle School shared the development of STEM education and the cultivation of talent in chip design in Macao, as well as the latest technological development of China respectively, so as to support teachers to understand the national situation and boost education on the achievements of China's technological development.



### 2022 Public Lectures on Outstanding Contemporary Chinese Scientists

The China Association for Science and Technology and the Association for Promotion of Science and Technology of Macau held the "2022 Public Lectures on Outstanding Contemporary Chinese Scientists" at MSC on September 21. Liu Jiaqi, academican of the Chinese Academy of Sciences, researcher of the Institute of Geology and Geophysics of the Chinese Academy of Sciences, and Chen Kefu, academican of the Chinese Academy of Engineering and the famous expert in pulp and paper engineering, were specially invited to give a keynote speech at the invitation to share the latest scientific and technological development information and trends with the public. The lectures encouraged young people to learn about science and technology and master scientific mindset and spirit.



## Discussing the Macao SAR's Contribution to the "30 • 60 Dual-Carbon Target" in the National 14th Five-Year plan for the "Recalibration" Road

The event was sponsored by the Macao Institution of Electrical and Mechanical Engineers at MSC online and offline on September 30. Many scholars from the mainland, Hong Kong and Macao were invited to deliver lectures and share experiences, attracting nearly 300 representatives of the entertainment and gaming industry and engineering industry professionals from Macao to participate in the event, with an expectation of absorbing the experience of Guangdong, Hong Kong and Macao, gathering the wisdom of all sectors of society in the professional field and making contribution to Macao's dual carbon road with a broader vision and more professional opinions through the seminar.



## Award Ceremony of "Award Scheme on Instructional Design for the 2020/2021 Academic Year" and Launching Ceremony of "Award Scheme on Instructional Design for the 2021/2022 Academic Year"

In order to encourage non-tertiary education institutions and teaching staff to explore innovative teaching models, promote their academic research and optimize teaching methods, DSEDJ held an event in the Convention Hall on October 25, and continued to implement the "Award Scheme on Instructional Design", keep close to the development of world education, and optimize its content, so as to meet the needs of Macao, and provide a platform for teaching staff to exchange, observe each other, learn and share experience, and help Macao establish a high-quality teaching staff team.



## 2022 "Painting China Together" Jiangsu-Macao Youth Painting Work Tour

The 2022 "Painting China Together" Jiangsu-Macao Youth Painting Work Tour, sponsored by the Jiangsu Provincial Internet Information Office, the Publicity Department of the Liaison Office of the Central People's Government in the Macao SAR, and the Xinhua News Media Group, was started at the Lobby Exhibition Gallery of MSC on November 15. This collection of painting works set off a creative upsurge in both Jiangsu and Macao. The organizer received more than 10,000 works from teenagers. After three rounds of selection, 150 excellent works were finally shortlisted. The 2022 "Painting China Together" Jiangsu-Macao Youth Painting Work Tour received positive responses and contributions from young people in both regions, showing the spirit of young people in both regions who love the motherland and strive to make progress.



## 2021 Key R&D Project Launch Ceremony and Introduction of Key Projects Under Research

The Science and Technology Development Fund (FDCT) held an event in the Convention Hall of MSC on November 18. The content of the report included the introduction of the contents of six newly funded key R&D projects and the phased progress of three key R&D projects under research. The focus of newly funded projects was put on the ability to transform scientific research achievements, especially the ability to introduce powerful enterprises to cooperate in research and development, promote the maturity of projects, and provide favorable transformation conditions for promoting the development of Macao's science and technology industry.



## Closing Ceremony of Youth Exchange Program between China and Portuguese-speaking Countries and Award Ceremony of Short Video Competition

The closing ceremony of the first "Youth Exchange Program between China and Portuguese-speaking Countries", jointly launched by the Office of the Commissioner of the Ministry of Foreign Affairs of the People's Republic of China in the Macao Special Administrative Region and the Macao SAR Government, and the award ceremony of the short video competition were held at MSC on November 28. On that day, the awards of short video competition on "My Story about Macao – Chinese and Portuguese Youth Talk" were also presented. A total of 33 teams participated in the competition, and the contestants from the University of Macau and the Macao University of Science and Technology won the championship.



## 2021/2022 Diploma Program Graduation Performance of CPTTM Fashion Design & Manufacture

The "2021/2022 Diploma Program Graduation Performance of CPTTM Fashion Design & Manufacture", hosted by the Macao Productivity and Technology Transfer Center, was successfully held in the Convention Hall of the Macao Science Centre Convention Center on November 23. Outstanding students were invited by the Centre to join the work of simulation business platform, namely, the "CPTTM Fashion Incubation Program (MaConsef)", so as to strengthen their understanding of the practical process of fashion design from concept to manufacture, and bring help to their career.



## 5.2 Activity data

In 2022, the Convention Center continued to offer teacher training and share science popularization resources to develop comprehensive applied skills education in schools across Macao through science popularization activities, competition activities and brand courses with different themes, expert lectures suitable for teenagers, and activities to improve parent-child science popularization experience. In terms of venue support, MSC were more proactive in cooperating with educational institutions to cultivate scientific talents and make MSC a representative base of science popularization and education for young people.

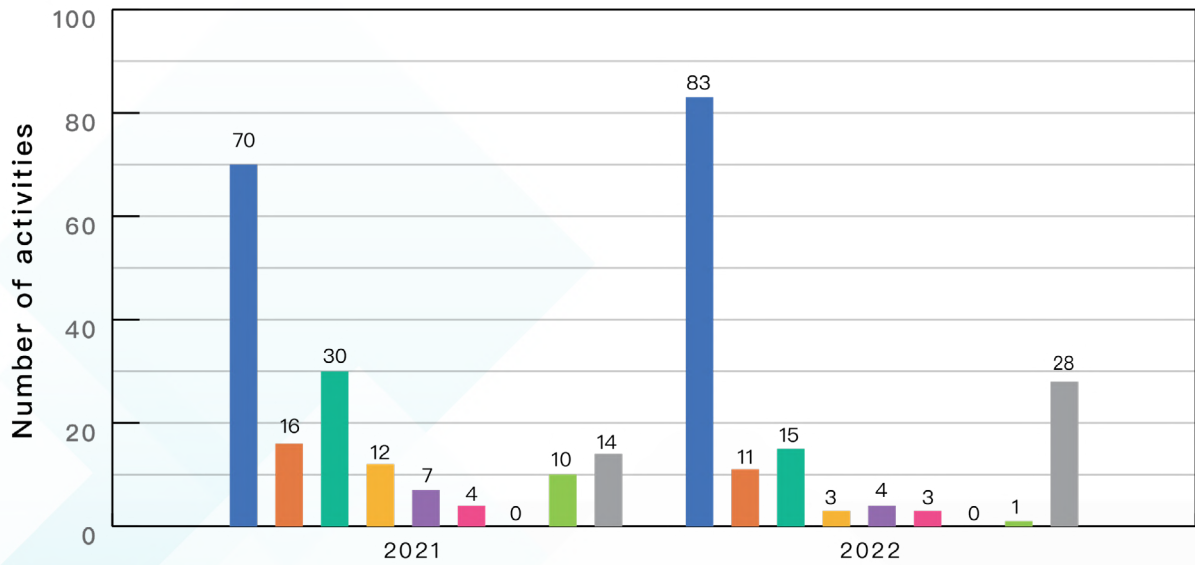
In 2022, the comprehensive utilization rate of conference and exhibition venues increased by 25.5%; the Heart-shaped Tree Square on the seawall was popular among all walks of life as a must-visit site. Its utilization rate recorded a significant increase of 60.8% in 2022; the rental of meeting rooms increased by 46.5% year on year.

In 2022, MSC held 148 meetings and exhibitions, and 70 activities were canceled due to the pandemic. The number of on-site participants was 47,235, that of online participants was 28,813, and the total number of participants was 76,048. To its credit, the number of activities attended by young people accounts for 45% of the total, with an annual increase of about 24.5%, indicating that young people were much more enthusiastic in participating in science popularization activities.

According to statistics, in 2022, the "education and training" activities were the most, with an annual increase of about 19%. Combined with activities in the category of "information and other technologies", there were 94 activities, accounting for 63.5% of the total number of activities in 2022.



Comparison of Numbers of Meetings and Exhibitions by Year



■ Education and training  
 ■ Information and other technologies  
 ■ Culture and art  
 ■ Justice and law  
■ Medicine and health  
 ■ Travel  
 ■ Banking and finance  
 ■ Commerce, trade and management  
 ■ Others

2022	83	11	15	3	4	3	0	1	28
2021	70	16	30	12	7	4	0	10	14

Note: Affected by the pandemic, some activities must be canceled or postponed from January 13 to March 31, June 19 to August 1, and November 28 to December 31, 2022. The total number of days affected were 156 days (accounting for 42.7% of the whole year). During the period from August 4 to 17, and from September 25 to October 18, 2021, some activities must be canceled or postponed. The total number of days affected was 38 days (accounting for 10.4% of the whole year).

# 06

Carrying out various exchanges and cooperation,  
and promoting the dissemination of high-tech  
and science

## 6. Carrying out various exchanges and cooperation, and promoting the dissemination of high-tech and science

### 6.1 Exchange and partnership

#### Visiting the Macao Base for Primary & Secondary STEM Education of the University of Macao

Members of the Board of Directors and staff of MSC visited the Macao Base for Primary & Secondary STEM Education and the State Key Laboratory of Analog and Mixed-Signal VLSI of the University of Macao on May 13, and held discussions on complementing each other's strengths and strengthening exchanges and cooperation. The two sides hoped to strengthen cooperation in the future, jointly develop science popularization resources, and give full play to the advantages of MSC and the University of Macau as the "National Science Popularization and Education Base", to assist young people who would be willing to devote themselves to science and technology in actively developing themselves and making career planning as soon as possible, so as to create excellent conditions for cultivating the next generation of scientific and technological innovation talents.



Visiting the Macao Base for Primary & Secondary STEM Education of the University of Macao



Visiting the State Key Laboratory of Analog and Mixed-Signal VLSI of the University of Macao

#### Visiting National Security Education Exhibition for All

More than 50 members of the Board of Directors and staff of MSC visited the "National Security Education Exhibition for All" on April 21, deepening the understanding of the importance of insisting on the overall national security concept and the fact that the national security benefits all people, and thus enhancing the sense of responsibility of individuals to protect national security.



Photo of members of the Board of Directors and staff of MSC

### Macao International Museum Day Carnival

To celebrate International Museum Day on May 18, MSC holds the Macao International Museum Day Carnival with several featured museums in Macao every year. The theme of the International Museum Day in 2022 was "the Power of Museums". With the extension theme of "the Power of Nature", MSC set up a number of booth activities, including "Stories of the Specimen Suitcase", "Games of Stone Specimen Booth", and "VR Experiences of Bugs".



Children listening attentively to Stories of the Specimen Suitcase

### The visit and exchange of the delegation of the Palace Museum

In the afternoon of November 9, the delegation of the Palace Museum visited MSC, and exchanged work with the management of MSC to discuss the integration and development of culture and technology as well as the future cooperation between the two sides. During the period, the delegation visited MSC, listened to the introduction of the youth science popularization and education, and exhibition planning work of MSC, and expressed congratulations to MSC for winning the honor of "National Science Popularization and Education Base" and "National Scientist Spirit Education Base" in 2022.



The delegation of the Palace Museum visited MSC under the leadership of Associate Dean Lou Wei

## Cooperation on the Development of Guangdong–Hong Kong–Macao Greater Bay Area

Zhuhai and Macao have always had frequent exchanges and close cooperation. On December 5, Li Chong, deputy mayor of the Zhuhai Municipal People's Government, and his delegation visited MSC, exchanging views on the work of science popularization and education in the two places, and discussing opportunities to strengthen cooperation in the future. In addition, MSC and the Zhuhai Science and Technology Innovation Bureau had many exchanges in 2022, and the two sides agreed to strengthen cooperation in the future and hold more activities related to Macao and Zhuhai. On September 21, Experts Walk Into the Community – Science Popularization Worker Training and Lecture on Zhuhai–Macao Science and Technology Innovation were held simultaneously in Zhuhai and Macao. The event was jointly held by MSC, the Macao Base for Primary & Secondary STEM Education, the Association for Promotion of Science and Technology of Macau, the Zhuhai Science and Technology Innovation Bureau and the Zhuhai Association for Promotion of Science and Technology, with the Office of Hong Kong, Macao and Taiwan Affairs of the Chinese Association for Science and Technology and DSEDJ as supporting institutions. Jia Weihua, professor of the Sun Yat–sen University Cancer Center, gave a speech entitled "Foreseeable Road to Fight Cancer", and Han Xiqiu, a Level–2 researcher at the Second Institute of Oceanography of the Ministry of Natural Resources, gave a speech entitled "Twenty Thousand Leagues Under the Sea – From Science Fiction to Reality". The activity attracted more than on–line and offline 1,500 visitors. It was listed as one of the "Science in the Future" series activities carried out by MSC in September.



Li Chong, deputy mayor of the Zhuhai Municipal People's Government, and his delegation visited MSC



Jia Weihua, professor of the Sun Yat–sen University Cancer Center, gives a speech entitled "Foreseeable Road to Fight Cancer"



Han Xiqiu, a Level–2 researcher at the Second Institute of Oceanography of the Ministry of Natural Resources, gives a speech entitled "Twenty Thousand Leagues Under the Sea – From Science Fiction to Reality"

### Cooperation with NIO Guangzhou

In order to promote the dissemination of high-tech and science, MSC cooperated with leading technology enterprises in the mainland to implement relevant technology exhibitions. On November 12, MSC signed a memorandum of cooperation with NIO Guangzhou to promote the building of NIO charging infrastructure and science popularization and education related to intelligent travel, and work together to build a demonstration site of science popularization and education. In the future, MSC intends to set up the first intelligent travel science exhibition hall in the Guangdong-Hong Kong-Macao Great Bay Area, so that the residents of Macao and the Great Bay Area can better understand and experience the innovative technology of the national automobile industry.



Signing ceremony with NIO Guangzhou

### "Spirit of Time Shines in Macao – Report on the Spirit of the 20th CPC National Congress"

Lin Ming, academician of the Chinese Academy of Engineering, chief scientist of China Communications Construction Company Co., Ltd. and Chair Professor of Shanghai Jiaotong University, shared and exchanged the strategic focus of "rejuvenating China through science and education" with the theme of "promoting China's construction through rejuvenating science and education". Professor Lin Ming, taking the construction of the Hong Kong-Zhuhai-Macao Bridge as an example, talked about three aspects: The proposal and connotation of the strategy of "rejuvenating China through science and education", the promotion of the construction of the Hong Kong-Zhuhai-Macao Bridge through "rejuvenating China through science and education", and the adherence to the "rejuvenating China through science and education" to meet the new opportunities in the "post-Hong Kong-Zhuhai-Macao Bridge" era. In combination with the development of high-tech, he introduced the background of the bridge and the construction of the project, and put forward ideas and suggestions for the future development of science.

The event was hosted by the Macao SAR Government, the Liaison Office of the Central People's Government in the Macao S.A.R. and the China Association for Science and Technology; undertaken by Shanghai Jiaotong University, MSC, the Association for Promotion of Science and Technology of Macau and China Science and Technology Press; and supported by the Chinese scientist spirit publicity group. More than 700 people participated in the exchange activities online and offline.



The event held at the Planetarium of MSC

### Exchange of Alliance of the Guangdong–Hong Kong–Macao Greater Bay Area Science and Technology Museums

Since joining the Alliance of the Guangdong–Hong Kong–Macao Greater Bay Area Science and Technology Museums, MSC has actively participated in the science popularization and research activities organized by the Alliance. In 2022, MSC participated in the "Science Popularization and Research Activities" online on April 15 and the "Gezhi Lundao of Bay Area -- 'Time Beyond the Wall' Forum" online on May 28, respectively, to learn from each other and exchange experience, and jointly promote the development, interaction and unity and cooperation of the science and technology venues in the Great Bay Area.

### Joining China Alliance of Sci-Tech and Cultural Institutions

The China Alliance of Sci-Tech and Cultural Institutions was promoted and organized by the China Association for Science and Technology in November 2021. The Alliance is committed to promoting horizontal and vertical collaboration, cross-border cooperation and integrated development among related venues, organizations and institutions, and serving as a model for cross-border achievements to create an open and shared ecology of science and technology of integrated development throughout the society, and improve people's ideological, moral, scientific and cultural literacy as well as physical and mental health. The first batch of members of the Alliance includes 16 leading science and technology venues, cultural venues, social organizations and research institutes, including the Palace Museum, National Museum of China, National Art Museum of China, Geological Museum of China, China Science and Technology Museum, Shanghai Science & Technology Museum, Dunhuang Academy, Beijing Museum of Natural History, National Maritime Museum of China, Chinese Physical Society, Chinese Medical Association, Chinese Association of Natural Science Museum, China Association for Science and Technology (CAST) – Peking University (PKU) Science Culture Institute, Chinese Association for Science and Technology (CAST) – Union of Life Science Societies, China Union for Public Science Literacy, and Preparatory Committee of the World Organization for Scientific Literacy.

At the end of 2022, MSC joined the China Alliance of Sci-Tech and Cultural Institutions with the National Museum of Modern Chinese Literature, and was the first science and technology venue in Hong Kong, Macao and Taiwan to be approved to join the Alliance. MSC will be devoted to promoting the development of cross-border integration and exchange between science and technology venues and cultural venues with other members of the Union, actively leveraging its strengths and resources to provide more sound science and technology cultural products and services to the public by combining the latest technology and innovative forms.

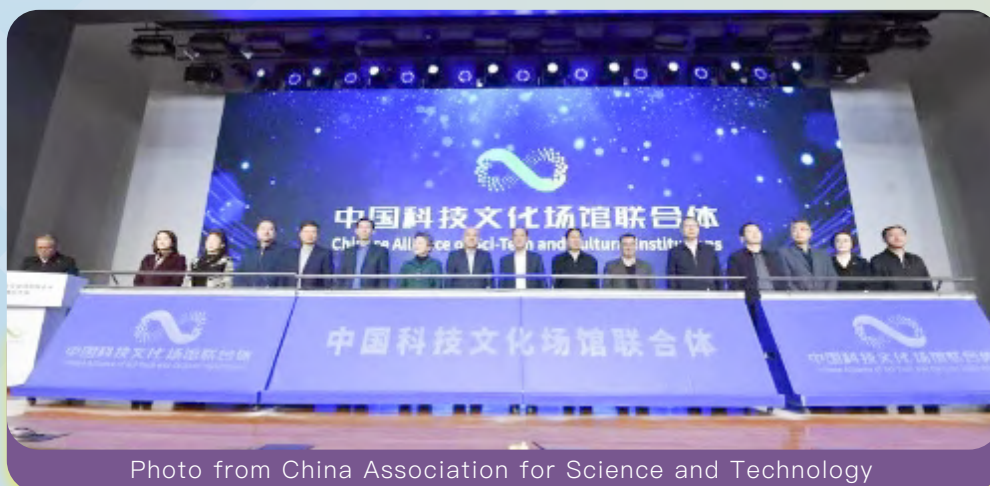


Photo from China Association for Science and Technology

## 6.2 Promotion and publicity activities

In 2022, MSC continued to employ electronic media, newspapers, websites and social platforms as the main channels to disseminate information, keeps optimizing the information on social media accounts and placing advertisements or conducting activities to attract public attention to MSC's exhibitions and programs as required.

Also, MSC provided information to the media through websites, social media, press releases and interviews, and publicize such information through appropriate television or radio programs.

### · Media coverage



#### 2022年10月10日《人民網》

真沒想到科學館這麼“有料”，從形式到內容都很吸引人。在澳門科學館遊覽了一整天的朱先生興奮地告訴記者，看球幕電影，體驗科學館設備的神奇力量，參與科普知識互動，不知不覺中好奇心，求知欲被激發，感覺生活特別美好。

#### 2022年10月10日《澳門日報》

到場觀賞《詩與真》的內地旅客賀先生表示，今次與家人一同看電影是因為在科學館大堂處見到電影海報才臨時起意，不過觀影體驗完全超出預期，透過電影自己加深對當代無機材料科學的奠基人之一，嚴東生的認識。他認為如今年輕一輩很少有機會去認識、瞭解對推動國家發展有重要意義的偉大科學家，而這種沉浸式的觀影體驗可以讓小朋友靜下來細細品味，瞭解前人走過的路，因此覺得這類活動相當有意義，亦非常符合科學館的定位。一同觀賞電影的賀小朋友亦認同爸爸看法，觀賞電影後對科學家積極探索、堅持不懈的精神感動敬佩，自己亦會以這些偉大的科學家作榜樣而去努力學習。



In 2022, MSC published 21 special interviews in the Macao Daily and four short videos on the YouTube channel of the Macao Daily to introduce the science popularization work of MSC to the public.

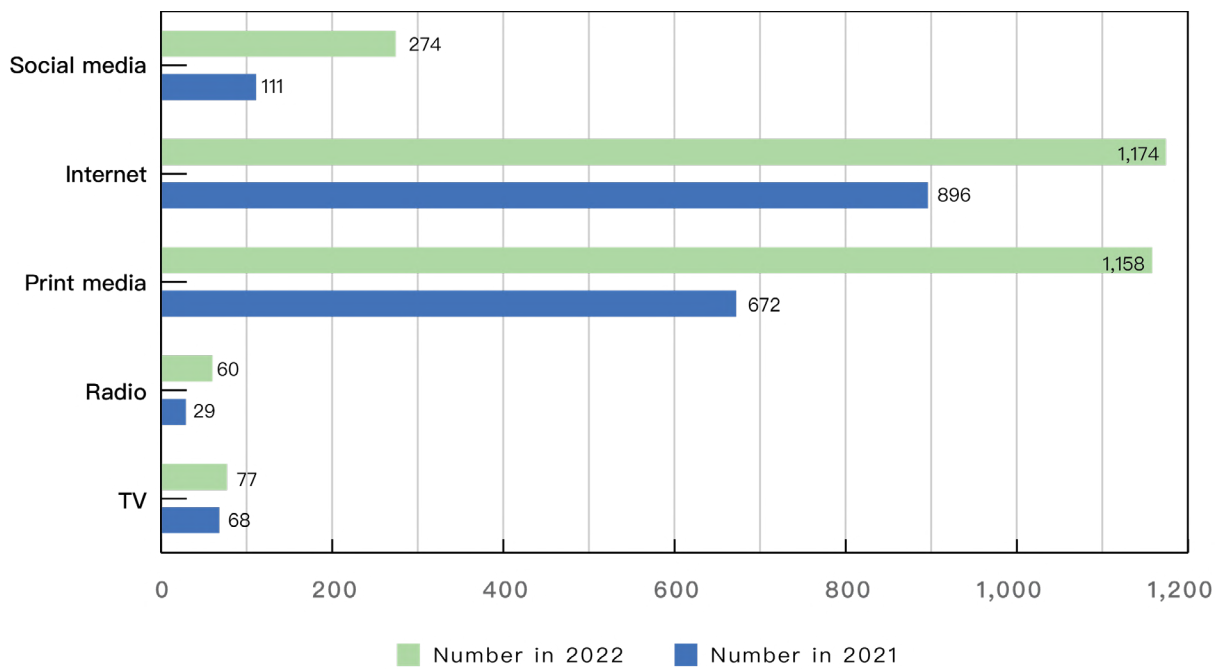


### MSC's social platforms

Platform	Number of Followers		Year-on-Year Growth	Number of Posts
	2021	2022		
MSC Facebook	20,929	22,134	5.8%	745
Science popularization and education page of Facebook	-	2,253	-	-
WeChat	22,833	27,211	19.3%	788
YouTube	4,970	6,870	38.3%	130
Instagram	1,135	1,222	7.7%	739
Weibo	2,228	2,282	2.4%	733
Twitter	350	407	16.3%	733

### Major media coverage

	Number in 2021	Number in 2022	Year-on-Year Growth
TV	68	77	13.2%
Radio	29	60	106.9%
Print media	672	1,158	72%
Internet	896	1,174	31%
Social media	111	274	146.8%
<b>Total</b>	<b>1,776</b>	<b>2,743</b>	<b>54.4%</b>



# 07

Participating in anti-pandemic with attention to social care, and making community relations close

## 7. Participating in anti-pandemic with attention to social care, and making community relations close

MSC has always been enthusiastic about public welfare and caring for vulnerable groups in society. In 2022, in response to the 2022 World Autism Awareness Day, MSC supported a number of charitable activities sponsored by the Social Welfare Bureau (IAS) of the Macao SAR Government and social welfare institutions in various forms. Besides, to support the Macao SAR Government for the COVID-19 pandemic control, MSC organized more than 60% employees to participate in the nucleic acid testing for key populations and support the nucleic acid testing for the entire people, and kept in touch with major associations for a long time to build a communication bridge between MSC and the community.

### 7.1 Anti-pandemic support

To support the Macao SAR Government for the June 18th COVID-19 Outbreak control, MSC organized employees to participate in the nucleic acid testing for key populations and support the fourth to sixth rounds of nucleic acid testing for the entire people. The participating employees accounted for two thirds of the total number of employees, reflecting the spirit of common anti-pandemic of all.



## 7.2 Charity activities

- ◆ MSC designed different accessible science popularization experience activities to encourage disabled persons to participate in science activities with us and experience the fun of learning science. In cooperation with the Social Welfare Bureau, MSC, together with different government departments and non-governmental organizations, launched activities for the International Day of Disabled Persons from December 2021 to March 2022, covering visual impairment, hearing impairment, limb impairment, hypophrenia, early treatment services and mental rehabilitation. In 2022, there were 20 activities with a total of 389 participants.
- ◆ In order to support the "2022 World Autism Awareness Day", MSC participated in the "Light It Up BLUE" Campaign in April, making Macao citizens and tourists feel the support and care of the Macao government for vulnerable communities, and hoping to remind everyone of understanding autism and paying more attention to the patients with autism through the activity.
- ◆ In order to encourage kind-hearted people to donate blood to help people in need, MSC presented 16,000 tickets for the Gallery Center to the Blood Donation Center.
- ◆ On September 4, MSC, together with McDonald's in Macao, received 20 students from the Kaichong Center. They took part in the theme activity of "Science in the Future – Starry Dream Space Station" in the Nautical Science Gallery of MSC as a team member. Each of them wore space suits and carried space bags to explore the mystery of the Star Dream Space Station under the leadership of the Happy MakMak, enabling all team members to learn more about aerospace in scientific experiments and various tasks. The team members and their parents were full of gains in game experiments. This activity was also included as one of the "Science in the Future" series activities carried out by MSC in September.



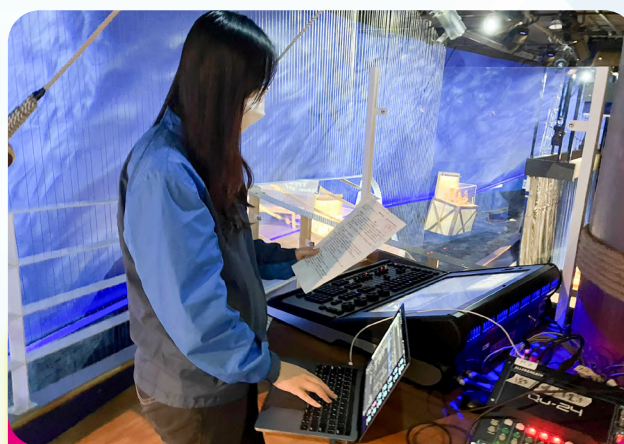
- ◆ MSC continued to support Macao Orbis. MSC has become a supporting institution of "Action for Sight 2022" campaign, providing the venue for the launching ceremony on October 13 and the subsequent physical exhibition, and supporting Macao Orbis to promote the importance of eye care and health to the Macao community.



- ◆ Since 2021, MSC and the S.K.H. Macao Social Services Coordination Office have cooperated closely to carry out a number of science popularization training courses, aiming at training institutional instructors, improving the ability of science popularization, and leading teenagers to learn about the fields of science and technology; they have also held a number of parent-child activities for organizations to gather teenagers and parents. Specifically, there were eight activities including Drone Experience Course and 3D Printing Course with 212 participants.



- ◆ MSC has launched the Volunteer Service Program since 2010 to encourage the public to join public and volunteer services and science popularization activities. It calls on more like-minded people to join and further lead teenagers to explore, experience and love science. Since 2022, young volunteers have been more involved in the production of online education resource platform and the science popularization and education page of Facebook, and have invested in multi-dimensional learning and practical experience. In 2022, 110 volunteers provided services of 17,646 hours.



Volunteers are operating background sound for the science popularization theater

### 7.3 Visit of social welfare groups

MSC has always been an active supporter of public welfare activities. In 2022, MSC cooperated with a number of social welfare groups to promote science popularization knowledge. In 2022, MSC received 49 social welfare groups, and a total of 1,853 visitors, in an effort to promote interesting science popularization knowledge in different fields and encourage the integration of health and injury.



Parents' Meeting of Nurseries Affiliated to the Women's General Association took photos after the activities of MSC



# MSC Achievements



## MSC Achievements

### Member of the Chinese Alliance of Sci-Tech and Cultural Institutions

At the end of 2022, MSC joined the Chinese Alliance of Sci-Tech and Cultural Institutions, and is the first science and technology venue across Hong Kong, Macao and Taiwan regions to be approved to join the Alliance.



### National Scientist Spirit Education Base

In May 2022, MSC was listed in the first batch of Scientist Spirit Education Bases in China by the China Association for Science and Technology, and is the only science and technology venue across Hong Kong, Macao and Taiwan regions to be listed as a National Science Popularization and Education Base at the same time.

### 科学家精神教育基地

中国科协 教育部 科技部 国务院国资委  
中国科学院 中国工程院 国防科工局  
二〇二二年五月

### National Science Popularization and Education Base

In March 2022, MSC was included in the *First List of Accredited National Science Popularization and Education Bases for 2021–2025* by the China Association for Science and Technology, and is the first science and technology venue across Macao, Hong Kong and Taiwan regions to receive this honor.



### Three-star Certificate of Green Building Design Label

At the end of 2016, MSC was awarded the Three-star Certificate of Green Building Design Label, the highest level of green building design certificate in China.





# Visitor data

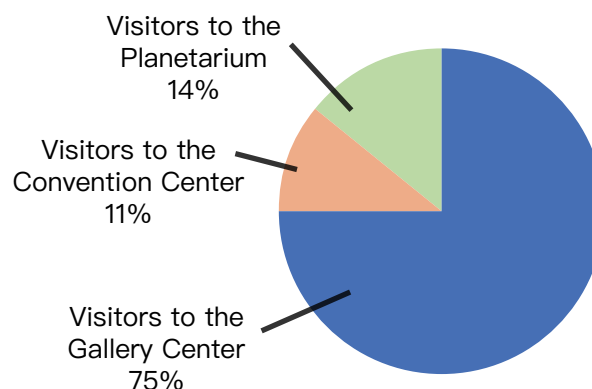
## Visitor data

### Number of Visitors in 2022

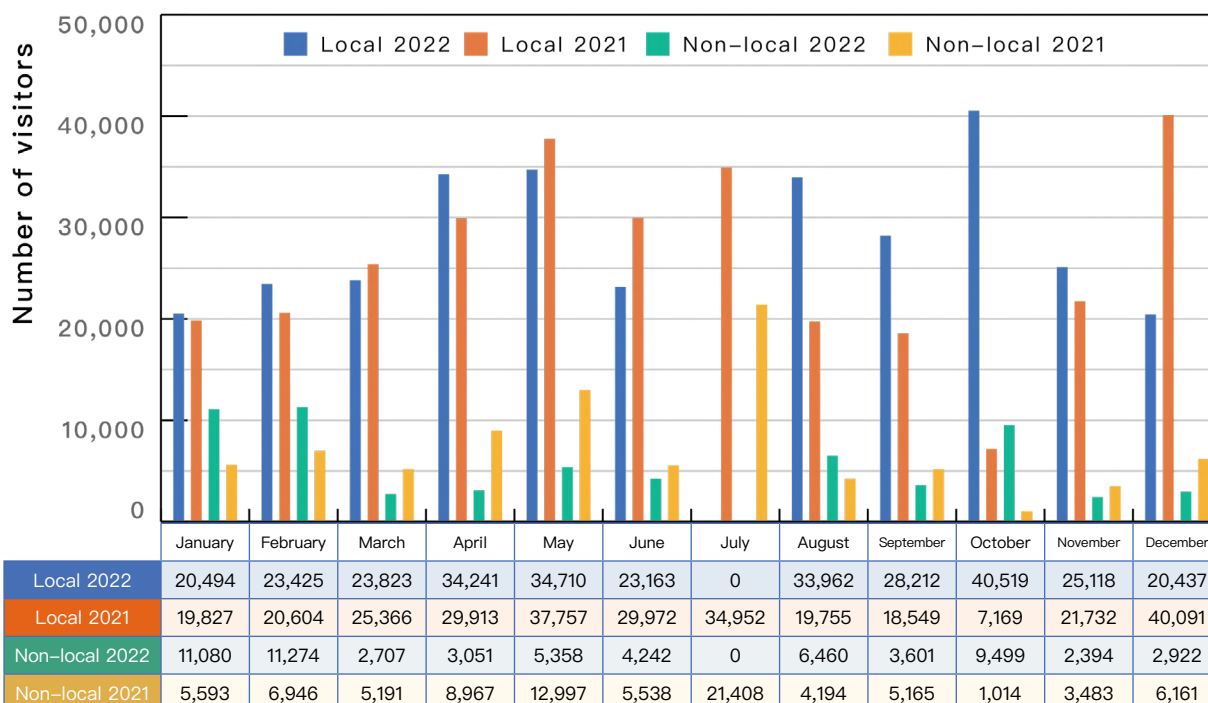
Visitors to the Gallery Center	Visitors to the Planetarium	Visitors to the Convention Center	Total Visitors
312,820	57,872	47,235	417,927



Macao tourism mascot Mak Mak at MSC

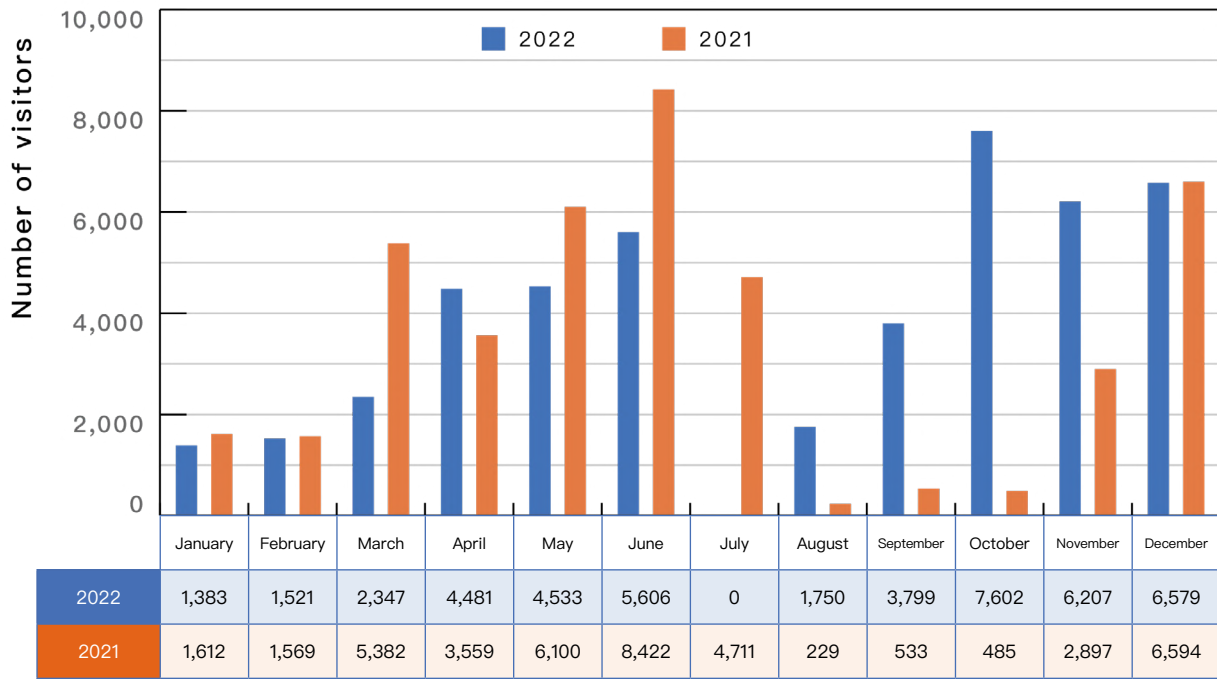


### Comparison of Local and Non-Local Visitors Between 2021 and 2022



Note: The Gallery Center and the Planetarium were closed from June 19 to August 1, 2022, due to the pandemic. In 2022, MSC opened for 282 days, with 308,104 local visitors and 62,588 foreign visitors. The Gallery Center and the Planetarium were closed from August 4 to 17 and from September 25 to October 22, 2022, due to the pandemic. In 2021, MSC opened for 284 days, with 305,687 local visitors and 86,657 foreign visitors.

Comparison of Numbers of Group Visitors Between 2021 and 2022



Note: The total number of group visitors was 45,808 in 2022 and 42,066 in 2021.





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