

2014

Annual Report

Contents

5 - Words from Director-general	
6 - History	
10 - Development Missions	
12 - Organizational Structure	13 - Post Allocation
	14 - Posts
	16 - Educational Statistics
	17 - Researcher Backgrounds
18 - Collections & Research	19 - Item Studies
	20 - Collection Statistics
	20 - Open Storage
	22 - Popular Science Library
	23 - Academic Exchanges
	24 - Creative and Cultural Developments
	25 - Research findings and Publications Statistics
26 - Exhibitions	27 - Permanent Exhibition Updates
	37 - Special Exhibitions and Improving Professional knowledge
	41 - Collaboration Exhibitions
	45 - 3D Theater
	48 - Out-of-the-Museum Service Performance
	50 - Results of Combining Social Resources
55 - Technology Education	56 - Summer/Winter Science Camps
	57 - Theme-based Learning
	59 - Hands-On Science
	60 - Scientific Creativity Competition
	63 - Energy-conservation House Promotions
	64 - Specific Ethnic Group Activities
	66 - Project-type Programs
69 - Public Service	70 - Visitor Service
	72 - Public Relationships and Marketing
	74 - Guided Tours
	75 - Utilizing Social Resources
79 - Green Museum Project Implementation Results	
	80 - The Sustainable Environment Aspect
	80 - The Sustainable Society Aspect
	81 - The Sustainable Culture Aspect
	82 - The Sustainable Economy Aspect
83 - General Affairs and Environment	
	84 - General Affairs Management
	85 - Electromechanical Operations
	89 - IT Operations
93 - Budget Execution	94 - Annual Balance
	96 - Annual Capital
	97 - Past Revenues, Expenditures, Budgets and Final Accounts
98 - Chronicle of Events	
109 - List of NSTM Personnel	
125 - Lanterns of Love Sponsors/Units	

List of Figures

Figure 1 / Organization Structure	13
Figure 2 / Budget Headcount	14
Figure 3 / Personnel Educational Statistics	16
Figure 4 / Researchers Educational Statistics	17
Figure 5 / Researchers Academic Background Statistics	17
Figure 6 / Ancient Locks, Measurements, and Typography E-books and APPs	19
Figure 7 / Artifact Maintenance Technology Demonstration	21
Figure 8 / Ceramics Maintenance Workshop	21
Figure 9 / Popular Science Library	22
Figure 10 / "Museums Are So Much Fun!" 2014 International Conference on Museum Marketing	23
Figure 11 / Certain Creative Merchandise	24
Figure 12 / Diseases Prevention Combat Camp 2.0	27
Figure 13 / Recovery and Reconstruction after Morakot	28
Figure 14 / "Textiles and Clothing" Permanent Exhibition Hall	29
Figure 15 / 3D Animation of Water-Drawing Pot Exhibition	30
Figure 16 / Three Stage Rocket	30
Figure 17 / Earthquake Chamber	31
Figure 18 / Solar/Lunar Eclipse	32
Figure 19 / Water Walls Exhibition Updates	33
Figure 20 / NAO Robot Demonstration	34
Figure 21 / Agricultural Farming	35
Figure 22 / Modern Telecom Exhibition: 4G LTE	36
Figure 23 / "Nanometer: The Invisible Scale"	37
Figure 24 / "Museum Green Exhibition: Practice and Experience" Conference	38
Figure 25 / Certain of Maintenance and Experience Facilities	39
Figure 26 / Certain Self-made Exhibits	40
Figure 27 / Dark Art	41
Figure 28 / Master of Light – Vermeer Exhibition	42
Figure 29 / Glory of the Tang Prize: Laureate and Design Exhibition	43
Figure 30 / "Sentinel of Taiwan and the World" Formosat-2 10th Year Touring Exhibition	44
Figure 31 / Films of 3D Theater	45
Figure 32 / 3D Theater	46
Figure 33 / 3D Animated Film "Frogville"	47
Figure 34 / Opening event of "Under Keys & Locks" in Macau Science Center	48
Figure 35 / Preparing Exhibition of "Under Keys & Locks"	49
Figure 36 / Demonstrative Educational Event: I Love Mammoths	50
Figure 37 / Hello, Mr. President! A Panorama Review of R.O.C.-U.S.A. Summit Diplomacy	51
Figure 38 / Sustainable Taiwan: Reconstruction After Typhoon Morakot Photography Exhibition	52
Figure 39 / Across Africa: Chen Tianpu Photography Exhibition	53
Figure 40 / The Precise Moment: Precision Alignment Technology Exhibition	53
Figure 41 / Food Packaging Exhibition Unit	54
Figure 42 / 2014 Nationwide Student's Picture Book Creation Award	54
Figure 43 / "Programmable Robot PvP Competition" Winter Camp	57
Figure 44 / "Pandora's Box of Science" Battle Sea, Land, Air Scientific Experiments	57
Figure 45 / "NSTM FUN Science" Power-Learning Secret Art	58
Figure 46 / "2014 Water Conservation Children's Day Festival" water-month promotion	59
Figure 47 / "Creative Design Competition using Solar Cell" Award Ceremony	60
Figure 48 / National Energy Technology Competition	61
Figure 49 / MOE Energy Education Program Result Exhibition	61
Figure 50 / 4th "Hand Launch Glider Flying Competition"	62
Figure 51 / 2015 FLL and FTC Creative Robot Competition Site	62
Figure 52 / "LOHAS Energy-Conservation House" Guided-tour	63
Figure 53 / Science Papago Thank-You Ceremony	64

Figure 54 / “NSTM Creative Life School ” Erhu Presentation	64	Figure 63 / Soil and Water Conservation and Disaster Prevention Promotions on outside slopes in the NSTM	88
Figure 55 / “Technology Senior Alumni Association” Series Courses	65	Figure 64 / Soil and Water Conservation Science Education Activity	88
Figure 56 / 2014 Popular Science Forum	66	Figure 65 / A Bronze Certification of the Green Building Label in Old Building Renovation Category by the Ministry of the Internal	89
Figure 57 / Nanotechnology and Popular Science DIY Event	67	Figure 66 / Exhibition Hall Inspection System	90
Figure 58 / Teaching Package Promotion: Air- Cushioned Crane	68	Figure 67 / Impressive Experience Facility	90
Figure 59 / Holiday Art Festival	73	Figure 68 / Improved i Taiwan Route	91
Figure 60 / 2014 Lantern Festival Night: NSTM Lanterns of Love Event	75	Figure 69 / Mobile Guided Tour Platform	92
Figure 61 / “Love to Remote Areas: Care Journey for the Disadvantaged Students ” Event	76		
Figure 62 / NSTM Volunteer Visiting Event	77		

List of Tables

Table 1 / NSTM Managers and Non-Managers Gender Analysis.....	15
Table 2 / NSTM Personnel Gender Analysis.....	15
Table 3 / Collection Statistics.....	20
Table 4 / Research findings and Publications Statistics.....	25
Table 5 / Staistics of Technology Educational Activities in 2014.....	56
Table 6 / Number of people visited.....	70
Table 7 / 2014 Income Balance Sheet.....	95
Table 8 / 2014 Fixed Asset Facility Improvement/Expansion Balance Sheet.....	96
Table 9 / Past Revenues, Budgets and Final Accounts after Implementing Operational Funds.....	97
Table 10 / Past Expenditures, Budgets and Final Accounts after Implementing Operational Funds.....	97

Words from Director-general

For the past year, we have been striving to build a "green museum" that emphasizes "making technology closer to life, and improving life via technology." Under the foundation of the principle of sustainable development, we hope to provide a quality museum environment, as well as a diversity of scientific knowledge. Our employees and associates (volunteers, partners) all uphold the work attitude of being "friendly, passionate, active, patient, and responsible" in hopes to make the NSTM a place wherever everyone wants to visit again and again.

In order to shorten the gap between the rich and the poor, and implement scientific education, we promoted the "Hand-in-Hand, Side-by-Side" welfare program for the disadvantaged, accepting the donations of social welfare enthusiasts for a price of NT\$10,000 per lantern to financially support economically disadvantaged students in visiting the museum. This further facilitates the goal of museum, social resources, and education integration. Through the "NSTM Lanterns of Love" event held this year, we serviced 344 schools, 6,218 students, and helped disadvantaged students in visiting the museum, giving the children a chance to "build their dreams, chase their dreams, and realize their dreams."

Under the condition of not increasing personnel costs, our employees self-developed a multitude of creative merchandise that correspond to the features and culture of the museum. These merchandises include the "Scholar Lock Pen Drive," the "3D Stamp," the "Ring of Science," the "Pinhole Camera DIY Kit," the "Money Matchbox Color Pencils Set," and so on, totaling 12 pieces of creative merchandise. Through the power of creative merchandises, we also have elevated our museum pieces' visibility in the public eye.

In order to promote the core features of our collections research branch, we continue to strengthen the foundation of local culture, widely collect items of value of Taiwanese history in industrial development, and conducting in depth research and interpretation of the items and their backgrounds. As for researching findings, other than

publishing research papers, we have also actively conducted collection-promotion and related educational events, giving these cultural collections a meaningful afterlife.

In combining outside resources and self-planned projects, this year, we held 29 exhibitions, completed the renovation of three permanent exhibition halls, and updated partial exhibition units in eight permanent exhibition halls. Our multi-aspect scientific themes and innovative content were well-received by the public. Additionally, in fully promoting the educational value of our 3D films, we have established a special project group to develop scientific film-related elements to integrate with primary and secondary science courses. This is done to attract students in coming and enjoying the films, and it also enables our big screen theater to become the best choice for school field trips.

We also hosted a multitude of science-themed educational events in the categories of physics, chemistry, biology, electricity, astronomy, art, parenting, children, and life science. For the current year, we have hosted 2,455 events, with a visitor count of over 333,000 people, providing a diverse learning resource, creating a scientific educational environment, and achieving the goal of "everyone's a scientist."

The annual report is a publication demonstrate our performance and communication with the public, as well as the driving force in employee self-assessments and making future improvements. The arrangement of this issue of the annual report has been adjusted to focus on demonstrating our functions and performances, enabling the public to easily understand our work and relevant efforts done in this year via the table of contents. These is the fruits of our continuous efforts for improvement. The performance in 2014 was due to the commitments and cooperation from all of us. We strive to be at the front of the technological advancements with a lookout for the future, and we encourage innovations in order to achieve a higher purpose.

Shiunn-Shyang Chen



NATIONAL SCIENCE & TECHNOLOGY MUSEUM
2014 Annual Report

History

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The National Science and Technology Museum (NSTM) was one of the central cultural facilities constructed in the "Project of County/City Cultural Center Construction" in The Twelve Construction Projects announced by the Executive Yuan in 1979. As the first museum of applied science in Taiwan, as well as the first national institute of public education in Southern Taiwan, the focus of the museum is to collect and study scientific and technological objects, hold exhibitions related to science and technology and promote education as well as provide the public with a place for leisure and life long learning.



History

Located on Jiouru 1st Road, Kaohsiung City (originally City Park No. 6), the museum covers 18.37 hectares of land. The buildings contain a total building area of 20,682.83 m² and the floor area is 113,557.69 m² (including North building: 97,734.93 m²; South complex: 15,258.88 m²; LOHAS Energy Conservation House: 563.88 m²) with 36.89 meters of structural height.

Brief Description of the Preparatory Process

- ❶ July 1986 The Planning Council for NSTM was established.
- ❷ November 1988 The Executive Yuan approved the construction plan.
- ❸ October 2, 1989 Construction of the museum commenced.
- ❹ January 1, 1997 The museum was officially established with the approval of the Executive Yuan and the Ministry of Education.
- ❺ July 26, 1997 The south complex was opened.
- ❻ September 21, 1997 The museum park was opened.
- ❼ November 9, 1997 The museum was opened to the public.



History

1 North building

15,007.55 m² of building area is used for the administration center, permanent exhibition halls, temporary exhibition halls, IMAX® 3D Theater, Wa-sci Science Theater, Open Storage, Maintenance Workshop, Green Shop as well as for gifts hops.



History

2 South complex

5,412.61 m² of building area is used for the Library and Audiovisual Center, research center, auditorium, lecture rooms and storage. The LOHAS Energy Conservation House was set up in 2009 and sits on an architectural dimension of 262.67 m²





NATIONAL SCIENCE & TECHNOLOGY MUSEUM
2014 Annual Report

Development Missions



Development Missions

- ① To reinforce technological collections management and research: continuation of holding conservation and maintenance seminars and improving the conservation environment, as well as strengthening research and applications for technological collections.
- ② To establish an exhibition renewal mechanism and gradually alter exhibitions, so as to vitalize the exhibiting functions of the NSTM and make the NSTM a venue for displaying the industrial achievement of Taiwan as well as permanent establishment to record important industrial achievement.
- ③ To develop new teaching aids and combine resources from businesses, schools and society to organize more activities for technology education.
- ④ To enhance public services, utilize the power of the media as well as community resources and establish a diversified marketing strategy to increase the number of visitors.
- ⑤ To strengthen public safety around the museum and create quality visiting environment for better service.
- ⑥ To promote automation of administration affairs of the museum and provide life-long learning access on the Internet.
- ⑦ To improve and enrich network hardware and software equipment to enhance work efficiency.
- ⑧ To plan a digitalized library to provide the public with information from Internet databases and to create a specialized book repository for different research topics in the museum.
- ⑨ To strengthen cooperation among museums by holding various seminars and inviting guest speakers to improve research quality.



NATIONAL SCIENCE & TECHNOLOGY MUSEUM
2014 Annual Report

Organizational Structure



Organizational Structure

Post Allocation

1 Post Allocation

Pursuant to the temporary regulations and staffing structure of National Science and Technology Museum as promulgated by the Ministry of Education with the Letter Year (1996)Tsan-Zi 85504426 on December 30, 1996, the National Science and Technology Museum has one director-general and one deputy director-general. Under them, the Museum operates through the Exhibition Division & Technology Education Division, Public Services Division, Secretariat, Personnel Office and Accounting & Statistics Office. Further in the light of the need for development of the Museum, the Information (MIS) Task Force was established on July 16, 1998 and Collection Research Task Force was established on February 1, 2001. Subsequently later on, pursuant to the amendment to the temporary regulations as promulgated by the Ministry of Education with the Letter Tai-Tsan-Zi- 0920113739A dated August 5, 2003, the Collections and Research Division was additionally established on September 1, 2003 and the establishment was approved by the Examination Yuan with the Letter Kao-Tai-Er-I-Zi 09200079281 dated September 22, 2003. Besides, the Organizational Act of the National Science and Technology Museum was duly enacted under Order of the President of the Republic of China, i.e., Hua-Tsung-I-I-Zi 10100022841 dated February 3, 2012 and was put into enforcement starting from January 1, 2013 under Order Yuan-Shou-Yen-Tsung-Zi 1012260345 of the Executive Yuan (the Cabinet) dated March 8, 2012. Pursuant to the Organizational Act of the National Science and Technology Museum, the Accounting Office was reorganized into the Accounting and Statistics office.

In line with the substantial need of the Museum, the Maintenance & Repair Service Task Force was established on January 1, 2012, as Figure 1.

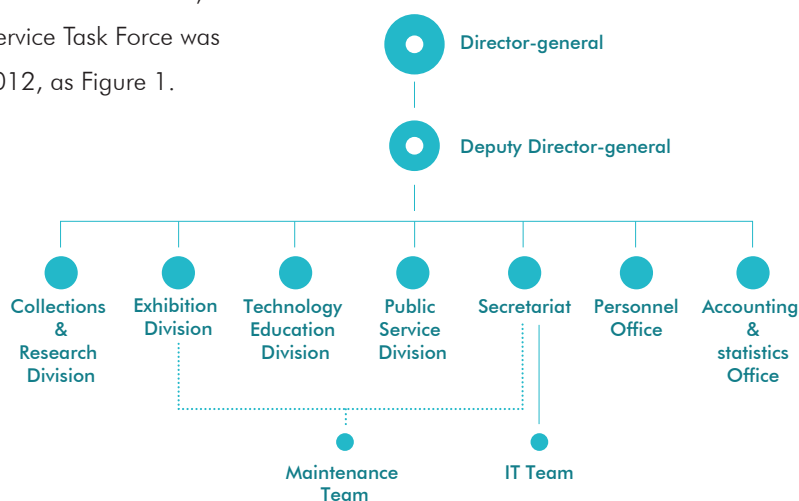


Figure 1 / Organization Structure

Organizational Structure

Posts

2 Posts

1 Budget Headcount

A total of 84 posts were opened as defined by relevant law and regulations. After the assessment of Ministry of Education in 2014, our budget post openings were as follows: 28 Researchers, 44 Civil Servants, 29 Senior Contract Employees, 20 Junior Contract Employees, 8 Technical Workers, 7 Maintenance Workers, with a total of 136 posts budgeted. The budget headcount analysis is as Figure 2.



Figure 2 / Budget Headcount

Organizational Structure

Existing Headcount

2 Existing Headcount

Our existing headcount (excluding volunteers and commissioned service companies) has a total of 131 people. (61 Males, 70 Females). The female ratio is 53.44%, while the male ratio is 46.56%. There were 9 managers (including director-general and deputy director-general: 5 males, 4 females). The ratio of female managers is 44.44%, while the male ratio is 55.6%. There were 122 non-managers (56 males, 66 females). The ratio of female non-managers is 54.10%, while the male ratio is 45.90%. The managers and non-managers gender analysis is as Table 1. Additionally, there were 27 Researchers (12 males, 15 females), 41 Civil Servants (22 males, 19 females), 49 Senior Contract Employees and Junior Contract Employees (18 males, 31 females), 14 Technical Workers and Maintenance Workers (9 males, 5 females). The personnel gender analysis is as Table 2.

Table 1 / NSTM Managers and Non-Managers Gender Analysis

	Existing Number	Males	Male Ratio	Females	Female Ratio
Managers	9	5	55.56%	4	44.44%
Non-Managers	122	56	45.90%	66	54.10%
Total	131	61	46.56%	70	53.44%

Table 2 / NSTM Personnel Gender Analysis

	Existing Number	Males	Male Ratio	Females	Female Ratio
Researchers	27	12	44.44%	15	55.56%
Civil Servants	41	22	53.66%	19	46.34%
Senior/Junior Contract employees	49	18	36.73%	31	63.27%
Technical/Maintenance Worker	14	9	64.29%	5	35.71%
Total	131	61	46.56%	70	53.43%

3 Educational Statistics

We currently have a total of 131 employees, out of which, there are 15 with PhDs, 58 with master's degrees, 52 college graduates, 6 high school graduates or below. Our personnel educational statistics analysis is as Figure 3.

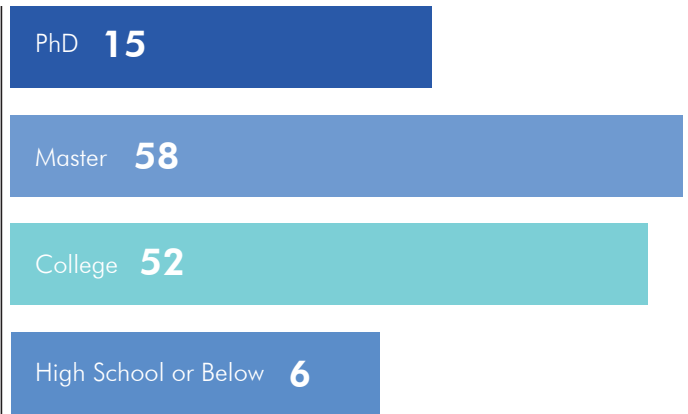


Figure 3 / Personnel Educational Statistics

4 Researcher Backgrounds

1 Researchers Educational Statistics

We currently have 27 researchers, out of which, there are 12 with PhDs, and 15 with master's degrees. Our researchers educational statistics analysis is as Figure 4.

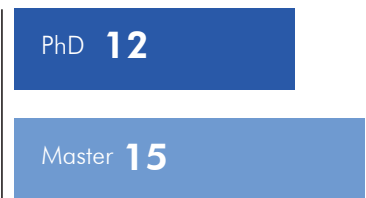


Figure 4 / Researchers Educational Statistics

2 Researchers Academic Background Statistics

We currently have 27 specialized personnel, out of which, 9 are affiliated with Science and Technology, 9 are affiliated with Education, 2 are affiliated with Design, 7 are affiliated with Humanities and Social Sciences. Our researchers' academic background statistics analysis is as Figure 5.

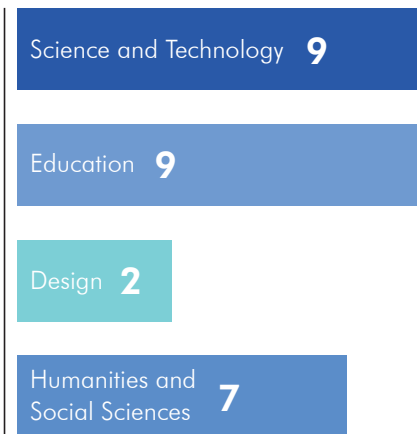


Figure 5 / Researchers Academic Background Statistics

NATIONAL SCIENCE & TECHNOLOGY MUSEUM
2014 Annual Report

Collections & Research

Under the principle of sustained development, Collections & Research Division combines the concepts of "making technology closer to life, and improving life via technology" in actively promoting out key operations. The 2014 annual operations on item studies, collections statistics, Open Storage, Popular Science Library, academic exchanges, creative and cultural developments, research findings and publications statistics are as follows:



Häne

Collections Research

Item Study

1 Item Studies

In 2014, we conducted eleven item studies including: printing industry, measuring instruments, Typhoon Morakot Disaster historical artifacts survey and collection, the textile industry, the TV industry, museum history research, the bicycle industry, lock research, ancient machinery research, social education agency digital creative culture and digital education project, and NTU campus cultural assets. During the course of the studies, we continued to collect relevant items of value, object interpretation, and collection promotions. Other than publishing academic papers, the research findings were also designed and made into e-books and APPs (Figure 6) free for the public to download. The relevant link is provided below:

<http://valueadded.nstm.gov.tw/tour/index.aspx?Parser=13,5,29>



Figure 6 / Ancient Locks, Measurements, and Typography E-books and APPs.

2 Collection Statistics

In 2014, there were 328 items registered into the collection, including 302 donated items, 25 collected items, one purchased item, zero transferred items. The stored items were provided adequate storage conditions in accordance to their materials in order to provide them with a sustainable environment for preservation. Due to the implementation of the “Group Object Renumbering” project in 2014, the annual accumulated number of collections has reached 40,133 items (Table 3).

Table 3 / Collection Statistics

Item Year	Total	Collected	Purchased	Donated	Transferred	Other	Annual Accumulated Number	Temporary Custody
2010	162	5	0	157	0	0	1,323	140
2011	151	51	14	86	0	0	1,474	241
2012	219	23	7	172	17	0	1,693	4
2013	328	31	0	297	0	28,161	30,182	0
2014	328	25	1	302	0	9,623	40,133	0

3 Open Storage

The Open Storage provides the public with a space to be in close contact with the collections. Through small collection exhibitions and promotions, other than enabling the public to understand the collections and industrial developments more in depths, they could also assist in training artifact maintenance volunteers via artifact maintenance technology demonstrations to

Collections Research

Open Collections Library

prepare for the artifact maintenance center in the southern regions in the future (Figure 7).

The researchers transformed the findings on item studies into promotions. We held 12 collection promotions in 2014, and added diverse courses such as the “Ceramics Maintenance Workshop,(Figure 8)” “Technological Artifact Health Depot,” “Small Collectors,” and “Open Collections Library Summer Experience” events, developing different ethnic groups for museum visits, and serviced a total number of 13,993 people.



Figure 7 / Artifact Maintenance Technology Demonstration



Figure 8 / Ceramics Maintenance Workshop

4 Popular Science Library

The reading space of the Popular Science Library is 1,350m², providing for a free reading space for popular science books, DVD visual/audio, popular science comics, and children's popular science books. The Popular Science Library is based upon the concept of a "green museum," allowing technology to firmly take root via readings on popular sciences, enabling the museum to become the center for life and learning for the public, which can also broaden the scope of educational learning of the visitors (Figure 9). The Library has a collection of 45,007 books, primarily related to science and museology; 114 kinds of periodic journals, primarily related to design and educational information; and the database contains educational databases, newspaper databases, periodic journals, and thesis papers.

In correspondence with the implementation of the 12-year national education, in 2014, the Popular Science Library conducted reading activities on a diversity of themes. Other than indoor seminars and learning activities, we even expanded to the participation and observation of ecology out in the world. We also improved families' interests in using the Library via promoting Library Membership Cards and point-collection events, developing different audience groups. The Library serviced 15,850 people in 2014.



Figure 9 / Popular Science Library

Collections Research

Academic Exchanges

5 Academic Exchanges

Adequate themes were chosen from the field of museology, and invited both domestic and foreign scholars and experts to participate in discussions. On Oct 2nd and 3rd 2014, the NSTM held the “Museums Are So Much Fun!” (Figure 10) 2014 International Conference on Museum Marketing with five other units, which were: the Graduate Institute of Conservation of Cultural Relics and Museology of the Tainan National University of the Arts, Art Restoration & Conservation Scientific Research Laboratory of Cheng Shiu University, NCKU Museum, Department of Theater Arts of National Sun Yat-sen University, and the Chinese Association of Museums. Three foreign speakers, including Prof. Ruth Rentschler of Deakin University (Melbourne Campus, Australia); published a total of 55 theses; and the participants over 400 people.



Figure 10 / “Museums Are So Much Fun!” 2014 International Conference on Museum Marketing



6 Creative and Cultural Developments

In 2014, the NSTM developed creative merchandise based on the museum collections. Besides emphasizing the features and meanings of the original item, the visibility of our collections was also improved via the power of our creative merchandises gradually. The NSTM established the cross-department merchandise team on Mar 26, 2014, with the Collections & Research Division and Public Service Division heads serving both as the organizers. This team was in charge of creative merchandise design, collaboration development, consignment, marketing channels, self-selling, and legal operations.

Our annual 12 creative merchandises included: the “Scholar Lock Pen Drive,” the “Money Matchbox Color Pencils Set,” the “Early Taiwan Measuring Instrument Tape Set,” the “IDF 3D Postcard,” the “Film Reel Bookmark,” the “Lead-Printed Hand-Made Postcards two types),” the “Collections Poker Cards,” the “Collections Bookmark,” the “Ring of Science,” the “Micro Building Blocks,” the “Pinhole Camera DIY Kit,” and the “3D Stamp.”



Figure 11 / Certain Creative Merchandise



Collections Research

Research findings and Publications Statistics

7 Research findings and Publications Statistics

For the research findings in 2014, a total of 25 journal papers, 50 conference papers, three books, and 12 relevant publications were published, as well as participated in 16 research projects. The devotion and effort of the NSTM personnel proved to be beneficial to museology-related fields (Table 4).

Table 4 / Research findings and Publications Statistics

Item year	Journal Papers	Confer- ence Papers	Research Projects		Invited to Academic Lectures	Publications					Symposiums	Lectures
			NSTM Personnel as Hosts	NSTM Personnel as Participant		Books	CDs	MSMs	Foldings	Journals		
2010	32	24	14	14	21	4	1	1	4	2	3	0
2011	29	27	17	6	24	2	3	1	16	2	2	28
2012	36	28	17	3	6	5	0	1	8	2	2	38
2013	28	26	7	3	3	3	0	2	11	2	1	20
2014	25	50	10	6	17	3	0	1	9	2	2	18

NATIONAL SCIENCE & TECHNOLOGY MUSEUM
2014 Annual Report

Exhibitions



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This year, we introduced a total of 29 exhibitions, renovated and reopened 3 permanent exhibition halls, as well as updated partial exhibition units in the permanent exhibition halls. We continued to maintain all the exhibited items, implemented the quantification of operations, and the proper functioning rate of exhibits exceeded over 91.85%. We also developed the Giant Screen Theater "alternative content" service project to improve the operational performance of the theater.

操作說明
Instructions

應棒，使其出現在
一起互動。
er in front of you. Move the
with you.

注意！

體驗完畢請將感應

Exhibitions

Permanent Exhibition Updates

1 Permanent Exhibition Updates

1 “Diseases Prevention Combat Camp 2.0” Permanent Exhibition Hall

The exhibition hall was closed down for relocation/renovations on Jan 1st 2014. After almost half a year of renovations, the “Diseases Prevention Combat Camp 2.0” was reopened on July 30th 2014 on the 4th Floor in the Triangular Hall. The new exhibition hall welcomes the public with a new outlook, as well as a wealth of fun and interactive experiences as Figure 12. The “Diseases Prevention Combat Camp 2.0” expanded upon the previous Aqua Planet theme, inviting the public to become Epidemic Fighters, following three virtual envoys from the Helios Kingdom to learn about epidemics and how to eliminate transmitted diseases. Please pay attention to the actions and dialogue of the demonstrators while visiting the exhibition do not miss out any important epidemic prevention knowledge! Other than the changes in the atmosphere of the new exhibition hall, we also added a few interactive units, as well as upgrading the existing contents. All the fighters must pass through 15 epidemic prevention challenges to obtain the final Golden Fighter honorable title.

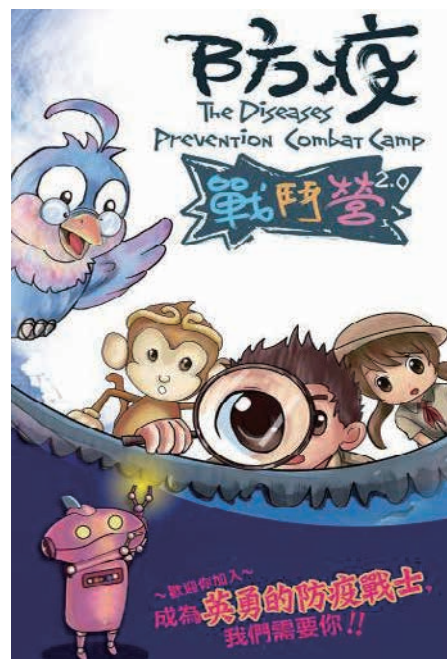


Figure 12 / Diseases Prevention Combat Camp 2.0

Exhibitions

Permanent Exhibition Updates

2 “Recovery and Reconstruction after Morakot” Permanent Exhibition Hall

The “Recovery and Reconstruction after Morakot,” opened on Aug 8th 2014 (Figure 13), introduced the disasters caused by the Typhoon Morakot on Aug 8th 2009 across 11 counties, as well as 175 districts and townships, took 669 lives and destroyed the homes of countless others. It also introduced the reconstruction and relief efforts, as well as scientific concepts of typhoon prevention measures. Our exhibition was hosted in collaboration of the Morakot Post-Disaster Reconstruction Council, Executive Yuan, and was categorized by five different themes: Return to the Typhoon Morakot Site, The Road to Recovery, The Science behind Typhoon Disasters, Reflections & Visions, and Embracing the Future. Other than visual and textual descriptions, the “Recovery and Reconstruction after Morakot” also incorporated interviews with the subjects in the audio guided tour system, allowing a deeper understanding of the event. Our exhibition implemented the 3E planning principle of Educate, Enrich, Entertain, and integrated them with environmental/ecological education to provide the public with the knowledge of how to deal with typhoon disasters: “Avoiding a disaster is better than preventing the disaster; and preventing the disaster is more important than relieving the disaster.” We also planned to provide the first domestic submerged-type Typhoon Morakot Experience Theater.



Figure 13 / Recovery and Reconstruction after Morakot

Exhibitions

Permanent Exhibition Updates

3 “Textile and Clothing” Permanent Exhibition Hall

The “Textile and Clothing” permanent exhibition hall was officially reopened on Dec 9th 2014. Situated on the 4F Circular Hall of the National Science and Technology Museum (Figure 14), the “Textile and Clothing” permanent museum adopted the apparel of the Taiwanese commoners in the past century as the preface to guide the public in immersing and thinking about the cultures and politics of each era, as well as the influence and relations of the changes in fabrics and fashion. The history of Taiwan was divided into 4 eras: The Japanese Occupation Era, The Retrocession of Taiwan, Eastern-Western Exchanges, and Popular Fashion. Through the exhibition displays, the public was able to glimpse into a different living environment and culture in order to gain a deeper insight into the definition of “beauty” for each era. It also provided a channel for the older and younger generations to get to know and accept each other’s view on the so called “youth and fashion.” Additionally, we also put our exclusive relics on display of different units, e.g. Typhoon Pineapple Can, Wulian Bicycles, 8mm film projector, and Lucky radio which enable the public to experience the life in past eras.



Figure 14 / “Textiles and Clothing” Permanent Exhibition Hall

Exhibitions

Permanent Exhibition Updates

4 3D Animation of Water-Drawing Pot Exhibition in “Power and Machines Hall”

The water-drawing pots are displayed at the Ancestor's Wisdom Exhibition Unit (near the entrance) of the “Power and Machines Hall.” The original exhibit was an approximately 80cm static pointed-end ceramic pot model, which was newly updated with 3D animations to introduce the physics and histories behind the water-drawing pot, supplied with subtitles, to help the public in fully comprehending its function (Figure 15).



Figure 15 / 3D Animation of Water-Drawing Pot Exhibition

5 Three Stage Rocket in “Air Navigation and Aerospace Hall”

Through the aid of multimedia, the public is led through Earth's atmosphere to understand the principles behind launching a rocket into space. The “Rocket Exhibition” interactive unit integrates the relevant information and videos from the original exhibition, and displays them via a 4m X 1.5m video screen, demonstrating the tremendous force of the launching of a space rocket accompanied by multimedia special effects. This enables the public to learn about the principles behind launching a rocket, and the differences in design of single and multi-stage rockets, while enjoying the entertaining experience, as Figure 16.



Figure 16 / Three Stage Rocket

Exhibitions

Permanent Exhibition Updates

6 “Earthquake Chamber” moved to “Open Sesame”

The original “Earthquake Chamber” that simulates the magnitude of the 921 incident, which also incorporated earthquake disaster prevention measures, was highly impressive to all who experienced it, as Figure 17. The facility was closed down since the beginning of 2014, and after three months of renovation and relocation, it reopened to public on March 25 2014. Utilizing six multi-directional hydraulic cylinders to simulate earthquakes of 1, 3, 5, and 7 on the Richter scale as well as simulate the heavy swaying during the 921 incident; the audience could not help but scream and laugh. Now it has been moved to the “Open Sesame” with new renovations to allow the public to experience again the force of the 921 earthquake in 1999. Accompanied by 6 additional earthquake prevention education demonstration units, it provides hands-on education to understanding Earth's land structures, faults, quakes, disaster prevention measures, shock-absorbing architecture, as well as the IRIS real-time connection system that synchronizes the records of regional earthquakes globally. The new earthquake demonstration zone, now offers the same powerful earthquake experience. The Earthquake Chamber does not only simulate different scales of earthquake scenarios, but also puts indoor earthquake escape/evacuation procedures to practice.



Figure 17 / Earthquake Chamber

Exhibitions

Permanent Exhibition Updates

7 Solar/Lunar Eclipse in “Open Sesame”

The updated “Solar & Lunar Eclipse” adopts other than the conventional images or models to explain solar and lunar eclipses. The new unit allows the audience to become the Earth itself, using interactive techniques to simulate the positional changes between the Sun, Moon, and Earth. People generally heard of the term before, but are actually confused about their relative positions, but the “Solar & Lunar Eclipse” in the “Open Sesame ” offers an easy way to learn and experience this astronomical phenomenon. An observation chair is placed in the unit with a helmet of the Earth. After sitting down and hitting the “Activate” button, the chair will start to turn gradually, witnessing the solar and lunar eclipses scene when facing or backing toward the sun, as Figure 18.



Figure 18 / Solar/Lunar Eclipse

Exhibitions

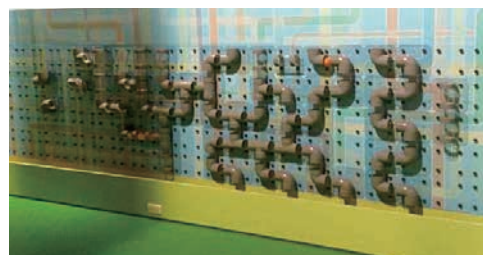
Permanent Exhibition Updates

8 Water Walls in “Children's Science Center”

The new units include three interactive devices of “Oil and Water Separation,” the “Tube Puzzle” and “Where does the Ball Go?” (Figure 19). The “Oil and Water Separation” utilizes the characteristics of liquid density to separate water and oil, displaying the dynamic effect of colored liquid dripped into water. The “Tube Puzzle” is an interactive wall, allowing the audience to connect a variety of T-shaped, L-shaped, and I-shaped pipes into a twisting maze of pipes, allowing a ball to roll through the connected pipes. “Where does the Ball go?” is a gigantic pinball machine; the zigzagging route of every marble falling down is like the rain passing through the twists and turns of the upstream, midstream, and downstream flow. The new unit adopts the characteristics of water to provide an interactive experience for visitors, allowing children to have fun during the interactions. Other than demonstration physical principles, as well as providing an aesthetic experience to serve as a photo-spot for the audience in the zone, it provides learning and understanding in the course of observation, interaction, and sharing.



Oil and Water Separation



Tube Puzzle



Where does the Ball go?

Figure 19 / Water Walls Exhibition Updates

Exhibitions

Permanent Exhibition Updates

9 NAO in "Power and Machines Hall"

Robotics may not only be an emerging industry of the future, via the integration of AI and environmental sensing technology, robots could also become intimate partners to people. In correspondence to the development of robotics technology and industries, via demonstrating the current robotics technology and industry as well as its future visions, the public is able to take a glimpse at the new outlook of the robotics industry. Additionally, via interactive devices and NAO robot demonstrations, they enable the public a chance to understand the structure and functions of a robot, as well as creating the sense of participation and fun in the exhibition, as Figure 20.

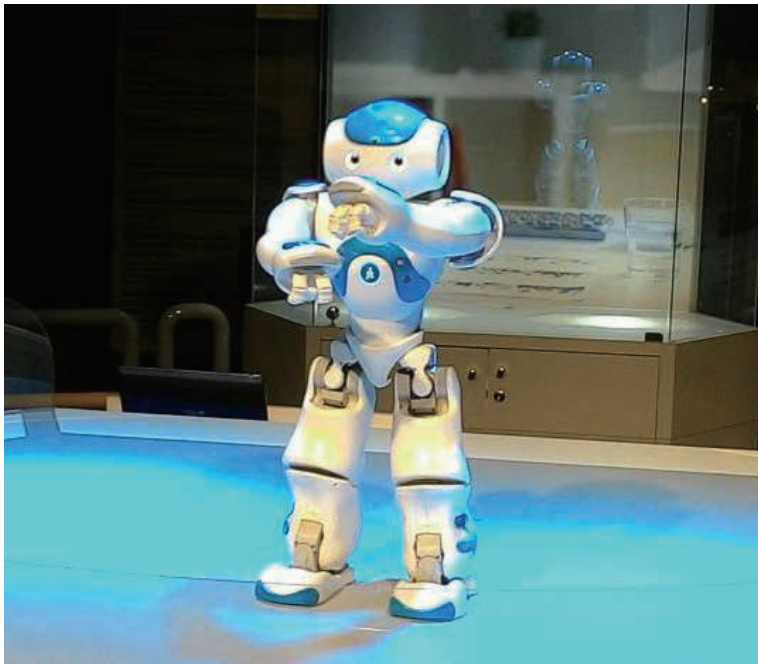


Figure 20 / NAO Robot Demonstration

Exhibitions

Permanent Exhibition Updates

10 Agricultural Farming in the “Biological Technology Hall”

The Biological Technology Hall continues upon the original exhibition to explore and care for the culture and technology of the living world. Partial exhibits on agricultural product cultivation were updated, including the “Induction Zone,” “Cultivation Achievements of Local Biological Species,” “Agricultural Technology Principles,” “Decoding Genetic Codes of Life,” and “The Ethics of Genetics” (Figure 21). In the updated area, the public can walk into the agricultural product cultivation greenhouse, and open a multi-window to gain an insight into Taiwan's cloned cow Chubao, cloned sheep Baoyu, partial pink or green GloFish done by gene transfer, discussion on the secret of mass-cloning selected Orchids in Taiwan, learning how to grow seedless watermelons, decode gene sequences, and learn about the controversies regarding biotechnology. Via simple and lively images, textual descriptions and interactive units, we hope to bring the public closer to multiple aspects of biotechnology.



Figure 21 / Agricultural Farming

Exhibitions

Permanent Exhibition Updates

11 Modern Telecom Exhibition: 4G LTE in “Telecom@Taiwan”

Simply put, 4G LTE combines the merits of “wireless” 3G and the “speed” of fixed line wideband networks. The biggest difference between 3G and 4G LTE is transmission speed, and the biggest different between 4G LTE and fixed line networks is that it is not limited by cables or hotspots. Thus, it could be called the “Internet in Everywhere” . Actual testing suggests that, the speed of 4G LTE is about 20 times faster than usual 3.5G smartphones. Additionally, 4G can form a tight IOT, integrating different modes of wireless communications from wireless area network, Bluetooth closed networks, cellular networks, and TV broadcasting to satellite communications. Different standards are able to interwork with each other by establishing a M2M (Machine to Machine) open communication standard. Therefore, some changes in everyday life occur, e.g. real digital convergence, smart lifestyle, wearable technology, and mobile health management (Figure 22).



Figure 22 / Modern Telecom Exhibition: 4G LTE

Exhibitions

Special Exhibitions and Improving Professional Knowledge

2 Special Exhibitions and Improving Professional Knowledge

1 “Nanometer: The Invisible Scale” Exhibition

The second Nano Exhibition still expanded on the “Nanotechnology Highlights” from the manufacturing and academia industries, featuring hands-on experiences and interactive exhibits. It incorporated the contents of the previous exhibition to show the public the world of nanotechnology (Figure 23). The new content for the exhibition focuses on nano materials as its main theme. The definition of nano material is: It must be at least less than 100 nanometers out of the length, width, and height of an object, as well as materials with new characteristics. Some common materials exhibit great changes when they are nanonized. For example, gold nanonized to under 100 nanometers will no longer be shiny, but having colors of brown, red, or blue. Come to the exhibition zone and try it out, experience the charms of magnetic fluids, see the colors of quantum dots, learn the sterilization principle using nano photocatalysts, and the light transmission characteristics of nano thermal insulation coatings. The exhibition was held from May 3rd to Sep 28th 2014.



Figure 23 / “Nanometer: The Invisible Scale”

Exhibitions

Special Exhibitions and Improving Professional Knowledge

2 “Museum Green Exhibition: Practice and Experience” Conference

Since the 21st Century, even museums must face the issues of climate changes and the trend of energy saving & carbon reduction. Other than planning energy saving and environmental protection-related exhibitions, the exhibits of the museum should also adopt the green thinking of “sustainable development.” From the selection of exhibition materials, recycling and reusing exhibits, to the expansion of relevant concepts, these were all topics that required continued learning from all museum personnel. Based on this concept, we held the Museum Green Exhibitions: Practice and Experience Conference on Dec 5th, 2014, in order to improve the knowledge and professional skills of museum personnel regarding current green exhibition practices (Figure 24). This conference invited domestic experts and scholars in the museum community, including: Exhibition Director Yang Jungshih of the National Museum of Natural Science, Director Geng Fongying of the Graduate Institute of Conservation of Cultural Relics and Museology at Tainan National University of the Arts, and Exhibition Curator Su Fangyi of the National Science and Technology Museum. All of them possessed a wealth of exhibition-related experience, and were able to use the exhibitions as a foundation, and continued to contribute innovative and sustainability-related efforts. Through the knowledge exchange of the conference, we hoped to achieve the goal of exhibition exchanges and passing down of the experiences of domestic museums.



Figure 24 / “Museum Green Exhibition: Practice and Experience” Conference

Exhibitions

Special Exhibitions and Improving Professional Knowledge

3 The Maintenance Team Periodically Inspects the Exhibition Halls and All Experience Facilities to Ensure Normal Operations.

We established maintenance teams and setup a group working method to efficiently utilize our personnel using their strengths and to facilitate cooperation. We repaired or changed over 10 exhibit pieces in 2014, including: Changing the catapult track motor in the “Open Sesame” to non-brush type, changing the foreign differential motor to a domestic motor and sense-activated, changing the Electricity Maze unit wires to steel cables, replacing the old Egyptian Lock unit with a new one, changing the old DVD and LD players in the exhibition hall to digital players, updating the Tower of Hope Water Clock PLC Unit, updating the weight of the air in the Air Navigation and Aerospace Hall, drainage improvements were made in the Weatherbound Expedition of Rain and Wind Environment, improving the submarine exhibition unit in the Transportation and Civilization Hall,



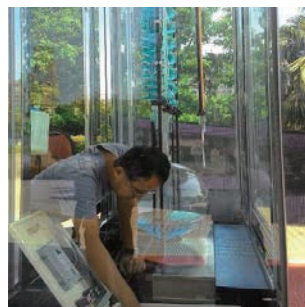
Outdoor Energy Exhibition Unit Maintenance



Experience Facility: Wander Car



Experience Facility: Embosser



Water-Clock Maintenance



3D Film Projection Equipment Maintenance



Self-made Exhibits

Figure 25 / Certain of Maintenance and Experience Facilities

Exhibitions

Special Exhibitions and Improving Professional Knowledge

updating the Telecom @ Taiwan direction inquiry unit, resolving stuck ball issue in the bullfighting area issue in the Diseases Prevention Combat Camp by adding a net in the two hoops and repairing robot in the main hall. The maintenance colleagues and volunteers inspect the exhibition halls periodically and professional technology suppliers for maintenances were also outsourced. All efforts were done according to experienced facility operation procedures, efficiently improving operational stability to ensure public safety and improve service quality. Figure 25 shows the certain of maintenance and experience facilities.

4 Improve Employee's Professional Knowledge and Skills, Enhance Professional Innovative Performance: Self-made Exhibits

Under the principle of sustainable business, we fully utilized professional knowledge and skills to improve the professional quality of our colleagues and promote self-growth. Our design and maintenance team members collaborated in developing the mobile “Lever Principle” and “Kinetic-Potential Energy Conversion” interactive units (Figure 26). Other than enriching the contents of the exhibitions and hands-on experiences of the public, we also provide educational uses for primary and secondary schools via their mobile characteristics.



Power and Machines Hall: Lever



Fantasy Hall: Kinetic-Potential Energy Conversion

Figure 26 / Certain Self-made Exhibits

Exhibitions

Collaboration Exhibitions

3 Collaboration Exhibitions

1 Dark Art

We collaborated with the Since Pro International Co., Ltd. in holding the “Dark Art” (Figure 27). representing the virtual beauty of 2D and 3D, as well as innovatively creating a luminescent effect in the artworks. It was a world-exclusive 3D visual effect of using different light sources in recreating day and night cycles. Other than using creativity, interacting with the artwork, and taking photos with them, the magical charms of the artworks emitted at night could also be experienced, which was far beyond the traditional impression regarding 3D artworks. By introducing the most popular international trend in arts, it subverted the traditional impression of a stale art exhibition, and offered a completely new feast of art. The exhibition was held from June 17th to Sep 10th 2014.



Figure 27 / Dark Art

Exhibitions

Collaboration Exhibitions

2 Master of Light – Vermeer Exhibition

United Daily News and ourselves had received the full support of the Delft Vermeer Centre in Holland, the homeland of the artist Vermeer, in holding an exhibition that displayed all of Vermeer's life work via a technological demonstration show. This was a true education exhibition that combined entertainment and learning, and was also the first large-scale international exhibition on Vermeer in Taiwan (Figure 28). Vermeer's works are stored and treasured in 18 major museums across the world. Since Vermeer's works are rare and highly valuable, no museum in the world could ever host a show of all 37 pieces of Vermeer's works in one place. This unprecedented exhibition utilized different education angles, latest digital printing technology, and a diversity of hands-on interactive experiences, to gain an insight into this mysterious artist in understanding the life of Vermeer, as well as exploring the rich historical and artistic knowledge of the golden 17th Holland. This exhibition was held from July 2nd to Sep 14th 2014.



Figure 28 / Master of Light – Vermeer Exhibition

Exhibitions

Collaboration Exhibitions

3 Glory of the Tang Prize: Laureate and Design Exhibition

The “Tang Prize” was founded to follow the Nobel Prize spirit, aimed to aid in education and learning and cultivate talented people, so it is also known as the Oriental Nobel Prize. The Tang Prize had 4 major categories, including Sustainable Development, Biopharmaceutical Science, Sinology, and Rule of Law, which is held biannually. The list of winners of the first Tang Prize was released on June 18, 2014, and the winners were: Gro Harlem Brundtland for sustainable development; James P. Allison and Tasuku Honjo for biopharmaceutical science; Albie Sachs for rule of law; and Yu Ying-shih for Sinology. This exhibition was held in honor and to present these pioneering winners and their contributions. Additionally, the exhibition also incorporates the winning works of “Tang Prize: Medal & Diploma Design Competition” and “Tang Prize: Laureate and Design Exhibition” hosted in collaboration by Tang Prize Foundation and Taiwan Design Center. At the same time, the winner and the winning works of the Medal and Design contests were also the brightest shining example out of the four Tang Prize winners (Figure 29). The exhibition was held from Oct 4th to Nov 9th 2014.



Figure 29 / Glory of the Tang Prize: Laureate and Design Exhibition

Exhibitions

Collaboration Exhibitions

4 “Sentinel of Taiwan and the World” Formosat-2 10th Year Touring Exhibition

We collaborated with the National Space Organization in hosting the “Sentinel of Taiwan and the World” Formosat-2 10th Year Touring Exhibition (Figure 30). This exhibition introduced the past, present, and future of Taiwan's own artificial satellite Formosat-2, as well as a model replica of the satellite. The exhibition especially compiled the images taken by Formosat-2 into pictures, videos, interactive games, as well as showing rocket models. It adopted an entertaining method to introduce the public to the satellite technologies that were intimately connected to our everyday life, and to learn about the satellites that silently watched over us in space. The contents of the exhibition included a 3D geographical map of Taiwan, pictures of other satellites in the world, a full-scale model replica of the Formosat-2 satellite, as well as a simulated fly-over of Taiwan video, and the “Big Steps across Taiwan” interactive game. Other than the already-launched Formosat-2 remote sensing satellite and Formosat-3 research satellite, Taiwan would also launch more satellites in the near future. The missions and progress of these satellites were also introduced to the public in the exhibition. The exhibition was held from Dec 20th 2014 to Mar 1st 2015.



Figure 30 / “Sentinel of Taiwan and the World” Formosat-2 10th Year Touring Exhibition

4

3D Theater

1 Promoting the NSTM Educational Stereoscopic Film Feature, Designing a Customized Learning Sheets

In order to promote the 3D stereoscopic films of the NSTM, and use the educational and promotional characteristics exclusive to 3D films to the fullest, special project teams are formed to develop scientific educational film-related elements. The aims is to integrate with the primary and secondary school science courses to formulate customized learning sheets, in order to attract the targeted student-group to watch the films, as well as opening ourselves to school field trips, enabling our large screen theater to serve as the best choice for school field trips. In 2014, we finished the development of “Space Junk” and “The River Odyssey of Life” customized learning sheets (Figure 31).



The River Odyssey of Life



Space Junk

Figure 31 / Films of 3D Theater

Exhibitions

3D Theater

2 Improving Theater Facility and Service Quality

Since the second half of 2014, all the films played in our 3D theater are with Chinese subtitles to enable the hear-impaired to read and understand. Additionally, the subtitles can be used as translations for foreign films, allowing the public without foreign language skills to hear the original audio, as well as understand the content of the program. This upholds the spirit of establishing the rights for disadvantaged groups, and improves the service quality of our theater to all general public (Figure 32).



Figure 32 / 3D Theater.

Exhibitions

3D Theater

3 Developing “Alternative Content” Service Program

In order to improve the efficiency of the 3D theater, we plan to utilize the existing digital projection system in 2014 to provide a diversity of services, and seek “alternative content” to support the traditional source of income. On Sep 28th 2014, we hosted, in collaboration with Winner Audio & Video Corporation, the premier event for the 3D Animation “Frogville ” (Figure 33). The film is about Taiwan's own native frog species that is less than 2 cm in length, the *Microhyla heymonsi*, and how it led its people in finding Frogville. It is hoped that the local theme can trigger a genuine emotional response from the people of Taiwan, while also representing our emphasis on education. It is entertaining, educational, and suitable for all family and kids. The theme songs of the film are performed by the “Taiwanese Indigenous Children's Choir” of the Bunun tribe. This film has also been submitted to compete for the 51th Golden Horse Best Animation Award.



Figure 33 / 3D Animated Film “Frogville”

Exhibitions

Out-of-the-Museum Service Performance

5 Out-of-the-Museum Service Performance

1 Self-curated Touring Exhibition

The “Under Keys & Locks” exhibition held in 2012 was full with images and textual descriptions on the principles and evolutions of locks. Its entertaining interactive exhibits enabled the public to easily understand how a variety of locks operate. The collection and ancient locks were also eyes-opening. This exhibition attracted the attention of the Macau Science Center, and they contacted us in 2013 to discuss the possibility of bringing the exhibition in full to Macau. After months of discussions and negotiations, the collaborative project was finally confirmed and established. The Macau Science Center hosted the “Under the Keys & Locks” exhibition from Jun 20th 2014 to Jan 4th 2015 (Figure 34).



NSTM Director-general, Exhibition Division Director Wu Peisiou, Specialist Jheng Zongjhe, as well as Macau Science Center President Lin Jincheng, President Li Peilin, and Curator Shao Hanbin all participated in the ribbon-cutting opening event of the exhibition.

Figure 34 / Opening event of “Under Keys & Locks” in Macau Science Center

Exhibitions

Out-of-the-Museum Service Performance

Other than bringing the extraordinary exhibition to Macau in full, we also selected 160 delicate ancient keys to exhibit in Macau, fully utilizing our collection of relics and resources, expanding the functions of the museum. Via this collaborate project, we enabled exchanges and visits with Macau, establishing a good museum-to-museum relationship.



Figure 35 / Preparing Exhibition of “Under Keys & Locks”

ExhibitionsResults of Combining Social Resources

6 Results of Combining Social Resources

1 Demonstrative Educational Event by Injection Molding Machine : I Love Mammoths

We collaborated with the Department of Mold and Die Engineering of National Kaohsiung University of Applied Sciences, FCS Machinery Manufacturer Co., Ltd., and Formosa Plastics Corporation in holding this exhibition. Through the hands-on experience of the injecting molding machines, the public got to learn the process of how molds are made (Figure 36). Additionally, the public was able to bring back the exclusive and adorable models of mammoths home. The exhibition was held from Feb 28th to Jun 15th 2014.



Figure 36 / Demonstrative Educational Event: I Love Mammoths

Exhibitions

Results of Combining Social Resources

2 Hello, Mr. President! A Panorama Review of R.O.C.-U.S.A. Summit Diplomacy

2014 was the 35th anniversary of the signing of the Taiwan Relations Act, and the Ministry of Foreign Affairs especially held the “Hello, Mr. President! A Panorama Review of R.O.C.-U.S.A. Summit Diplomacy” touring exhibition (Figure 37). The first session was held in Kaohsiung on the 25th, enabling the public a chance to understand the deep history and friendship shared between the two countries. The “Hello, Mr. President” held by the Ministry of Foreign Affairs in Chiang Kai-shek Memorial Hall attracted the attention of over 40,000 people within a period of a month, and was well-received. In view of this, the Ministry of Foreign Affairs decided to hold this exhibition throughout the provinces in honor of the 35th anniversary of the signing of the Taiwan Relations Act in 2014, in order to deepen the public understanding of the relationships and historical developments of the two countries. The exhibition was held from Mar 25th to Apr 12th 2014



Figure 37 / Hello, Mr. President! A Panorama Review of R.O.C.-U.S.A. Summit Diplomacy

Exhibitions

Results of Combining Social Resources

3 Sustainable Taiwan: Reconstruction After Typhoon Morakot Photography Exhibition

In order to let the national public witness disaster-relief efforts, the Typhoon Morakot Disaster Recovery Committee of the Executive Yuan held the “Sustainable Taiwan: Reconstruction After Typhoon Morakot Photography Exhibition” on our 6th floor. Via a series of detailed images, it brought the public to relive the Morakot disaster, using the photos to demonstrate the pride of Taiwan (Figure 38). This “Sustainable Taiwan: Reconstruction After Typhoon Morakot Photography Exhibition” utilized art installations that used imageries of permanent housing as the theme to present and reconstruct a story of reconstruction through pictures. The exhibition was divided into the themes of: The Typhoon Disaster of the Century, Building a Sustainable Home, Respect Nature and Human Rights, Land of Hope and Visions, The Grand Alishan, Emerging Industries, Spiritual Restoration, and Cultural Aspects. In terms of its details, other than arranging them in accordance with the timeline of the Morakot disaster, it was also distinguished by topics, enabling the greatly complicated disaster relieve and reconstruction efforts to be simplified for easy understanding. Additionally, via ingenious designs and motion-flow planning, we allowed the visitors to travel back to the scene of the disaster via the images, helped the affected population to walk out of depression by seeing the entire process and result of the reconstruction. The exhibition was held from Aug 22th to Dec 28th 2014.



Figure 38 / Sustainable Taiwan: Reconstruction After Typhoon Morakot Photography Exhibition

Exhibitions

Results of Combining Social Resources

4 Across Africa: Chen Tianpu Photography Exhibition

We specially invited the Frank C. Chen Foundation for Culture and Education to hold the personal photography exhibition of Mr. Chen Tianpu. Chen was the president of the Frank C.Chen Foundation for Culture and Education, who was inspired by his father Frank C. Chen, and became interested in photography. Aside from a busy working life, he took pictures whenever and wherever he could. This exhibition was named “Across Africa,” presenting a series of photos of birds, animals, and environments that Chen took while he toured South Africa (Figure 39). Through the photography exchange in this exhibition, we hoped to share with the general public the special ecology and landscape of South Africa. This exhibition was held from April 19th to Jun 15th 2014.



Figure 39 / Across Africa: Chen Tianpu Photography Exhibition

5 The Precise Moment: Precision Alignment Technology Exhibition

We collaborated with the Metal Industry Research & Development Center in holding this exhibition (Figure 40). The Metal Center had always been actively promoting the R&D results to be applied in the industry. In order to enable the general public become aware of the crucial roles of technology R&D play in daily life, we established a human-computer interactive experience zone, including rapid detection machines among other. This enabled the public to understand the technological relationship of 3C products and touch panels.



The exhibition also included the “Robot Heat” show combining the Prince Ne Zha robots and electronic music. This exhibition was held from Jul 10th to Aug 31th 2014.

Figure 40 / The Precise Moment: Precision Alignment Technology Exhibition

Exhibitions

Results of Combining Social Resources

6 Food Packaging Exhibition Unit

This exhibition area introduced the business story of Mr. Ye Yifang of inventing the sealing machine (Figure 41). In correspondence to the implementation of the 12-year national education, the exhibition encouraged students to use, and use the scientific attitude and creativity to resolve inconveniences in life, so everyone could be an inventor. The exhibition also designed a “Sealing Machine DIY” event, allowing the public to seal words of blessings in a cup. This exhibition was held from Jan 25th 2014 to Mar 31th 2015.



Figure 41 / Food Packaging Exhibition Unit

7 2014 Nationwide Student's Picture Book Creation Award

The “2014 Nationwide Student's Picture Book Creation Award” was organized by the National Taiwan Arts Education Center, counselled by the Ministry of Education, and co-organized by NSTM and the National Dong Hwa University (Figure 42). Its aim was to realize every child's dream of making their own unique picture books through their own creations, stories, and paintings. This exhibition exhibited original works that were awarded with Excellence Award or above, suitable for children 3-12 of age. This exhibition was held from Dec 4th to Dec 28th 2014.



Figure 42 / 2014 Nationwide Student's Picture Book Creation Award

NATIONAL SCIENCE & TECHNOLOGY MUSEUM
2014 Annual Report

Technology Education



Technology Education

Summer/Winter Science Camps

The NSTM hosted a multitude of science-themed educational events with the core principle of “making technology closer to life, and improving life via technology” in the categories of: physics, chemistry, biology, electricity, astronomy, lego, art, parenting, children, and life science, providing a diverse learning resource, creating a scientific educational environment, and achieving the goal of “everyone’s a scientist.” In 2014, we have hosted 2,455 events, with a visitor count of over 333,106 people, as table 5.

Table 5 / Statistics of Technology Educational Activities in 2014

	Theme-based Learning									Total
	Summer/ winter Sciences Camps	Weekend Learning Courses	Educational Groups Booked Activities	Hands-on Science	Miscellaneous(include Teachers’ workshops)	Scientific Competition(include achievement exhibition)	Energy- Conservation House Promotions	Specific Ethnic Group Activities	Project-type Programs	
Sessions	195	136	335	715	154	128	27	128	637	2,455
Participants	6,622	1,791	13,605	125,688	5,512	71,689	883	4,058	103,258	333,106

1 Summer/Winter Science Camps

In order to enrich the lives of students during summer and winter vacations, the NSTM promoted a diversity of science education to improve the scientific knowledge and disciplines of our national students via a variety of science experiences. We also provide 5% free slots for specific vulnerable groups,

Technology Education

Themed Learning Courses

and hold summer/winter science camps specifically for preschool, elementary school, and high school students, which include courses in machinery, chemistry, energy, mathematical logic, creativity, life sciences, physics, mathematics, and astronomy. We held a total of 195 camps, and serviced 6,622 people in 2014, figure 43 is “Programmable Robot PvP Competition” Winter Camp.



Figure 43 / “Programmable Robot PvP Competition” Winter Camp

2 Theme-based Learning

1 Weekend Learning Courses

In order to cultivate basic scientific knowledge and discipline in students, and also in correspondence with the spirit of the 12-year national education program to cultivate individual talents, the NSTM integrates applied science resources and developing science-series courses, as well as offers 5% free slots for specific vulnerable groups in holding “Fun Science,” “Pandora's Box of Science,” (Figure 44) “Happy Green Science,” “Small Collectors,” “Fossil Exploration,” and “Astronomy” weekend courses from March to June, and from September to December. In 2014, we held 136 courses, and serviced 1,791 people.



Figure 44 / “Pandora's Box of Science”
Battle Sea, Land, Air Scientific Experiments

Technology Education

Themed Learning Courses

2 Educational Groups Booked Activities

In order to improve basic scientific knowledge in students, and in correspondence to school curriculums, the NSTM planned the “NSTM FUN Science” series hands-on activities (Figure 45) open to bookings by school and educational groups for field trips to improve the chance of a diverse learning opportunity for students. The activities are divided into lower, intermediate, medium, higher elementary levels, and secondary school level environmental education activities. In order to fully integrate with the museum's resources, all courses are matched up with recommended experience units and exhibition halls to improve the learning performance of the activities. We held 335 activities, and serviced 13,605 people in 2014.



Figure 45 / “NSTM FUN Science” Power-Learning Secret Art

Technology Education

On-site DIY

3 Hands-On Science

In order for the students and public to learn basic scientific knowledge through the exhibitions and experiments, the NSTM held Hands-On Science events, guiding the public in the realm of scientific learning via hands-on activities. This year, we held the “Popular Science: The Ship Formosa” in collaboration with the Department of Naval Architecture & Ocean Engineering and Graduate School of the National Kaohsiung Marine University, and conducted on-site submarine demonstration, Cao Chong Elephant-Weighing, canoe-making DIY activities. We held the “2014 Water Conservation Children's Day Festival” (Figure 46) water-month promotion with the Water Resources Agency of the Ministry of Economic Affairs. We also held the “Robot March,” “Dynamic Wheel,” Magic Box,” and “Flying Experience” scientific DIY events on weekends. We held a total of 1,270 events, and serviced 229,329 people in 2014.



Figure 46 / “2014 Water Conservation Children's Day Festival” water-month promotion

4 Scientific Creativity Competition

1 Creative Design Competition using Solar Cell

The NSTM held the “Creative Design Competition using Solar Cell” (Figure 47) in collaboration with Motech Industries, Inc. and its Motech Culture and Art Foundation, with the application of solar photovoltaics as the theme, aimed at university students and above. The 5th competition was held in 2014, and 37 university teams participated with a total of 160 students and teachers on May 25th. In accordance with their creative proposals and models, the winners for Gold, Silver, Bronze, and other prizes were selected on that day. A three month exhibition on winning works was also held with a total of 76 sessions, participated by 52,267 people.

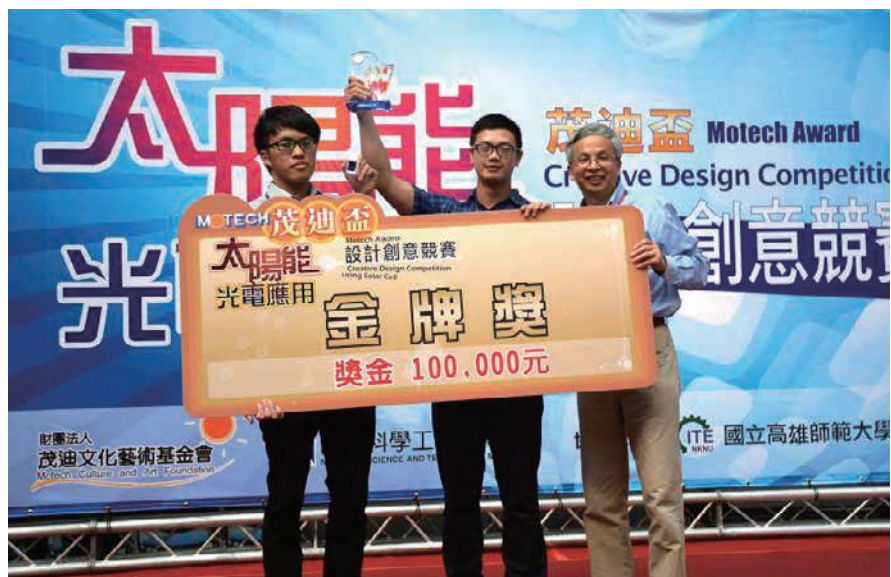


Figure 47 / “Creative Design Competition using Solar Cell” Award Ceremony

Technology Education

National Energy Technology Competition

2 National Energy Technology Competition

In correspondence with the energy technology education promotional policies from the Ministry of Education, the NSTM held the “National Energy Technology Competition” (Figure 48) and “MOE Energy Education Program Result Exhibition” (Figure 49) in collaboration with MOE Energy Education Program Office. 11 briefing sessions and workshops were held between June and July for the “National Energy Technology Competition,” participated by a total of 849 teams with 1,478 students and teachers, and awarded 55 teams and 218 people. The “MOE Energy Education Program Result Exhibition” included the annual results from six energy technology educational alliance centers under its office, winning works from the 2014 National Energy Technology Competition, and invited nine energy technology education promotion elementary/secondary schools, as well as three green energy technology enterprises to participate. The exhibition was held for 18 days, and audience was over 16,000.



Figure 48 / National Energy Technology Competition



Figure 49 / MOE Energy Education Program Result Exhibition

Technology Education

Hand Launch Glider Flying Competition/Robot Competition

3 Hand Launch Glider Flying Competition

In honor of the Wrights Brothers in designing the first manned heavier-than-air air-craft in 1903, as well as promoting aerospace science, the NSTM held the 4th “Hand Launch Glider Flying Competition” (Figure 50) on December 13th and 14th aimed at senior and junior high school students. The event adopted the method of making-on-the-day, compete-on-the-day with the categories of “Straight Flight” and “Endurance Flight,” while taking into considerations of creativity and the scientific principles of flight. It was aimed at training students in developing designing, thinking, and problem solving abilities. The event was participated by 138 senior high school teams, 116 junior high school teams, and a total of 460 students and teachers.



Figure 50 / 4th “Hand Launch Glider Flying Competition”

4 Robot Competition

In promotion of cross-industry integration and utilization of scientific knowledge, as well as the motivation in learning and participation of students in robotics, Esunra invited the NSTM in organizing the 2015 FIRST LEGO League and FIRST Tech Challenge creative robot competition (Figure 51). The competition was participated by a total of 828 people, including contestants, their families, and audiences. The association also organized the “2014 World Robot Olympiad 2014 National Auditions Southern Region Preliminaries” with the NSTM as co-organizers. The competition was participated by 56 teams with 209 contestants and coaches. Winning senior high school, junior high school, and elementary school teams were to participate in the national finals.



Figure 51 / 2015 FLL and FTC Creative Robot Competition Site

Technology Education

Energy-conservation house promotions

5 Energy-conservation house promotions

The NSTM conducted the energy-saving volunteer training in certified environments within the museum, bringing volunteer groups passionate in serving as well the public into the “LOHAS Energy-Conservation House,” (Figure 52) allowing the house to provide knowledge learning through live-demonstrations and workshops, in order to convey the public with household and everyday life energy-saving skills. This was done in correspondence with the expanded “Energy-Saving & Carbon-Reduction” movement principle of the Bureau of Energy. We held 15 “Energy-Saving Partners: Volunteer Alliance-Joining Seminars,” participated by 339 people in 2014. We also brought students into the “LOHAS Energy-Conservation House” to conduct energy-saving & carbon reduction, environmental protection, and everyday life energy-saving education, holding 12 “Green Life Workshops,” servicing 554 people.



Figure 52 / “LOHAS Energy-Conservation House”
Guided-tour



Technology Education

Specific Ethnic Group Activities

6 Specific Ethnic Group Activities

1 Remote Area Disadvantaged Group Activities

In order to care for disadvantaged students, the NSTM strived to obtain the sponsorship of Shui-Lai Chen Foundation in holding the “Scientific Banquet Event: Science Papago” project (Figure 53), sponsorship of Happy Net in holding the 2014 “Multi-Ethnic Group Science Education” promotion collaboration project, and science education banquet events for 2nd generation new resident and remote area students. We held 71 sessions, and serviced 2,839 people in 2014. Additionally, we obtained the sponsorship of the Motech Culture and Art Foundation in holding the Solar Energy Journey event for elementary schools in remote regions of Tainan. We held 10 sessions, and serviced 400 people this year.



Figure 53 / Science Papago Thank-You Ceremony

2 Adult Education Learning Activities

In establishing the principle of a community popular science learning center, the NSTM exclusively held the 24-hour museum courses: “NSTM Creative Life School” series learning activities. (Figure 54) The activities were aimed at adults, and held the courses at weekday nights and weekend afternoons to establish an all-day-long knowledge-sharing environment, providing regular adults a chance for a life-long education. It was well-received and recognized by the students. We held a total of 32 sessions, and serviced 453 people in 2014.



Figure 54 / “NSTM Creative Life School” Erhu Presentation

Technology EducationSenior Series Courses/Honor Example Courses

3 Senior Series Courses

The NSTM held the “Technology Senior Alumni Association” series courses (Figure 55) for the elders, providing useful aids for retired individuals or homemaker. The series of courses primarily focused on convey concepts on nutrition, sanitation, health, technology, and environmental protection. Through the courses and travels, they enabled the senior age groups to obtain useful life-sciences in a pressure-free manner. We held 12 sessions, and serviced 273 people in 2014.



Figure 55 / “Technology Senior Alumni Association” Series Courses

4 Honor Example Courses

In correspondence with the implementation of the 12-year national education, in order to satisfy the demands for junior and high school honor classes or other special educational activities, the NSTM developed the example learning courses through conducting customized learning course planning and developing of new activities. We held three whole-class honor classes for junior high schools, and serviced 93 people in 2014.

7 Project-type Programs

1 The Ministry of Education financially supported the “2014 Popular Science Forum” .

The Popular Science Forum led and conducted by the Ministry of Education since 2012 is aimed at gathering a nationwide consensus on integrating and promoting popular sciences, and promoting the establishment of an integrated promotional mechanism to facilitate the actual collaborative relationships in various industries, as well as creating a popular science education promotion and added-value application platform. The NSTM held the “2014 Popular Science Forum” (Figure 56) on November 21st and 22nd, 2014, with the theme of “Popular Science Encyclopedia: Cross-Industry Integration of Popular Science Promotions” specifically aimed at issues of popular science cross-industry promotion collaboration experiences, workings of foreign popular science promotional organizations, as well as popular



Roundtable Forum

science promotion resource integration and promotional problems. It was conducted via lectures, roundtable forums, group discussions, live popular science books & magazines exhibition, scientific demonstrations, observation on hands-on DIY events, and panel discussions. The forum conducted three lectures, one roundtable forum, eight group discussions, and published 46 theses, had modern popular science books & magazines exhibition, and on-site observation on hands-on DIY events, and one panel discussion in total, in which approximately 520 people participated.



Figure 56 / 2014 Popular Science Forum

Technology Education

Project-type Programs

2 The Ministry of Science and Technology Financially Supported the

“Nanotechnology Education and Training Integration Platform Program”

The NSTM continued to participate in the “Nanotechnology & Popular Science Promotion Platform” and “Nanotechnology Digital Platform” programs, which were part of the national nanotechnology talents cultivation program organized by the Ministry of Science and Technology of the Executive Yuan, conducting nanotechnology education promotions (Figure 57) via a diversity of methods, including the planning and establishment of nanotechnology exhibition area, the 2014 nanotechnology carnival, operation and updates of the nano website, digitalized nanotechnology science education activities, development and demonstration of nano-teaching aids, DIY experiments, learning courses for teachers, and nanotechnology science camps. These enabled the public to experience and learn about nanotechnology via a variety of methods of participation and learning, in hopes to improve the knowledge in nanotechnology and science of the participants. We held 611 nanotechnology and popular science promotions, participated by 98,497 people in 2014.



Figure 57 / Nanotechnology and Popular Science DIY Event

3 The Ministry of Science and Technology financially supported the

“Sunday Science Reading Master” series popular science lectures

In order to promote popular science education for the public, the Ministry of Science and Technology, since 2003, began to financially support the NCKU, NSTM, KUAS, and NAR Labs in conducting this series of lectures. 16 lectures were held in the NSTM South Wing International Lecture Hall in 2014, during which 3,915 people participated, as well as conducting online real-time video broadcasting, enabling the domestic and foreign public unable to be present at the lectures to also participate.

Technology Education

Project-type Programs

4 The Ministry of Education financially supported the “Science Learning Center Construction Plan”

In correspondence with the 12-year national education policy, under the direction of the Ministry of Education and their funds, the NSTM adopted “optimizing existing resources” and “innovating technology courses” as the core strategies, aimed at junior high school students and teachers in establishing the “Science Learning Center” (Figure 58) via upgrading and revitalizing the educational environment and professional resources. Its core spirit was to correspond to the contents of science and life technology related courses in junior high schools in integrating the professional resources of the museum to develop a diversity of adequate courses, that take into account both the “teacher's professional growth” and “student's multi-learning.” The implementation results of 2014 were: we developed 15 teaching models; conducted nine teaching model promotions for seed teacher learning in the NSTM, Pingtung County, Chiayi County, and Tainan City, participated by a total of 326 teachers; implemented teaching packages reaching 250 classes, participated by 102 promotional teachers; conducted 20 school-to-museum promotional courses, five honor class learning camps; conducted 28 disadvantaged group promotions in remote areas with external resources; established the learning center resource website with 6,561 video hits, and 11,458 website hits; and videotaped 36 videos on our interactive exhibit operations and theory in correspondence with junior high school science class curriculum.



Figure 58 / Teaching Package Promotion: Air-Cushioned Crane

NATIONAL SCIENCE & TECHNOLOGY MUSEUM
2014 Annual Report

Public Service



Film Schedule

片名 / Title	時間 / Time
國語 / Mandarin	10:00
英語 / English	12:00
國語 / Mandarin	14:00
英語 / English	16:00
國語 / Mandarin	18:00
英語 / English	20:00

大銀幕影院 / 3D Theater

片名 / Title	時間 / Time	票價 / Ticket price
國語 / Mandarin	10:00	200.0
英語 / English	12:00	200.0
國語 / Mandarin	14:00	200.0
英語 / English	16:00	200.0
國語 / Mandarin	18:00	200.0
英語 / English	20:00	200.0

常設展示廳 / Permanent Exhibitions

展覽名稱 / Exhibition Name	票價 / Ticket price
第一廳 / Hall 1	200.0
第二廳 / Hall 2	200.0
第三廳 / Hall 3	200.0
第四廳 / Hall 4	200.0



Public Service

Visitor Service

1 Visitor Service

1 Improve marketing and service, improve visitor ratings

The number of visitors is a key performance indicator for the museum, as well as a demonstration of the performance goal. In facing with the changing outside environment, other than continue to update and innovate our merchandises, the NSTM also adopted diverse marketing channels, combining social/civil resources, and is actively developing potential visitors and disadvantaged groups. On visitor servicing side, the NSTM provides a diversity of guided tour services and activities, improving service quality, and conducts community events to maintain the customer base, establishing a good interactive mechanism. This year, our customer satisfaction rate is 92.66%, and a total of 2,257,334 visitors served, with a growth of 6% in comparison with the previous year (Table 6).

Table 6 / Number of people visited

Year	Exhibition Hall	IMAX 3D Theater	Paid Special Exhibitions	South Complex	Others	Outdoor Activities	Total Number of People
2010	665,992	164,627	260,418	194,747	444,277	130,949	1,861,010
2011	672,493	159,299	386,860	136,274	558,343	137,521	2,050,790
2012	1,015,065	180,570	416,380	194,370	188,494	523,772	2,518,651
2013	1,340,613	131,535	131,761	201,142	163,636	701,949	2,670,636
2014	698,550	113,575	157,223	222,184	155,501	910,301	2,257,334
Total	4,392,713	749,606	1,352,642	948,717	1,510,251	2,404,492	11,358,421

Public ServiceVisitor Service

2 Establish an E-ticket system, improving ticket-purchasing conveniences

In view of the current demands in plastic money in a wide range of applications in modern technological life, in adapting to the needs of the time, the NSTM added a new ticket-purchasing system. Other than the continued use of our current cash and credit card payment operations, we corresponded to the plans of the convenient ticket system proposed in “2014 Happy Green Park Sub-Project” of the “Southern Taiwan Technology Education Green Exhibition Park” under the “Cross-Industry Experience, Learning for Life: National Social Education Agency Cross-Industry Extra Development Project,” and established an e-ticket system. This enabled our tickets, movie tickets, paid experience facilities, and creative arts merchandises, to be substituted with automatic billing and small consumer by card payment options, providing the public with more diverse and convenient services, as well as easing the visitor traffic at the entrance. Additionally, this could be marketed jointly to open up more promotional methods: by collaborating with different units that also adopt e-tickets, and plan marketing activities and promotional events, as well as resource-sharing, creating a win-win situation for all.

This project began procurement bidding on 2014 September, completed the annual testing in phases on December 10th, and is estimated to complete the installation of e-ticket function stations in all areas by May 31th 2015; it is estimated to be in full operation in July 2015. In estimation, this project could service 80,000 people additionally, create 30 employment opportunities, and business opportunities with a value of NT\$38,000,000.

2 Public Relationships and Marketing

1 Utilize media resources, develop marketing channels

In accordance with our marketing network concept, we are to develop and maintain good relations with reporters from print, network, broadcast, television fields, and treat them as best allies in promoting educational events and exhibitions held by the museum. The NSTM has been maintaining a good interaction between educational personnel over the years, establishing relevant database gradually, actively provide latest and relevant information on the museum' s popular science promotional events, enabling the formation of a positive cycle in the industry. word-of-mouth and active promotions enabled the marketing performance to improve every year.

In correspondence to the trend in newspaper editorial fields, we adopted the method of “visual marketing” in constructing an “images aid in getting a newspaper page” thinking logic, and currently have accumulated an image database of over 100,000 pictures. We provide newspaper materials in accordance with our weekly events on scientists, science news, and science events, creating newspaper highlights, and have been well-received.

News regarding our museum can be easily obtain through the constant updates on our official website, active Facebook updates, promotions through e-mail subscriptions, as well as the popular mobile devices (such as smartphones), which is also a good method to develop the marketing channels. This year, we have released 663 relevant print advertisements, issued 52 issues with a total of 397 e-newsletters, broadcasted 52 “NSTM FUN” shows in collaboration with National Education Radio, 13 “Modern Life News” show on National Education Radio, and 44 “Kaohsiung Citizens” shows on Kaohsiung Broadcasting Station.

Public Service

Public Relationships and Marketing

2 Utilize social media, conduct real-time information updates

Due to the popularity of social media, we established a Facebook page in October 2009 with the address: <http://www.facebook.com/ilovenstm>, and have amassed 37,835 fans at the end of 2014, which is 81% more in comparison with the 20,880 fans in 2013. The check-in count after Facebook community page updated was 67,521. We relay information to our internet fans via our FB, which includes permanent exhibitions, special exhibitions, science education events, selected collections, seminars, relevant images and writings, videos, as well as science, environmental education, and science education news. We wish to bring forth applied science and the vision of a green museum in both educational and entertaining manner.

3 Holding holiday art festivals, combining technology and art

In integrating art and technology, improving the performing art quality and artistic sense of the southern regions, the NSTM holds the creative performing art events on holidays, enabling the visitors to enjoy music, drama, and other performances aside from learning new technologies, allowing artistic education to be closer to life, bringing knowledge and sensibility to everyday life. In 2014, we held 18 “Holiday Art Festivals,” with a total of 5,100 visitors (Figure 59). Street artists performances were held on every Saturday and Sunday, and a total of 221 performances were done in 2014.

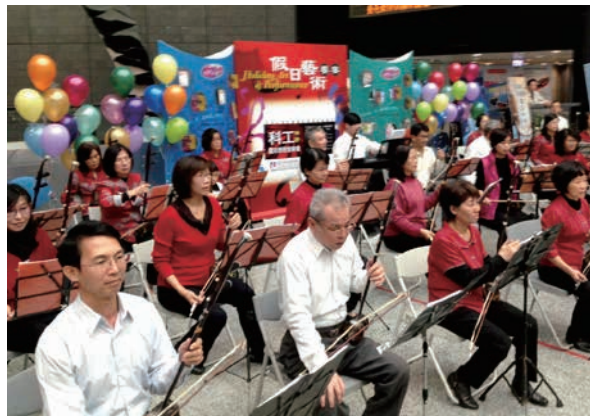


Figure 59 / Holiday Art Festival

3 Guided Tours

1 Provide quality tours, enrich the tour experience

In correspondence with our exhibitions, we provide the public with a diversity of guided tour services, which includes: group guided tours, active guided tours, robot demonstrations, and “periodic guided tours” specific to each different exhibition and exhibition halls. In the current year, we provided guided tour services for 12 exhibitions including: the “Lively Balloon Show ,” “Heroes VS Monsters,” “The Story of Water: Conserve Water Resources Educational Exhibition” , the “Journey of Printing Collections,” “Hello, Mr. President! A panorama review of R.O.C.-U.S.A. summit diplomacy,” “Candy Wonderland,” “Dark Art Luminescent 3D Virtual Art,” “Shipping Governance and Taiwan Exhibition,” ” Master of Light – Vermeer Exhibition,” “Glory of the Tang Prize: Laureate and Design Exhibition,” “Industrial Safety Trick Art Exhibition,” and "Typhoon Morakot Recovery Exhibition Hall." We held a total of 1,800 periodic guided tours, with a total of 5,105 various guided tours in the current year, and serviced 177,382 people.

2 Provide public sectors internships for hands-on experiences of the work environment and personnel relationships

We held the “2014 College Student Internship Project” in collaboration with the YDA of the Ministry of Education to provide two internship opportunities from April to May, 3 from July to August, and one from October to November for public sector interns to be responsible for a various of tasks in the museum, including: training and evaluation of guided tours, special exhibitions, and permanent exhibitions; hosting and operating in robot performance events; issuing, collecting, and analyzing customer satisfaction and service quality surveys. The interns were hard-working and responsible, and completed all assigned tasks. We provided a total of 900 hours of service opportunities for six interns.

Public Service

Utilizing Social Resources

4 Utilizing Social Resources

1 Hand-in-Hand, Side-by-Side

In order to shorten the gap between the rich and the poor, and implement scientific education, we promoted the “Hand in Hand, Side by Side” welfare program for the disadvantaged, accepting the donations of social welfare enthusiasts for NT\$10,000 per lantern to financially support the economically disadvantaged students in visiting the museum. This further facilitates the goal of museum, social resources, and education integration. Through the “NSTM Lanterns of Love” event held this year (Figure 60), we serviced 344 schools, 6,218 students, and helped disadvantaged students in visiting the museum, giving the children a chance to “build a dream, chase a dream, and realize a dream.”



Figure 60 / 2014 Lantern Festival Night: NSTM Lanterns of Love Event

Public ServiceUtilizing Social Resources

2 Adequately utilize social resources to aid disadvantaged groups

We obtain social resources to enable children from disadvantaged groups in visiting the museum, in hopes to improve our business income and visitor counts, while fulfilling museum education duties, and our responsibilities to implement popular science education and social care. This year, the Chunghwa Telecom supported the NSTM with NT\$500,000 to conduct the “Love to Remote Areas: Care Journey for Disadvantaged Students” event (Figure 61). The event was done in two stages on Sept 25th and Nov 6th respectively, and was participated in by 620 people.



Figure 61 / “Love to Remote Areas: Care Journey for the Disadvantaged Students ” Event

Public Service

Utilizing Social Resources

3 Utilize social manpower resource, improve overall performance

The NSTM is the museum occupying the largest area in Taiwan. Under the restriction of limited employees, in accordance with “Volunteer Service Act” of the Ministry of Interior, we invite social manpower resources to join our ranks. The scope of service includes reader services, collection maintenance, collection management, maintenance service, educational activity, exhibition service, Chunghwa Telecom exhibition services, theater service, audience service, volunteer administration, guided tour, nursing, information desk, promotion, group cafeteria, energy-saving house projects, general affairs, and gardening. There were 1,117 volunteers by the end of 2014 with an accumulated total service time of 182,991 hours. We held three volunteer forums, participated in by 200 people; one volunteer recognition ceremony, participated in by 897 people. In gratitude of senior volunteers, we awarded 46 volunteers with 15-years-of-service awards (total service time of 2,250 hours) at our NSTM 17th Anniversary.

Since 2012, we aided in the establishment of the “NSTM Volunteer Fund.” The source of the fund primarily comes from volunteer donations, and flea-market charity events held at our gift shop halls on Sunday afternoons. The funds are used for volunteer gift money, consolations, volunteer travels (Figure 62), as well as charity donations in accordance with the annual balance. The fund balance for 2014 was NT\$316,732.



Figure 62 / NSTM Volunteer Visiting Event

Public ServiceUtilizing Social Resources

4 Provide employment opportunities, encourage student in volunteer services

In correspondence with the implementation of the national 12-year education policy, since 2012, the scores of service learning (volunteer service) in diverse learning performance was counted as an important part. In encouraging students to commit to volunteer services and providing service opportunities, the NSTM amended the “NSTM Social Service Student Operation Key Points,” and the implementation began in June 2012. We conduct educational training once per month, all students enrolled in junior high schools or above are eligible to apply. There were 3,435 students participating in social services with a total service time of 16,319.5 hours in the current year.

5 Conduct community events, building good community relationships

Through the implementation of activities, we provide the community members with the opportunity to utilize the resources of the museum. We held two movie screenings this year; the first was done from 12th to 17th of March, and the latter was done from 14th to 19th of October, participated by a total of 1,149 people. Additionally, the “Experience Vermeer, Explore New Experiences” community event was held on May 25th, and participated by 556 people.

NATIONAL SCIENCE & TECHNOLOGY MUSEUM
2014 Annual Report

Green Museum Project Implementation Results



In 2014, we continued to strive toward the development vision of becoming a "Green Museum" via environment-friendly efforts of "making technology closer to life, and improving life via technology." Based on the principle of sustainable development, we were devoted to create a friendly and comfortable environment for visitors via the four major aspects of "Sustainable Environment," "Sustainable Economy," "Sustainable Culture," and "Sustainable Society." We implemented the social responsibility of improving a fair participation in a diversity of ways, promoted the transmission and innovation of culture, improved cost control, and created a well-established financial mechanism. Our implementation status and results in the current year are as follows:

Green Museum Project Implementation Results

The Sustainable Environment Aspect

1 The Sustainable Environment Aspect

The aim of a sustainable environment was to make the NSTM a friendly, comfortable, and enjoyable environment for visitors. The items of implementation included the three major topics of “energy-saving & carbon-reduction,” “environmental management,” and “green consumption.” The three sub-items of their implementations included: an energy-saving improvement project, a green architecture improvement project, and a green consumption improvement project.

The major implementation results included the annual use of renewable solar energy to generate a total of 198,000 kWh; we reduced the electricity consumption to 1820,000 kWh (13.4% reduction) in comparison with 2013; we reduced the consumption of water by 6,836 cubic meters (8.9% reduction) in comparison with 2013. The North Wing has been certified with the bronze certification Green Building Label for old buildings in 2014, which served as the first “old building” to obtain the “Green Building Label” within the Ministry of Education. The ratio of Green Procurement reached 98%.

2 The Sustainable Society Aspect

The aim of a sustainable society was to fulfill our social responsibilities, pursuing social justice, and develop multiple actors' participation, in order to receive the recognition and support from the public, communities, and other domestic/foreign museum communities. The items of implementations included the three topics of: “Improving Diverse Ethnic Group Education and Services,” “Promoting Community Care and Development,” “Promoting Multiculturalism and International Collaborations.” The sub-items of the implementations included the multi-audience development project, and social collaboration promotion project.

The major implementation results included 37,835 fans from community/media members, showing an 81% growth in comparison with 20,800

Green Museum Project Implementation Results

The Sustainable Society Aspect/ The Sustainable Culture Aspect

people in 2013; the “Hand-in-Hand, Side-by-Side” welfare project for the disadvantaged received a financial support fund of NT\$3,100,962 with an achievement rate of 310%. The actual operational cost was NT\$3,074,804 (implementation rate of 99.2%). In the current year, we serviced 151 visiting units with a total number of 6,218 people.

3 The Sustainable Culture Aspect

The aim of a sustainable culture was to improve the transmission and innovation of culture via our collections research, exhibition, and educational events. The items of implementations included the three topics of “Cultural Asset Preservation,” “Green Education,” and “Green Exhibition.” The sub-items of implementation included the collection and research improvement project, green education promotion project, and the green exhibition and assessment project.

The major implementation results on the side of cultural asset preservation included: the storage and collection of 328 historical items of technology, holding 12 collection promotion and preservation events, developing two creative pieces of merchandise for the museum, and completed 20 cultural asset-related papers. On the side of green education promotion, we held 43 specialized personnel training sessions, and over 200 energy-saving, electricity-saving, solar photovoltaic, new energy technology, environment, ocean, ecology, and disaster prevention sessions, with over 5,5000 participants. Additionally, we continued to conduct science education promotion events for disadvantaged groups, and held 51 educational promotion event aimed for new residents and students in remote areas, including “Science Banquet,” and the “Multiculturalism” series with 2,058 participants. On the side of green exhibitions, we planned to establish the Typhoon Morakot Recovery Exhibition Hall to enable the NSTM to become a quality educational facility for environmental education. We held three environmental protection and energy-saving exhibitions with over 210,000 visitors, as well as five exhibition green assessments with “three gold, two silver” levels, all achieving the “Silver” level or above.

Green Museum Project Implementation Results

The Sustainable Economy Aspect

4 The Sustainable Economy Aspect

The aim of a sustainable economy was to conduct cost control, reduce operational costs, and establish a well-rounded financial mechanism. The items of implementation included the topics of “Resource Recycling,” and “External Resource Utilization.” The sub-item of implementation was the income-increase & expenditure-reduction project.

The major implementation results, on the side of income-increase & expenditure-reduction projects, were that the business and other business revenue for 2014 was NT\$101,700,960, which was NT\$2,991,858 more than the estimated target of NT\$98,708,832. The reduced amount for 2014 was NT\$71,496,178, which was NT\$34,237,379 more than the estimated target of NT\$37,258,799.

NATIONAL SCIENCE & TECHNOLOGY MUSEUM
2014 Annual Report



General Affairs and Environment

General Affairs and EnvironmentGeneral Affairs Management

1 General Affairs Management

1 Public Procurement to Conserve Public Funds

For procurement contracts and tender award cases over NT\$100,000, the accumulated tender budget was NT\$154,294,123, and the awarded amount was NT\$144,956,543. NT\$9,337,580 was conserved in total, with a conservation achievement rate of 6.05%. There were 328 procurement cases between NT\$10,000 and NT\$100,000, the accumulated subscription amount was NT\$13,860,047, reported amount was NT\$13,398,409. NT\$461,638 was conserved in total, with a conservation achievement rate of 3.33%.

2 Interest Income Resource Widening

In order to increase interest income, flexibly utilize fixed deposit methods, other than the existing 401 NSTM account of operational fund in fixed deposit in the Agent Institutions of National Treasury (Taiwan Business Bank, Eastern Kaohsiung Branch), we also conducted fixed deposits at the post office. Currently, the total amount of fixed deposits including in the Taiwan Business Bank and the Post Office was NT\$125,000,000. The income from interest in 2014 was NT\$2,112,024, with a 4% increase in comparison to 2013.

3 Improve File Management Quality

(1) Our “National Science and Technology Museum Archive Storage Room Security and Maintenance Key Points” and “National Science and Technology Museum Archive Storage Room Emergency Response Team Establishment Key Points” have been approved by the National Archives Administration of the National Development Council with Letter Dang-Ci-Zi 1030005240 dated November 3, 2014.

General Affairs and Environment

General Affairs Management/Electromechanical Operations

- (2) Our “National Science and Technology Museum Open Archives Application Key Points” has been approved by the National Archives Administration of the National Development Council with Letter Dang-Ying-Zi 1030005788 dated November 21, 2014.
- (3) Our new archive classification and records schedules have been approved by the National Archives Administration of the National Development Council with Letter Dang-Jheng-Zi 1030005478 dated December 23, 2014, and implemented on Jan 1, 2015.
- (4) Our 2013 annual archive destruction case “NSTM 1986-1988 Proposed Destruction Archive Direction” has been approved by the National Archives Administration of the National Development Council with Letter Dang-Jheng-Zi 1030004624 dated October 7, 2014. The approved number for destruction was 189, completed on October 28, 2014.

2 Electromechanical Operations

1 Conserve Water, Electricity, Oil, Paper to Implement Green Museum

In order to improve electricity-saving equipment, the NSTM completed the replacement of condensation systems in the No.5 ice-storage machine in January 2014, and improved the efficiency of the ice-storage machine; completed the dismantling of terminal wind boxes in three exhibition halls in February 2014, and reduced the power consumption of air conditioning units in the exhibition halls. Additionally, ventilation systems in transformer substations were added, using ventilation in place of air conditioning units

General Affairs and Environment

Electromechanical Operations

to cool the transformer substation internally. This completed the replacement of condensation systems in the No.4 ice-storage machine in July 2014, and improved the efficiency of the ice-storage machine. 21 inverters were added in the air conditioning system, reducing the power consumption of the air conditioning units; and completed the replacement of water cooling towers in the South Wing in December 2014, replacing the original single unit 600RT cooling towers with two 250RT cooling towers, improving the overall system efficiency and system maintenance procedures.

After the improvements, in comparison with 2013, the power consumption was reduced by 1,818,829 kWh in 2014 with a power-reduction rate of 14.92%. The water consumption was 69,805 cubic meters, with a reduction of 6.836 cubic meters in comparison with 2013, and the reduction ratio was 8.92%. The reduction in fuel consumption of official vehicles in 2014 was reduced by 4.66% in comparison with 2013. The NSTM fully promoted the online approval of official documents and digitalization of conference data; the ratio of digitalizing official documents was 76.9%, efficiently reducing the consumption of paper.

2 Hazard Prevention Drills

The NSTM held one flood drill in 2014, improving the emergency response skills of our electromechanical department colleges and water/power companies. Additionally, two fire drills group trainings were held to improve the familiarity of our colleges in handling fire equipment, and the handling skills of the group in the event of disasters.

General Affairs and Environment

Electromechanical Operations

3 Improving Efficiency of Public Facilities

In order to improve public facility servicing functions and achieves fire-blocking functions, as well as improving public facility safety, the NSTM completed the inspection and maintenance of 131 rolling doors in the NSTM on Feb 26, 2014. Additionally, in ensuring public safety and prolong building-life span, stone-material inspections were done on the South Wing outer wall on Dec 5, 2014.

4 Environmental-Protection Promotion for Sustainability

The NSTM continued to receive the financial support from the Soil and Water Conservation Bureau of the Council of Agriculture of the Executive Yuan in the “2014 Soil and Water Conservation Outdoor Education Promotion and Diversified Promotional Plan.” It was divided into competition-type and awarding-type supporting plans with a total of NT\$906,037 (NT\$168,963 was returned after balancing the account). It was conducted by the Exhibition Department, the Science Education Department, the Public Service Department, and the Secretariat in collaboration. The Secretariat conducted the following promotions on environmental sustainability.

- (1) In correspondence with the Soil and Water Conservation Month (Apr 15 – May 31), we conducted the Soil and Water conservation and disaster prevention promotion on the slope outside the museum. We also provided passing on to the public the importance in Soil and Water conservation and disaster prevention in everyday life via establishing billboards. A total of 1,104 people were estimated to have stopped and read the board. Subsequently, in order to improve service quality, worn billboards were replaced by the end of October. Ecological engineering methods and disaster prevention strategies were added to the billboards, with a total visitor count of 812.

General Affairs and Environment

Electromechanical Operations

(2) In assisting the Science Education Department in integrating the visits to the water conservation exchange classroom and energy-conservation house, Soil and Water conservation science education activities were in from March to June, and inviting suitable groups to participate for free (Figure 63). We conducted introductions on environmental disaster prevention and energy issues via lively courses and professional lectures. 14 sessions were held in total, participated by 321 people.



Figure 63 / Soil and Water Conservation and Disaster Prevention Promotions on outside slopes in the NSTM

(3) The 2014 water conservation lecture in relation with Soil and Water conservation issues, the “All About Water Conservation: Disaster Prevention” was held on October 16th and November 8th, inviting professionals and scholars from different fields to discuss environmental-protection related issues regarding sky, land, mountains, forests, water, and soil (Figure 64). The lectures were done in an easy-to-understand way to introduce the touching stories of efforts in Soil and Water conservation. Two sessions were held, and participated by 239 people.

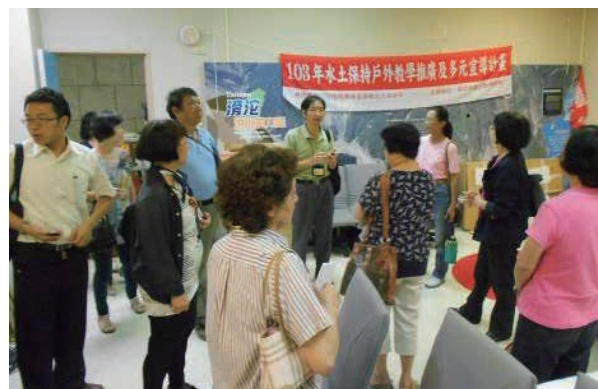


Figure 64 / Soil and Water Conservation Science Education Activity

General Affairs and Environment

Electromechanical Operations/IT Operations

5 Accolades and honorable mentions



The air conditioning equipment improvement operation were conducted on the old building of the NSTM North Wing, using the evaluation method of carbon-reduction efficiency, it was certified with a Green Building Label Bronze Label in old building renovations by the Ministry of the Interior on October 7, 2014. The label is effective until October 6, 2017 (Figure 65).

Figure 65 / A Bronze Certification of the Green Building Label in Old Building Renovation Category by the Ministry of the Internal

3 IT Operations

1 Completed the e-form system establishment and came online

The NSTM began to establish the e-form system since 2013, and had the IT team self-develop e-forms and enabled them online. The forms include: leave forms, leave cancellation forms, item requisition forms, over-time forms, work leave requisition forms, work leave cancellation forms, leave adjustment forms, and exhibition hall maintenance/inspection forms.

General Affairs and Environment

IT Operations

2 Self-Developed IT System

Completed the exhibition hall inspection system (Figure 66), including the establishment of inspection operations, shift-scheduling operations, experience facility inspection operations, defective unit e-form, exhibit resume database, and the defective information are periodically sent to relevant personnel to be updated with the status of the exhibition halls.

[illegible]

Figure 66 / Exhibition Hall Inspection System

3 Developed Impressive Experience Facility Software

Self-developed the impressive experience facility public-end software in collaboration with the exhibition team, and utilized the existing touch-screens to allow the public to draw their own stamps via fingers (Figure 67).



Figure 67 / Impressive Experience Facility

General Affairs and Environment

IT Operations

4 Expanded the NSTM iTaiwan Route

We improved the iTaiwan route in our exhibition halls, enabling it for all exhibition halls and all public areas, as well as activated the iTaiwan wireless network certification operations, improving internet security functions over the wireless network. In 2014, 25 wireless hotspots in exhibition halls were updated, and completed the NDC iTaiwan account authenticating service (Figure 68).



Figure 68 / Improved i Taiwan Route

General Affairs and Environment

IT Operations

5 Established the Mobile Guided Tour Platform

We completed the establishment of our mobile guided tour system, storing all guided tour-related videos and audios in the system, and generating the QR Codes. Currently, video and audio resources of certain exhibition halls and collections have been stored in the system, providing the public to play the guided tour while visiting via our wireless network or cellular data on phones. After the completion of guided tour-related video and audio resources, we would be able to provide the public with wireless mobile guided tour service (Figure 69).



Figure 69 / Mobile Guided Tour Platform

6 Completed the establishment of IPv6 Network

The NSTM has completed the establishment of IPv6 external network, setting all primary server domain names to dual IPv6 and IPv4, which means, any computer using IPv6 or IPv4 can connect to NSTM-related websites.



NATIONAL SCIENCE & TECHNOLOGY MUSEUM
2014 Annual Report

Budget Execution



Budget Execution

Annual Balance

1 Annual Balance

The total revenue from execution results of NSTM in 2014 was NT\$312,904,000. The main source was the social education institution development grant of NT\$196,446,000, which occupied 62.78% of the total revenue. Self-raised funds was NT\$116,458,000, occupying 37.22% of the total revenue. Out of which, service income of \$34,043,000 took the top, occupying 10.88% of the total revenue. The second highest was the income from assets-use and royalties of NT\$26,574,000, occupying 8.49% of the total revenue. The rest in order was: cooperative education income of NT\$24,915,000, occupying 7.96% of the total revenue; additional income of NT\$13,415,000, occupying 4.29% of the total revenue; educational promotion income of NT\$11,456,000, occupying 3.66% of the total revenue; donation income of NT\$3,079,000, occupying 0.98% of the total revenue; other income of NT\$2,976,000, occupying 0.96% of the total revenue. Business costs and expenses of \$NT370,990,000, occupying 118.56% of the total revenue; other business expenses of NT\$103,000, occupying 0.03% of the total revenue. Our annual shortage amount was NT\$58,189,000, and the main reason was due to the fact that operational funds must be depreciated and amortized. On the income side, the self-raised ratio of NSTM in 2014 was 37.22% (Table 7).

Budget Execution

Annual Balance

Table 7 / 2014 Income Balance Sheet

Unit: Thousand Dollars

Item	Yearly Budget Amount	Yearly Accounts Amount	Previous Year Accounts Amount
Business Income	257,511	280,275	280,866
Service Income	36,012	34,043	36,700
Exhibition Halls	12,880	13,933	12,557
Theater	11,040	6,768	8,062
Special Exhibitions	9,200	9,587	12,891
Experience Facilities	2,892	3,735	3,190
Popular Science Card	0	20	0
Cooperative Education Income	17,053	24,915	17,863
Educational Promotion Income	8,000	11,456	12,650
Social Education Institution Development Grant (A)	196,446	196,446	205,717
Additional Income	0	13,415	7,936
Other Business Income	23,312	32,629	25,629
Interest Income	1,000	2,115	2,029
Asset-use and Royalties Income	22,201	26,574	21,468
Donation Income	0	3,079	1,632
Breach and Fine Income (including reparations)	50	314	90
Miscellaneous Income	61	547	410
Total Income (B)	280,823	312,904	306,495
Business Costs and Expenses	382,168	370,990	372,185
Service Costs	199,928	192,110	194,369
Cooperative Education Costs	12,087	24,647	17,257
Educational Promotion Costs	6,300	5,440	5,491
Management Costs and General Expenses	163,853	148,793	155,068
Other Business Expenses	0	103	0
Miscellaneous Expenses	0	103	0
Total Expenses	382,168	371,093	372,185
Yearly Surplus (Shortage-)	-101,345	-58,189	-65,690
Government Current Grants Ratio(A)/(B)	69.95%	62.78%	67.12%
Agency Current Self-Raised Ratio 1-(A)/(B)	30.05%	37.22%	32.88%
Self-Raised Income	84,377	116,458	100,778

Source: Annual Budgets, Financial Accounts


Budget Execution

Annual Capital

2 Annual Capital

The annual capital budget of NSTM in 2014 added the fixed asset of NT\$52,291,000 covered fully by self-raised funds. Additionally, the fixed assets from project grants from the Ministry of Education, the Ministry of Science and Technology, and donations from Yonglin Education Foundation were NT\$50,903,000. The total amount was NT\$103,194,000 (Table 8).

Table 8 / 2014 Fixed Asset Facility Improvement / Expansion Balance Sheet

 Projects	Unit: Thousand Dollars	
	Available Budgets	Yearly Accounts
Fixed Asset Additions	53,069	52,291
Government Support	0	0
Self-Raised Funds	53,069	52,291
Donations and Managements	0	50,903
Total	53,069	103,194

Budget Execution

Past Revenues, Expenditures, Budgets and Final Accounts

3 Past Revenues, Expenditures, Budgets and Final Accounts (Table 9 & Table 10)

Table 9 / Past Revenues, Budgets and Final Accounts after Implementing Operational Funds

Unit Thousand Dollars

Item Year	Budgets					Financial Accounts				
	Total	Social Education Institution Development Grant	%	Self-Raised	%	Total	Social Education Institution Development Grant	%	Self-Raised	%
2007	285,366	219,208	76.82	66,158	23.18	321,744	219,208	68.13	102,536	31.87
2008	290,529	222,682	76.65	67,847	23.35	339,550	222,682	65.58	116,868	34.42
2009	292,280	222,552	76.14	69,728	23.86	340,319	222,552	65.40	117,767	34.60
2010	303,024	232,746	76.81	70,278	23.19	376,968	232,746	61.74	144,222	38.26
2011	297,950	229,746	77.11	68,204	22.89	343,591	231,045	67.24	112,546	32.76
2012	330,513	221,324	66.96	109,189	33.04	335,751	221,324	65.92	114,427	34.08
2013	315,354	206,165	65.38	109,189	34.62	306,495	205,717	67.12	100,778	32.88
2014	280,823	196,446	69.95	84,377	30.05	312,904	196,446	62.78	116,458	37.22

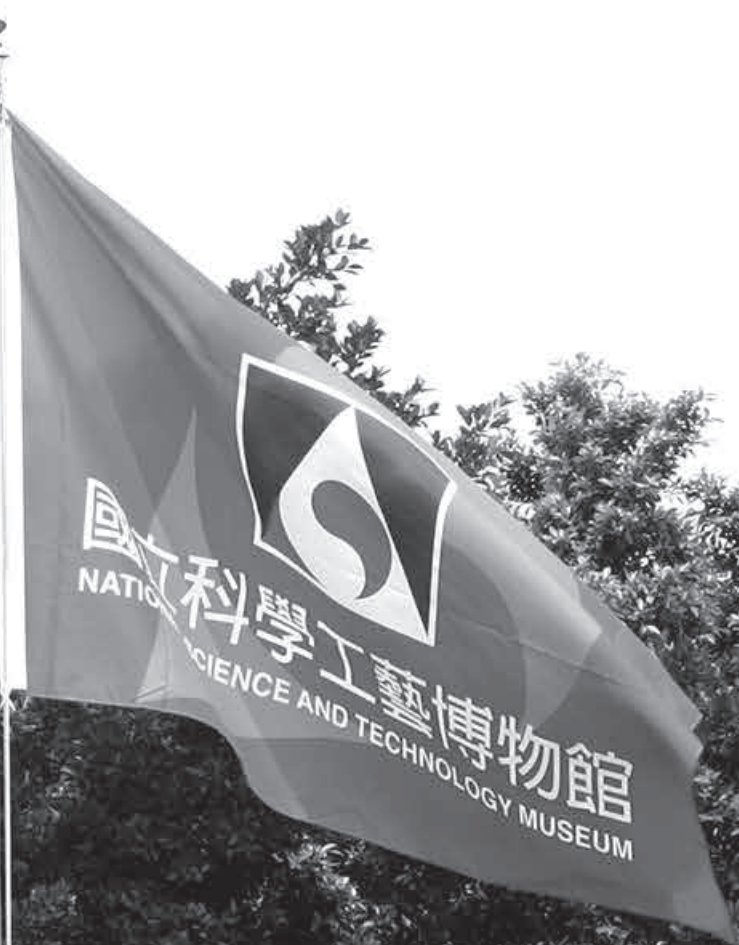
Source: Annual Budgets, Financial Accounts

Table 10 / Past Expenditures, Budgets and Final Accounts after Implementing Operational Funds

Unit Thousand Dollars

Item Year	Budgets					Financial Accounts				
	Total	Current Expenditures	%	Capital Expenditures	%	Total	Current Expenditures		%	Capital Expenditures
							Staff Costs	Recurrent Costs		
2007	303,964	285,166	93.82	18,798	6.18	534,471	116,781	347,698	86.90	69,992
2008	335,070	290,246	86.62	44,824	13.38	518,767	117,709	344,815	89.16	56,243
2009	302,051	291,997	96.67	10,054	3.33	551,295	119,405	331,970	81.88	99,920
2010	376,828	366,764	97.33	10,064	2.67	513,683	121,574	331,636	88.23	60,473
2011	428,603	418,539	97.65	10,064	2.35	432,857	122,749	296,357	96.82	13,751
2012	470,605	451,713	95.99	18,892	4.01	447,729	124,548	294,624	93.62	28,557
2013	435,635	424,825	97.52	10,810	2.48	383,037	123,916	248,313	97.18	10,808
2014	435,237	382,168	87.81	53,069	12.19	423,384	125,236	245,857	87.65	52,291

Source: Annual Budgets, Financial Accounts



NATIONAL SCIENCE & TECHNOLOGY MUSEUM
2014 Annual Report

Chronicle of Events



Chronicle of Events

	Date	Type	Contents	Unit
1	01/01-03/31	Events/ Activities	Held a 4-day holiday art festival event in collaboration with Kiwi Band and Classic Cello Orchestra	Public Service Division
2	01/23	Events/ Activities	Held the “IDF DIY Workshop” winter Camp event.	Collections Research Division
3	01/25-03/30	Events/ Activities	Held the “Ancient Steelyard Exhibition and Experience Event” with the BSML at the Open Collection Library, and held a press conference in January 25 th	Collections Research Dept. /Public Service Division
4	01/25	Exhibition	The “Food Packaging Exhibition” was held on the 4F gallery, sponsored by the Y-Fang Group, and held a press conference on relocation of exhibitions on Jan 24 th	Exhibition Division /Public Service Division
5	01/26	Events/ Activities	Popular Science Library held the “Natural Book Reading” family forum.	Collections Research Division.
6	01/29	Events/ Activities	Held the “2014 Sustainable Vegetables Lanterns of Blessings” press conference to issue cards of gratitude.	Public Service Division
7	02/05	Events/ Activities	Held the 2014 Happy New Year event.	Personnel Office
8	02/12	Events/ Activities	Held the 2014 “NSTM Lanterns of Blessings” event.	Public Service Division
9	02/20	Others	The 2014 “Epidemic Prevention Exhibition Area Collaboration Plan” was approved by the CDC.	Exhibition Division
10	02/20	Events/ Activities	Co-organized the “2013-2014 FLL (FIRST LEGO League) and FTC (FIRST Tech Challenge)” Taiwan-region robotics competition with Esunra.	Technology Education Division
11	02/23	Events/ Activities	The Popular Science Library held the “Interesting Plants” family forum.	Collections Research Division

Chronicle of Events

	Date	Type	Contents	Unit
12	02/28-06/15	Exhibition	The "Injection Molding Machine Demonstrative Educational Event: I love Mammoths" was held in B1 Eastern hallway in collaboration with FCS Machinery Manufacturer Co., Ltd. and the National Kaohsiung University of Applied Sciences. The press conference was held on Feb 27 th , participated by Assistant Manager Li Bingsian of FCS Machinery Manufacturer, Director Ciao Wunjhong of the Polypropylene Technology Division of Formosa Plastics Corporation, and Principle Yang Jhenghong of the National Kaohsiung University of Applied Sciences	Exhibition Division / Public Service Division
13	03/05	Signings	Conducted the oath of employment procedures of Director Wang Liangcyuan of the Public Service Department.	Personnel Office
14	03/07-05/04	Events/Activities	Held the "NTU Campus Culture Assets Exhibition."	Collections Research Division
15	03/09	Events/Activities	Held the "Little Collector Series: IDF DIY Competition."	Collections Research Division
16	03/14	Signings	Completed the signing ceremony and press conference of "Bilateral strategic alliance agreement" with the National Immigration Agency.	Exhibition Division / Public Service Division
17	03/15-03/30	Events/Activities	Held the "Key Cloner Experience Event" in our Open Collection Library	Collections Research Division
18	03/17	Events/Activities	2014 Volunteer Recognition Ceremony.	Public Service Division
19	03/21-04/13	Events/Activities	The NSTM-hosted "Nanometer: The Invisible Scale" participated in the "Chiayi Technology: Low-Carbon Homeland" event, organized by Chiayi City Government and the Ministry of Culture, held in the Chiayi Cultural and Creative Industries Park.	Exhibition Division
20	03/23	Events/Activities	Held the "Little Collector Series: Wired-bound Notebooks" event.	Collections Research Division
21	03/24-06/30	Events/Activities	The Popular Science Library held the "Rock Exhibition" popular science visual/textural exhibition event.	Collections Research Division

Chronicle of Events

	Date	Type	Contents	Unit
22	03/25-04/12	Exhibition	“The Hello, Mr. President! A panorama review of R.O.C.-U.S.A. summit diplomacy” was held 1F Eastern/Western Hallway, in collaboration with the Ministry of Foreign Affairs. The opening ceremony and press conference was held on March 24 th , participated by Director Gary G. Oba of the American Institute in Taiwan, Kaohsiung Branch.	Exhibition Division/ Public Service Division
23	03/25-03/30	Events/ Activities	Held a community-fostering movie event in the first half of 2014.	Public Service Division
24	03/25	Events/ Activities	Director Huang Yinghao of the Livestock Research Institute of the Council of Agriculture of the Executive Yuan led 40 colleges in visiting our implementation of volunteer promotion and environmental education projects.	Personnel Office
25	03/30	Events/ Activities	The Popular Science Library held the “Wisdom of the Rocks” guided reading event.	Collections Research Division
26	04/01	Events/ Activities	The Wander Car Experience Facility was opened to the public.	Exhibition Division
27	04/01-09/28	Exhibitions	The self-planned “NSTM Measurement Instrument Exhibition” was held at the 2F Art Cafe.	Exhibition Division
28	04/02	Others	The Ministry of Education came to oversee the “2012-2014 Museum Operations and Manpower Utilization.”	Secretariat
29	04/12-04/27	Exhibition	The “Compassion of Promise, The Legend, Lin Kin Chin Art Exhibition” was held on Special Exhibition Gallery 1, organized by Hongye Development and Construction Co., Ltd.	Exhibition Division
30	04/17	Events/ Activities	The handover ceremony of the new HR Department Head He Jhumei and Acting Head Wang Liangcyuan.	Personnel Office
31	04/18-06/15	Exhibition	The “Across South Africa: Chen Tianpu Photography Exhibition” was held in the 1F Western Hallway, in collaboration with the Frank C. Chen Foundation for Culture and Education.	Exhibition Division
32	05/03	Signings	Completed the signing of the “Under the Keys & Locks Lease Agreement” with the Macau Science Center.	Exhibition Division
33	05/03-05/11	Exhibition	The “2014 54th Science Fair for Elementary & Secondary Schools in Kaohsiung” was held in special exhibition Gallery 4&5, in collaboration with the Education Bureau of Kaohsiung City Government.	Exhibition Division

Chronicle of Events

	Date	Type	Contents	Unit
34	05/03-05/11	Events/ Activities	The NSTM participated in the “Nanotechnology Education and Training Integration Platform Program” and held the “2014 Nanotechnology Educational Research Findings Carnival” which included research finding demonstrations, nanotech DIY, and other promotional events.	Technology Education Division
35	05/04-05/09	Others	Our colleges went abroad to participated in the 2014 ASPAC Seminar in Brunei.	Technology Education Division
36	05/10	Exhibition	Our colleges went abroad to participated in the 2014 ASPAC Seminar in Brunei.	Technology Education Division
37	05/16	Seminars	The NSTM was commissioned by the DGPA of the Executive Yuan to conduct the 2014 Labor-Dispatch Promotional Conference.	Personnel Office
38	05/24	Exhibition	Renewal of “Children's Science Center Exhibition Hall” was opened to the public.	Exhibition Division
39	06/09	Others	The “Science Learning Center” was established in correspondence with implementation of the 12-year national education. The unveiling ceremony was held on 5F Auditorium in the Ministry of Education.	Technology Education Division
40	06/06	VIPs	Curator Lin, Rihyang of Taoyuan Airport Aviation Musuem and four colleges visited the NSTM Air Navigation and Aerospace Exhibition Hall and relevant experience facilities.	Exhibition Division
41	06/11	Exhibition	The “Solar & Lunar Eclipse” exhibition unit in the Open Sesame were updated, and opened to the public.	Exhibition Division
42	06/12	Seminars	Conducted the 2014 Personnel Office of the Ministry of Education's first conference of the “Perfection” project: “National Public Educational Employees Discounted Shop Promotion Project” and “Promotion and Utilization of Educational Volunteers in Participating in Public Services” proceedings.	Personnel Office
43	06/14-09/14	Exhibition	The “Candy Wonderland” was held on the 2F special exhibition hall, in collaboration with ArtMall Co., Ltd.	Exhibition Division
44	06/17-09/10	Exhibition	The “Dark Art 3D Exhibition” was held at special exhibition gallery 1, 2 & 3, in collaboration with Since Pro International Co., Ltd.	Exhibition Division

Chronicle of Events

	Date	Type	Contents	Unit
45	06/17-09/14	Exhibition	The “Shipping Governance and Taiwan Exhibition” was held at the “Star Plaza” organized by the Navy Foundation of Education and Culture.	Exhibition Division
46	06/18-06/20	Events/ Activities	Director-general Chen, Shiunn-Shyang, Chief of Exhibition Division Wu, Peisiou and colleges was invited to participate in the “IPS Macao International Fulldome Festival 2014” and “Under the Keys & Locks” opening ceremony in the Macau Science Center.	Exhibition Division
47	06/24	Seminars	The Personnel Office of the Ministry of Education and its belonging personnel agency managers came to NSTM for Service Quality Award benchmark-learning.	Personnel Office
48	06/27	Others	Conducted the 2014 Accounting Office of the Ministry of Education and Belonging Budget, Accounting, and Statistics Personnel Business Seminar (Southern Region)	Accounting and Statistics office
49	06/30-08/14	Others	Three trainees from the “Taiwan Tech Trek-” of the Ministry of Science and Technology” came for internship.	Technology Education Division
50	07/01	Signings	Signed the “Glory of the Tang Prize: Laureate and Design Exhibition” collaboration agreement with the Tang Prize Foundation, and the NSTM was commissioned by the Tang Prize Foundation to be in charge of supervision of the “Glory of the Tang Prize: Laureate and Design Exhibition”	Exhibition Division
51	07/01-08/31	Events/ Activities	Conducted the 2014 Nanotechnology Education and Training Integration Platform Program Sub-program 2 “Nanotechnology Promotion Platform Program,” and held the “Exhibition Guided Tour” and “Nanobionic Technology: Iridescent Effect DIY Event” at B1 Area E Hallway in correspondence with the nanotechnology exhibition area.	Technology Education Division
52	07/02-09/14	Exhibition	The “Master of Light – Vermeer Exhibition” was held in the special exhibition gallery 4 & 5 in collaboration with United Daily News. The “Pinhole Camera DIY” science education event was also held.	Exhibition Division
53	07/03	Events/ Activities	Conducted the Directorate-General of Personnel Administration of the Executive Yuan 2014 written and onsite inspection of museums under the Ministry of Education and their implementation of utilizing manpower. Administrator Huai Syu, and eight officials from the Personnel Office of the Ministry of Education and the National Development Council came for onsite inspections.	Personnel Office

Chronicle of Events

	Date	Type	Contents	Unit
54	07/03	Events/ Activities	Held the “A-Guang Energy-Saving Experience Classroom Activation and Energy-Saving Volunteer Award Ceremony” in collaboration with Industrial Technology Research Institute.	Public Service Division
55	07/04- 07/06	Events/ Activities	International Department Head Cing Jian of Dongguan Science & Technology Museum led Deputy-Director Ma Siangjheng and 4 technology instructors came to the NSTM for technology education exchange event.	Technology Education Division
56	07/10- 08/31	Exhibition	The “The Precise Moment: Precision Alignment Technology Exhibition” was held in B1 Eastern Hallway in collaboration with the Metal Industry Research & Development Center.	Exhibition Division
57	07/15	Exhibition	Our “Journey of Printing Collections” exhibition contents were leased to be exhibited in the Taiwan Printing Discovery Center.	Exhibition Division
58	07/15	Exhibition	The “Water-wall Unit” updated in the “Children's Science Center” was opened to public.	Exhibition Division
59	07/18- 07/23	Events/ Activities	Participated in the “2014 Science Education Exposition” science and education exposition, and provided a fuel cell-powered wooden chariot for Mayor Huang Minhuei to ride on.	Technology Education Division
60	07/19	Events/ Activities	Participated in the “2014 National Fishermen's Festival: Kaohsiung Ocean Festival” celebration event, and held ocean-related science education events.	Technology Education Division
61	07/21- 07/27	Events/ Activities	Participated in the 2014 “54 th Science Fair for Elementary & Secondary Schools” organized by NTSEC and Yilan County Government, and held the “Ancient Chinese Lock Exploration” and “Earthquake Time” science education events.	Technology Education Division
62	07/30	Exhibition	“Diseases Prevention Combat Camp 2.0” exhibition hall in collaboration with the CDC was reopened on the 4F exhibition hall. The opening ceremony and press conference was also held.	ExhibitionDivision/ Public Service Division

Chronicle of Events

	Date	Type	Contents	Unit
63	08/04	Others	The Ministry of Education approved NSTM's sub-projects of "Happy Green Park" and "Happy Taiwan Industry" of the "Cross-Industry Experience, Learning for Life: National Social Education Agency Cross-Industry Extra Development Project." The approved amounts were NT\$12,581,000 and NT\$32,306,500 respectively.	Secretariat
64	08/08	Exhibition	The opening ceremony of the "Recovery and Reconstruction after Morakot" on the 6F exhibition hall in collaboration with the Typhoon Morakot Disaster Recovery Committee of the Executive Yuan was hosted by Director Yang, Ciao, CEO Chen, Jhengchuan of the Typhoon Morakot Disaster Recovery Committee of the Executive Yuan, and Director-general Chen, Shiunn-shyang.	Exhibition Division
65	08/09	Events/ Activities	The "World Robot Olympiad 2014 National Competition: Southern Region Preliminary" was organized by Esunra, co-organized by the NSTM.	Technology Education Division
66	08/12	Seminars	The "2014 Cross-Business Benchmark Learning and Environmental Education and Experience Exchange Event" was held in collaboration with the Information Bureau of Kaohsiung City Government.	Personnel Office
67	08/13- 08/23	Events/ Activities	Conducted 2014 Goodwill Angel Selection Event.	Personnel Office
68	08/20	Exhibition	The NSTM self-developed the "Lever Principle" exhibition unit in the Power and Machines exhibition hall, and the "Kinetic-Potential Energy Conversion" exhibition unit in the "Children's Science Center," were opened to public.	Exhibition Division
69	08/22	Seminars	Conducted the second meeting of the 9 th and 10 th work cycle of the 2014 "Personnel Office of the Ministry of Education and Belonging Personnel Agencies' 'Perfection' Project Work Cycle" in collaboration with the National University of Kaohsiung.	Personnel Office

Chronicle of Events

	Date	Type	Contents	Unit
70	08/22-12/28	Exhibition	The “Sustainable Taiwan: Reconstruction After Typhoon Morakot Photography Exhibition” was held in 6F exhibition hall in collaboration with the Typhoon Morakot Disaster Recovery Committee of the Executive Yuan and the National Chiang Kai-Shek Memorial Hall Administration.	Exhibition Division
71	8/24	Events/ Activities	Conducted 2014 Employee Family Day	Personnel Office
72	09/18-09/21	Exhibition	The “Cross-Strait Employee Photography Competition” was held in the special exhibition gallery 1 in collaboration with the Cross-Straight Labor Development Association.	Exhibition Division
73	09/28	Events/ Activities	The 3D animated film “Frogville” premier event was held in collaboration with the Winner Audio & Video Corporation	Exhibition Division
74	10/02-10/03	Seminars	The “2014 International Conference on Museum Marketing” was held in collaboration with the Graduate Institute of Conservation of Cultural Relics and Museology of the Tainan National University of the Arts, Art Restoration & Conservation Scientific Research Laboratory of Cheng Shiu University, NCKU, Department of Theater Arts of National Sun Yat-sen University, and the Chinese Association of Museums.	Collections Research Division
75	10/4-/11/9	Exhibition	The “Tang Prize: Medal & Diploma Design Competition” was held in the special exhibition gallery 4, in collaboration with the Tang Prize Foundation.	Exhibition Division
76	10/07	Others	The air-conditioning equipment improvement project on old NSTM building (North Wing) received “Old Building Improvement” Bronze Green Building Label.	Secretariat
77	10/09	Exhibition	The “48 th National Military Literature and Art Golden Award Winning Work Touring Exhibition” was held in 1F western special exhibition hallway, in collaboration with the Navy Command Headquarters.	Exhibition Division
78	10/10	Exhibition	Updated exhibition units of the “Biological Technology Hall” was opened to the public.	Exhibition Division
79	10/17-11/25	Exhibition	The “Industrial Safety Trick Art Exhibition” was held in the special exhibition gallery 5, in collaboration with the Institute of Labor, Occupational Safety and Health of the Ministry of Labor and the National Museum of Natural Science.	Exhibition Division

Chronicle of Events

	Date	Type	Contents	Unit
80	10/18-10/19	Events/ Activities	The “2014 National Energy Technology Creativity Implementation Contest” finals were held in B1 of the Star Plaza and Gallery, in collaboration with the Energy Education Talent Cultivation Project Office of the Ministry of Education, Bureau of Energy of the Ministry of Economic Affairs, Water Resource Agency of the Ministry of Economic Affairs, and National Taiwan Normal University.	Technology Education Division
81	10/25-10/26	Events/ Activities	The “33rd Science Fair for Elementary & Secondary Schools in Kaohsiung” was held in collaboration with the Education Bureau of Kaohsiung City Government. The opening ceremony was hosted by NSTM Deputy-Curator Tsai Siezu and Deputy-Director Wang Jinyan of the Ministry of Education.	Technology Education Division
82	10/28-01/04	Exhibitions	The “Museum Anniversary Donation Collection Exhibition” was held in the Open Collection Library with collections donated to the NSTM in 2014.	Collections Research Division
83	11/01	Exhibition	The “2014 Nobel Prize Winner Exhibition” was held in the 1F Western Hallway.	Exhibition Division
84	11/08-11/16	Exhibition	The “2014 Energy Education Talent Cultivation Result Exhibition” of the 2014 Energy Education Talent Cultivation project was held in the B1 Star Plaza.	Exhibition Division
85	11/08-11/30	Events/ Activities	The “2014 Energy Education Talent Cultivation Result Exhibition” was divided into southern and northern touring exhibitions, and was held in the NSTM B1 of the Star Plaza and the Chiang Kai-Shek Memorial Hall Center Hallway in Taipei.	Technology Education Division
86	11/09	Events/ Activities	The 17th NSTM Anniversary Ceremony	Public Service Division
87	11/21-11/22	Seminars	The NSTM undertook the “2014 Popular Science Forum” in conducting keynote lectures, group discussions, 46 paper publications, combined discussions, live popular science books and magazines exhibitions, scientific museum DIY event observations, and transmission ceremony.	Technology Education Division
88	11/29-104/03/01	Exhibition	“LINE Friends” exhibition was held in the special exhibition gallery 1, 2 & 3, in collaboration with United Daily News.	Exhibition Division


Chronicle of Events

	Date	Type	Contents	Unit
89	12/02	Exhibition	"Telecom@Taiwan: Modern Telecom" exhibition units was updated, and opened to the public.	Exhibition Division
90	12/04-12/28	Exhibition	The "2014 Nationwide Student's Picture Book Creation Award" exhibition was held in the 1F Western hallway and the 2F Art cafe.	Exhibition Division
91	12/09	Exhibition	The Textile & Clothing permanent exhibition hall was completely renovated, and opened to the public.	Exhibition Division
92	12/11	Others	The "1899-1945 Historical Weather Data" was donated to the NSTM by the Air Force Institute of Technology.	Collections Research Division
93	12/13-104/03/01	Exhibition	The "Jeju Teddy Bear Museum" exhibition was held in the special exhibition gallery 4&5, in collaboration with Kuang Hong Arts.	Exhibition Division
94	12/13-12/14	Events/ Activities	The 4 th "Hand Launch Glider Flying Competition" combined creative-thinking and aerodynamics principles, participated by 120 junior high school teams, 150 senior high school teams, breaking the past record.	Technology Education Division
95	12/19-104/3/01	Exhibition	The "Sentinel Taiwan and the World Formosat-2 10th Year Touring Exhibition" was held in the 1F Eastern Hallway, in collaboration with the National Space Organization, National Taiwan Science Education Center, and the National Museum of Natural Science.	Exhibition Division
96	12/22	Others	The Magical Fitting Room in "Textile & Clothing" exhibition hall was listed as a paid experience facility, and opened to the public.	Exhibition Division



NATIONAL SCIENCE & TECHNOLOGY MUSEUM
2014 Annual Report
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List of NSTM Personnel



List of NSTM Personnel

Staff

STAFF

Director-general CHEN,SHIUNN-SHYANG

Deputy Director-general TSAI, HSIEH-TSU

Collections & Research Division LIN, JONG-I

HUANG, JUN-FU / YEH, SHANG-CHING / TSENG, CHI-SHU / HSIAO,KUO-HUNG / FAN, CHENG-WEI
HUANG, CHENG-CHONG / CHEN, SHU-CHING / HUNG, HSUEH-CHIN / WU, CHING-TAI
TSAI, CHIA-JUNG / CHENG, TING -FANG / LIU, CHING-HO

Exhibition Division WU, PEI-HSIU

SUN, YI-JEN / JHENG, ZONE-JHE / LIOU, JR-YUNG / WANG, TSUNG-CHI / TSENG, HUI-CHANG
YANG,CHIN-HAO / CHEN, MEI-TSEN / WU, SU-HUA / LI, JU-CHING / KAO, SHIH-WEN / SU, FANG-YI
LU, THAO-RONG / LIN, CHAO-HUNG / WU, YU-CHUN / CHUANG, SHENG-TENG
CHUANG, CHUN-LIN / HUANG, CHI-HONG / HONG, WAN-JHEN / WU,YUN-JU / YAN,LI-WEN
CHAN,CHEN-AN / LIN, WEN-HSIEN / LIN, SHU-CYU / LIN, SHIS-TANG

Technology Education Division CHANG, HSIU-CHUAN

CHUANG, TING-YU / LIN, PEI-YING / TSUI, YA-TING / CHANG, MEI-CHEN / WANG, CHI-HSIANG
TSENG, JUI-LIEN / CHEN, CHENG-CHIH / HSIAO, DER-REN / WANG, YU-HUNG / CHENG, JUI-CHOU
JIANG, SHU-FANG / LIU, JIA-RU / LIN, LI-CHUN / CHENG, CHIEN-CHI / YEH, CHIN-YU
MAI, HSIU-WAN / LIN, SUNNY-S / YANG, MEI-HUI / HO, SHU-MIN / CHEN, YI-CHEN / CHEN, YU-HSIN
LIN, CHIH-CHENG / KUO, HONG-BIN / CHANG, JIA-HWAI

List of NSTM Personnel

Staff

Public Service Division WANG, LIANG-CHUAN

LIN, HUI-CHUAN / CHUANG, FU-SHAN / KAO,SHU-CHEN / LU,MENG-YIN / TSENG, I-HSUN
CHENG, HSIEN-JEN / PU, CHING-CHING / WANG, YUN-YING / HUANG, HUI-TING /
LO, SZU-YI / TSAI, PEI-YING / CHENG, CHUN-HSIANG / CHEN, RAMON / WU, YI-NA /
CHU, PEI-YING / LIN, SZU-YUAN / CHIU, PING / LIU, FUN-RU / LIU, JIN-YI / HSIEH, YA-WEN /
TU, MEI-FANG / HUANG, SHIH-TING / LEE , CHIA-FEN / HUANG , PEI-YU / CHANG,SIN-YI /
YANG, SHIN-YI / LEE, KUAN-CHING / CHEN, I-WEN / LAI, JUO-NAN

Secretariat CHEN, CHI-HSIA

CHANG CHIEN, CHIH-TING / HONG, SHUN-CHENG / WU, CHING-YUN / CHOU, WAN-
RONG / WANG, CHU-LIN / YANG, LI-WEI / YEH, CHIA-HSING / WU, CHIA-YUAN / LIN,CHIH-
YU / CHEN, LIN-YUAN / LEE, CHIEN-HSING / HORNG, JING-YI / ZOU, JIA-PING / GER, TZU-
HSIANG / HO, JUNG-FU / HONG, JHIH,MING / LEE, SHUN-HSIUNG / JU, YUAN-CHING /
TSAI, CHENG-TE / KUO, CHUNG-HAO / SU, YU-JEN / LEE, HOUNG-JYH / WU, TING-FANG
/ YOU, SHUN-PING / LI,JHENG-DA / SU, PEI-JHEN / LIAO, MIN-LING / OU, HUI-LING /
LIU, CHIN-HUNG / SUN, MING-SHENG / LI, CHANE-WEN

Personnel office HO,CHU-MEI

LIAO, CHUN-HSIANG / HUANH,HSIN-YI /

Accounting and Statistics office TSAI, YA-WEN

YANG, TE-WEI / HUANG, SHU JUNG / LIU, SHU-YI

List of NSTM Personnel

Volunteers

VOLUNTEERS

0860397 TSENG, CHIUNG-HUI	0860587 LIN, LIANG-HSIU-YUAN	0860929 LEE, TZU-CHI
0860456 KUO, SHU-TUAN	0860594 LIN, HZIN-GUN	0860945 CHENG, CHIN-KUEI
0860474 CHUANGT, MEN-CHU	0860599 CHUANG, MEI-CHING	0860951 XU, SHU-ZHEN
0860487 CHEN, JIA-SHIANG	0860609 ZHANG, YAN-LING	0860979 SHAN, SHOU-JU
0860502 TSAI, NENG-SHENG	0860616 SHIH, BO-SONG	0860995 YANG, TSAI
0860511 CHIU, YU-MEI	0860670 CHEN, CHENG-HSIN	0861001 KU, KUEI-LI
0860512 LI, XIAO-MEI	0860673 CHANG, SHU-MEI	0861004 HUANG, CHIUNG-FANG
0860513 SUN, SHU-SHAN	0860705 WANG, CHUN-LIAN	0861006 CHEN, KAO-LI-CHU
0860530 CHEN, YANG-YU	0860707 LAI, HENG-HUA	0861014 LEE, HSIU-CHIN
0860539 CHUANG, YU-CHUNG	0860712 LIANG, CHIN-O	0861018 LIANG, YU-YING
0860541 ZHAO, LI-FENG	0860714 YANG, KUEI-TAO	0861027 XIE, YU-FENG
0860545 HUANG, SHU-HUI	0860715 YANG, HSUEN-O	0861039 LEE, CHUN-JUNG
0860546 CHIANG, CHIN-CHU	0860716 CHENG, SU-FEN	0861044 WANG, JIAN-HUA
0860547 CHEN, YONG-XUN	0860718 CHEN, SHU-YAN	0861046 SUN, LU-HUA
0860549 ZHENG, SHOU-YAN	0860743 LIN, CHAO-YIN	0861059 LIU, LING-YU
0860550 YANG, LEE-JU	0860753 CHEN, NING	0861082 HONG, XIU-JUAN
0860551 TSENG, WEN-CHEN-YING	0860760 HUNG, MEI-YING	0861096 SHIAI, SHAO-ERE
0860554 CHEN, TSUNG-TA	0860770 LO, YUEH-HSIU	0861101 LIN, CUI-DUAN
0860557 SHEN, MEI-LING	0860780 WANG, TA-YAO	0861103 CHEN, SUE-HUA
0860559 ZHENG, XIU-ZHEN	0860781 CHANG, LUO-WEI	0861154 LEE, SHU-CHING
0860561 TSAI, LI-SHU	0860809 TSENG, PAO-HUI	0861158 HONG, KO-MENG-LI
0860574 HE, YI-TING	0860825 LIAO, ZHEN-XING	0861165 HONG, KANG-NAN
0860575 HSU, CHI-FU	0860841 KONG, FUN-CHUAN	0861172 WANG, CHIN-CHENG
0860578 HUNG, SU-CHEN	0860845 KU, BAIR-HWA	0861173 PENG, LAI-YU-HUA
0860579 DUH, WON-CHUAN-HWA	0860852 SHAO, YU-TANG	0861174 HSIEH, A-MEI
0860580 FU, YU-CHUAN	0860865 LAI, RONG-JER	0861177 HUNG, HSIN-HUA
0860585 HUANG, KUEI-FENG	0860876 CHUNG, WU-LING	0861179 YEN, YIN-IZU
0860586 TSENG, SHU-LING	0860883 HUANG, HUI-LIEN	0861188 LOR, CHUN-LIN

List of NSTM Personnel**Volunteers**

0861194 TSUI, AI-YEN	0861619 LIN, PSAI-FA	0861759 CHEN, MAY-LIE
0861195 LI, JIN-LIN	0861629 CHANG, MAI-LING	0861760 WENG, RUI-MEI
0861207 SHIH, HUI-CHING	0861630 HU, CHIN-CHAI	0861762 HSU, FENG-HSIANG
0861233 HUANG, KWEN-FENG	0861639 JENG, MEI-SHANG	0861763 LI, HSIAO-LIN
0861242 CHEN, I-LUN	0861640 WANG, HUI-CHING	0861765 HUANG, SHIH
0861256 CHEN, PAO-CHU	0861645 TSOU, HSING-YING	0861781 CHOU, CHEN-MEI-WEN
0861278 TU, PI-LIEN	0861649 YANG, HSIU-YNUI	0870001 LIN, HUI-ZHEN
0861283 YANG, GAO-GUI	0861652 HUANG, MEI-LAN	0870010 LIN, XIU-BEI
0861287 TSAO, YU-HSIU	0861653 LIN, SHAN	0870012 SHIH, PAO-HSIU
0861296 WU, YUEH-CHEN	0861658 TSAI, LI-FENG	0870016 YE, YUE-YING
0861314 WANG, SHU-JING	0861661 ZHU, WEI-HUI	0870019 HUANG, SUN-MAO
0861320 LEE, TERANG-CHUAN	0861669 LEI, CHING-YEH	0870027 LI, SING-HONG
0861327 CHEN, LIANG-PAI	0861672 CHENG, CHIN-CHAI	0870033 HUANG, CHIU-HSUEA
0861335 SHIH, CHUAN-CHUAN	0861673 LIU, CHUN-CEN	0870039 KUO, WEN-CHEN
0861339 LEE, FANG-YING	0861674 HSIEH, SHIANG-ER	0870055 SHEN, FU-CHIEN
0861358 LIANG, CHIN-WEI	0861675 LIN, HUI-MEI	0870058 LIN, SHU-WAN
0861370 CHOU, FANG-HUA	0861676 CHUANG, PAO-AI	0870059 ZENG, SHU-SHEN
0861400 LIN, XIU-HUA	0861677 LI, SU-CHEN	0870061 YU, CHEN PI-LIEN
0861410 LIU, XIU-YING	0861678 LEE, SHIH-FANG	0870070 HUANG, TSAI-FZNG
0861416 WU, WEN-CHING	0861690 CHOU, HUA-KUEI	0870071 CAI, YU-ZHEN
0861419 CHOU, HUI-LIEN	0861693 JIN, SHU-XIA	0870075 LIN, EN-HSIUNG
0861421 WU, CHING-HUNG	0861694 CHUNG, HUI-LAN	0870077 LIN, CHUEN-MEEI
0861500 HUANG, SU-SHIA	0861695 CHEN, SU-CHIN	0870078 CHEN, LI-HUA
0861540 CHIH, CHEN-KNEI-YING	0861703 CHEN, YOUNG-CHING-MEI	0870084 CHEN, LI-YU
0861553 SU, SU-HUI	0861717 GU, LI-QIN	0870085 HUANG, LIN-LIANG-HUI
0861560 LIN, HSIU-FANG	0861718 LIU, YUE-JIAO	0870088 CHEN, LI-HUA
0861589 CHAN, PEI-YING	0861725 KUO, SHUN-HSIEN	0870091 LIN, WU-MEI-LAN
0861590 LEE, LI-HSIANG	0861732 HUANG, SHU-JU	0870093 WU, JUI-PIN

List of NSTM Personnel

Volunteers

0870103 TSAI, SHU-HSIEN	0870281 ZHU, RUI-FANG	0870467 WEI, CHANG CHIU-JUNG
0870109 LIN, WEN-YI	0870290 WANG, JUI-HAN	0870483 GUO, MING-ZHEN
0870110 CHEN, JIN-RUI	0870294 KAO, FEN	0880002 ZHANG, MEI-FENG
0870111 LEE, YA-LINE	0870300 CHANG, SU-YING	0880004 SU, HUI-MIN
0870117 CHEN, CHUNG-SHENG	0870306 ZHENG, LI-XIANG	0880007 YU, JUNG-SHIN
0870122 WU, MIN-YAN	0870315 LI, XIU-HUA	0880010 LIOU, SHOU-YING
0870127 SU, TENG-KUEI-YING	0870316 SHIH, LI-HUA	0880013 YANG, LING-FEI
0870130 WU, HSIN-HUI	0870318 WU, PEI-HSUAN	0880017 CHUANG, CHUN-HUA
0870131 WU, TUAN-MEI	0870322 CHUANG, PI-YUN	0880019 LIU, MING-CHU
0870138 SU, CHIN-TSUNG	0870330 ZENG, YAN-HUA	0880029 WU, CHIN-TUAN
0870141 HO, YUAN-PIN	0870332 HSU, WANG-LI-YU	0880034 WU, CHIN-JUI
0870144 YANG, SHU-FEN	0870333 WANG, LEE-BAO	0880037 CHAO, PI-LIEN
0870149 SHIEH, CHI-HUI	0870338 KUO, MEI-JU	0880040 WU, SU-SHIH
0870150 YU, SHUN-YI	0870348 LIN, QIN-JUAN	0880041 TIAN, CHEN,MEI-ZHU
0870152 SHIU, LI-CHUAN	0870362 WEN, CHIU-CHU	0880045 LIU, KE-SHIU
0870190 TSAI, CHIN-	0870372 ZHANG, MEI-YUN	0880046 WU, SHU-YUE
0870199 CHEN, LI-CHU	0870402 YU, JUI-CHIA	0880050 SU, LEE-CHIN
0870202 CHANG, HSIU-CHIN	0870403 WEI, YANG-HSIU-HUA	0880054 LU, LI-RONG
0870208 LIN, KUEI-CHEN	0870411 LIN, SU-LING	0880055 TAI, CHING-MEI
0870226 CHEN, MEI-HUEI	0870413 QIAN, LI-ZHEN	0880058 CAI, ZHEN-FEN
0870229 YANG, SHU-HUA	0870415 LI, YUAN-XIAN	0880064 TAI, CHIEN-HUI
0870230 WANG, JEN-HSIU	0870428 LIANG, ZHU-YAN	0880070 SU, CHIANG-LIU-SZU
0870231 CHUANG, CHIA-NU	0870429 CHENG, YEN-PIN	0880072 CHOU, SHIU-MEI
0870242 LEE, LING-FENG	0870431 LIN, KUEI-MEI	0880078 LIN, CHEN-MING-SHOW
0870243 TSAI, TENG-YEH	0870446 HONG, QING-XIN	0880082 LEE, HSIU-HSIANG
0870244 CHEN, MEI-CHU	0870451 WEN, XIN-LAN	0880086 LIN, SHU-CHEN
0870246 LIN, HUI-YANG	0870453 CHAO, LI-KUEI	0880087 BAO, QIONG-YING
0870248 LEE, SHU-CHEN	0870459 CHEN, YANG-SHOW-CHING	0880089 WANG HUANG, CHUN-GUI
0870263 WANG, YO-LI	0870465 HU XU, XIU-QIN	0880093 HUANG, YU-LI

List of NSTM Personnel**Volunteers**

0880097 SUN, YU-CHU	0890074 CHANG, HUI-HSIEN	0890202 HSUEH, TUNG-PAO
0880123 HUN, SHU-YING	0890075 HUANG, SHIH-LIAN	0890203 CHANG, MANG-LING
0880126 LU, YU-YAN	0890080 TSAI, JUAN-LI-CHUAN	0900004 XU, TIAN-DE
0880133 ZHENG, JING-MEI	0890083 LUO, YU-MEI	0900005 HSU, HSUEH-YU
0880138 CHEN, CHAI-CHIN	0890084 TSENG, SHU-HUI	0900006 LIM, SHU-LI
0880161 CHEN, NENG-YU	0890086 LU, XIU-ZHU	0900008 FENG, SHU-JUNG
0880179 ZHENG WU, YING-LUAN	0890096 WANG, SHU-MIN	0900009 CHEN, MEI-HUI
0880185 WANG, BI-XIA	0890097 YANG, HSUEH-CHIH	0900010 LI, YU-YAN
0880195 HUANG HONG, XIU-QIN	0890109 KUO, HSUEH-LU	0900014 ZHAO, SHU-ZHEN
0880197 WU, YE	0890111 LIU, CHEN-CHEAN	0900024 LIU YU-HUA
0880207 WU, SHU-FEN	0890119 TSENG, YEN-HSIN	0900027 LIEN, CHING-YUN
0880236 WANG, FENG-YI	0890129 ZHANG, YUN-HUA	0900034 CAI, QIU-YING
0880241 LAN, MEI-CHU	0890132 CHEN, HUI-ZHEN	0900047 MAO, QI-MEI
0890006 CHEN XIE, HUI-LI	0890133 CHENG, HUI-LING	0900048 HSIEH, PAO-HUA
0890008 CHU, LI-YU	0890140 CAI, JIA-JUAN	0900049 LIN, MIN-YI
0890009 YU, CHEN-YUEH-HSIA	0890145 CHAO, JUI-CHU	0900050 CHEN, AI-LING
0890010 WANG, CHIN-HUAN	0890147 TING, MEI-HUI	0900052 CHIANG, TAI-CHEN
0890011 SU, MEI-ZHU	0890150 XU, XIANG-MEI	0900053 PENG, ZHI-QIANG
0890013 LI, HUI-CHEN	0890151 WANG, QIONG-YUN	0900055 HSU, SHU-YING
0890018 LIANG, LI-ZHU	0890153 HE, SHU-LIU	0900074 HUANG, HOU-HSUEH-YUEH
0890019 LIN, GUI-FEN	0890154 LIOU, SHYH-KANG	0900085 WANG, YU-CHUNG
0890021 LIN, YU-QIONG	0890155 DU, SHU-FANG	0900086 ZHAO, ZI-WEI
0890022 YANG, LI-CHU	0890158 CHEN, TSAN-CHI	0900089 CHEN, YUEN-HSIA
0890023 CHEN, CHUN-TAO	0890163 LIU, MAM-NING	0900090 TUNG, MEI-CHU
0890047 CHEN, JIAN-LONG	0890189 KUO, FANG-MING	0900094 WU, MEI-CHIN
0890062 LIU, CHIN-YEH	0890195 CHEN CHIN-MEI	0900098 CHENG, CHUANG-CHUEI
0890065 WU, HSIU-LIN	0890197 WU, JIAN-LANG	0900109 WANG, JUN-KAI
0890067 LIN HONG, XIN-YUAN	0890198 LEE, LING-FIENG	0900113 TSOU, CHENG-YI
0890073 HUANG, HAI-PING	0890199 WU, SU-HUA	0900125 HUANG, FENG-CHIEN

List of NSTM Personnel**Volunteers**

0900126 ZHENG, YI-QIAN	0910096 WENG, MEI-ZHU	0930030 LEE, MU-HWA
0900127 CHEN, CHI-YUAN	0910098 HUANG, CHIEN-CHENG	0930031 KUO, CHAO-HSU
0900130 LEE, CHI-HOU	0910099 CHANG, CHIN-CHENG	0930032 WANG, LI-YULI
0900133 YEH, HSIEN-WEN	0910100 HUANG, LIEN-HSIANG	0930036 WANG, XIU-QING
0900134 CHANG, CHIN-YON	0910104 TENG, CHIN-HSIANG	0930043 HSIAO, LI-YING
0900139 LIN, HUANU-SHU-HSIA	0910106 LIU, HUI-WEN	0930044 LI, LI-FENG
0900141 HSIEH, MEI-CHEN	0910110 LAI, KE-NAN	0930045 WANG, CHEN-SHOW-WONG
0900143 CHEN, YAN-MIN	0930002 CHEN, YUEH-HSIA	0930046 LEE, CHAO-FEN
0900144 LIN, SHI-LANG	0930003 CHOU, SHIU-CHU	0930048 TSENG, YEN-MEI
0900146 HSU, SU-CHEN	0930005 CHANG, SU-CHIAO	0930053 SHYU, HUEY-LI
0900151 CHEN, KU-LAN	0930007 HUANG, MING-HUA	0930055 HSU, CHING-HUA
0900152 KUO, YU-LING	0930009 HSU, LI-HSIA	0930060 CHEN, SHU-NU
0900158 TU, YUAN,LI-DE	0930010 FAN, CHENG-YI	0930061 WANG, YA-CHIH
0910018 XU, YA-TING	0930011 CHEN, HUI-HUA	0930062 CHANG, JUNG-CHUN
0910036 CHENG, YU-MEI	0930012 HWANG, GWO-SHENO	0930065 LIU, FONG-HSIUNG
0910039 HOU, WEN-FU	0930013 YU, CHIU-YI	0930072 JIAN, ZHENG-NAN
0910040 CHOU, YU-CHIAO	0930014 CHEN, LI-CHOU	0930073 CHEN, NAI-ZHU
0910043 HUANG, CHING-MEI	0930016 SU, PAI-WEI	0930074 SUN, HUYU-LE
0910044 TSU, YU-YU	0930017 CHAN, MEI-CHU	0930075 LIN, WU-NAN
0910047 HUANG, MEI-YING	0930018 CHEN, HSIUNG	0930076 WEI, JIN-HUI
0910051 LIU, GUO-CHIEN	0930019 YANG, WU-YUNG	0930078 LIN, SHU-CHUAN
0910052 SUN, JUI-HUNG	0930020 CHIANG, AN-NAN	0930081 YIN, WEI-HUNG
0910053 CHEN, MING-HUANG	0930021 TSAI, SU-CHEN	0930087 TSAI, LI-HSIANG
0910054 YANG, MEI-LI	0930022 CHOU, SHENG-CHING	0930088 GU, YONG-JIE
0910070 LI, FENG-YING	0930023 CHENG, LI-LAN	0930089 HUANG, SHU-WAN
0910085 LEE, CHIN-YUAN	0930024 LIN, BI-CHEN	0930095 LIN, ZHI-ZHONG
0910088 KUO, CHIU-TAO	0930025 CHANG, YUEH-YUN	0930097 HUANG, HSUEN-FENG
0910090 CHEN, CHIN-CHUEH	0930026 LEE, YU-HSIA	0930102 DAI, KO-LI
0910091 SU, YUNG-PING	0930027 HUANG, SHENG-TS	0930109 LU, SHU-CHEN
0910094 LIN, ENG-MIN	0930028 WEN, YI-MING	0930111 HUANG, HSUEH-CHIAO

List of NSTM Personnel**Volunteers**

0930119 YANG, LING-CHEN	0940043 CHEN, TAI-RONG	0950028 CHEN, CHIH-YUAN
0930120 SHAO, YI-CHAO	0940045 SHIH, WAN-YI	0950030 TSENG, CHUAN-SUNG
0930124 WU, CHEN,SU-YU	0940050 CHEN, HSIU-CHU	0950031 LU, KAI-CHUAN
0930126 WANG, YUAN-YU	0940051 YANG, MAY-JU	0950034 LEE, BAO-NAN
0930127 LIU LIN, CHAO-HUA	0940052 YU, LEE-MSI	0950036 ZHANG, LI-MEI
0930131 LI, WOEI-YANG	0940058 HUANG, WEN-HSIUNG	0950039 HUANG, YU-LAIN
0930134 CHEN, TLU-CH	0940061 QIU, LIN-YUE	0950041 HSU, CHIEN-CHENG
0930138 CHANG, LIEN-CHU	0940063 TUNG, WAN	0950044 LU, YA-HUI
0930139 YU, KU-YUNG	0940064 HOU, CHUN-HUA	0950045 SUN, YU-HUI
0930142 SHEN, MING-CHIN	0940067 WEN, CHI-CHEN	0950046 HUANG, HUI-LING
0930147 LI, YU	0940070 LIN, HSIU-LING	0950047 LIN, JUN-HUI
0930148 YANG, SHU-CHEN	0940078 LEE, KUEI-MAN	0950048 SHI, XIAO,SEN-ZHI
0930150 LIN, JUI-MEI	0940079 LEE, YUH-HUA	0950049 LI, JIA-RUO
0930151 SU, JUI-CHUAN	0940080 HUNG, YI-WEN	0950051 SU, JU-SHU
0930153 LIN, PI-CHAO	0950001 CHOU, LIN-CHIU-HSIA	0950054 LEE, YU-CHIN
0930154 HUANG, TSAI-YUN	0950003 CHEN, LIN-CHIN-LUN	0950055 TSAI, LI-MAN
0940001 CHEN, LI-E	0950004 YU, SHU-ZHAO	0950058 LIN, GUAN-RONG
0940002 LIU, WANG-WAN-MAN	0950005 HUANG, SHU-YEN	0950059 CHEN, LINH-LI
0940003 SU, CHENG-CHIAO	0950007 KUO, KUEI-CHU	0950060 CAI, QIU-XIA
0940007 QIU, YU-LUN	0950008 CHANG, YUEH-YING	0950061 TSAI, CHIA-YEN
0940008 CHUNG, CHIG-YEN	0950009 HUANG, CHIN-PEN	0950062 WU, KUEI-MEI
0940010 SHIH, LING-TZV	0950011 LIN, RONG-HUI	0950063 TSENG, FONG-O
0940027 LIN, PEI-YU	0950014 LIN, CHIN-MEI	0950066 WENG, XIU-MIAN
0940029 YANG, SHU-YING	0950015 JU, JIA-LING	0950067 CHEN, SHEN
0940033 JUHN, LEI-FNA	0950019 CHEN, CHUN-ZHU	0950068 CHEN, AI-LING
0940036 CHEN, YU-YING	0950020 TUNG, SHU-CHEN	0950071 TSAI, SHU-YUAN
0940037 CHEN, HSIU-FENG	0950023 CHU, LIEN-HWA	0950073 LIN, YU-JUN
0940038 CHIU, CHI-SHENG	0950025 WANG, CHAO-YUAN	0950075 WANG, YU-YUN
0940040 LI, BI-MEI	0950026 CHEN, LIN	0950076 LEE, MING-HUI
0940042 PAN, MEI-HSIANG	0950027 WU, HUAN-JAN	0950077 WANG, CHIA-TSENG

List of NSTM Personnel**Volunteers**

0950078 CHANG, HSIAO-HIS	0950144 SUNG, LONG-SHENG	0960020 YANG, ZN-YUAN
0950079 YI, CHEN-YU	0950145 LIN, SEN-TIEN	0960022 TSAI, JU
0950080 LAI, SHU-YING	0950147 LIAO, YU-CANG	0960023 CHEN, NENG-CHI
0950081 ZHUANG, XIU-LI	0950151 HUANG, HE	0960029 PAN, JIN-LONG
0950084 HSIEH, MEI-YING	0950153 HUANG, YU-HSIN	0960033 LU, CHUN-LI
0950090 LEE, MEI-YUEH	0950154 CHOU, PO-SHIUN	0960034 HSU, KUEI-HUA
0950093 FANG, HSIAO-LING	0950156 LIU, MEI-MAN	0960040 WANG, YU-HSIANG
0950096 LIU, SHU-HUI	0950157 SU, GUANG-ZI	0960041 TSAI, SHU-JU
0950097 LU, HSIAO-I	0950159 ZHANG, GUI-YING	0960042 SHEN, YANG-CHENG
0950098 LIU, WEN-CHI	0950163 CHEN, YI-LI	0960045 HUANG, TZU-CHUAN
0950099 LEE, LI-YUN	0950165 SU, XUE-MEI	0960048 CHUNG, YAN-SUH-JAU
0950100 WANG, JIAO-ZE	0950166 WU, FU-I	0960053 WANG, CHIU-HSIANG
0950104 LIU, CHING-HIN	0950174 YU, CHIU-TAO	0960054 CHEN, MEI-YIN
0950105 ZHANG, RONG-LAN	0950175 ZHENG, XIU-QING	0960057 CHEN, NAN-SHENG
0950107 WANG, HSU-SHU-LI	0950176 LIU, CHUN-YUEH	0960060 XU, YING-YU
0950112 CHEN, XIU-YAN	0950177 CHENG, MING-HSANG	0960063 CAI, JIN-ZHANG
0950113 HSIEH, PEI-CHU	0950181 TSAI, HSIU-MEEI	0960064 CHENG, SAN-CHANG
0950116 TSAI, SU-CHEN	0950185 CHEN, TENG-CHAO	0960070 CHANG, MING-JUI
0950119 ZHOU, AI-YING	0950186 CHAO, CHENG-CHIEH	0960071 SU, YU-TING
0950122 LIN, LONG-MIN	0960001 MA, SAI-FEN	0960072 YANG, HSUEH-FEN
0950124 FU, JIN-RU	0960002 TANG, CHIU	0970004 WENG, TZN-SHUAN
0950125 CHEN, LIOU-JIN-YING	0960005 CHEN, XIAN-YI	0970006 LIN, JIA-HONG
0950128 HOU, JHAO-WUN	0960008 CAI, CHENG-MU	0970019 PU, SHI-YUE
0950129 WU, SU-CHING	0960009 CHEN, YI-MING	0970027 LIN, MEI-LING
0950131 HUNG, LI-HWA	0960010 XIE, YING-DONG	0970029 KE, TING-HUA
0950134 HUNG, JU-RUNG	0960012 CHEN, SHENG-XIONG	0970032 HONG, ZHEN-SHAN
0950136 TSO, TSNNG-YI	0960013 CHEN, RU-YI	0970033 YAO, CHU-LI-HUA
0950139 LU, DU-MEI	0960016 HIS, CHING-PING	0970034 HON, MI-SHOW
0950140 RUAN, ZHONG-QING	0960017 WANG, HSIU-CHU	0970035 CHEN, SIANG-SYUE

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0970039 HSIAO, LI-CHING	0980033 LIU, HSIANG-JU	0980099 SUN, KUO-MEI
0970040 YU, CHIEH	0980034 WANG, LI-MEI	0980100 PAN, FU-TSUN
0970041 TSAI, CHIA-YI	0980036 LIN, DAR-NAN	0980101 CHANG, CHIEH-YUN
0970043 HU, RUI-HUI	0980038 HUANG, SU-MEI	0980102 LEE, SHU-FEN
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0970045 HSU, CHIA-CHUAN	0980042 CHEN, TZU-JIUN	0990003 CAI, QING-XIAN
0970051 CHEN, HSIAO-HUAN	0980045 CHEN, ZI-LING	0990004 LAI, KUN-YI
0970052 CHOU, HUI-LING	0980046 PENG, HUI-CHEN	0990005 ZENG, YU-LUN
0970055 TESNG, YUEH-HSING	0980049 HUANG, ZONG-XIAN	0990006 CHEN, CHUN-XIONG
0970061 CHENG, LI-HUA	0980050 LIN, MEI-FEI	0990010 JIN, CUN-SHAN
0970062 CHAO, HIS-CHING	0980053 LIN, KUNG-SHU-MAN	0990011 XIE, ZHI-LING
0980002 YIN, JIAN-CHUNG	0980054 KUO, KUEI-LAN	0990012 CHEN, YAN-ZHU
0980005 CHIANG, YU-YUN	0980061 CHUNG, MEI-LEE	0990013 TUNG, CHENG-LIANG
0980007 CHEN, YU-CHIN	0980067 LIN, SHANG	0990014 XU, QING-RONG
0980012 CHEN, JIE-PING	0980074 ZHANG, LI-JING	0990015 LEE, YI-HOUN
0980013 LI, YUN-YIN	0980081 CAI, CAI-LING	0990016 JIANG, HUI-TIAN
0980014 CHANG, CHIEN-CHUN	0980082 ZHANG, MEI-JIN	0990017 QIU, JIN-CHENG
0980015 CHEN, SHAN	0980083 LIU, YU-YING	0990019 HU, XIN-ZHU
0980016 CHIANG, HSIU-MAN	0980084 LEE, LI-YING	0990020 HUANG, KUN-TSE
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1000084 LI, YAN-XIANG	1000125 LIN, LI-CHKNG	1000160 ZHENG, XING-XING
1000085 KUO, KUEI-HSIA	1000127 HUANG, WEI-PING	1000161 WANG, KUANG-HSIEN
1000087 HUANG, MEI-CHI	1000128 SHEN, MEI-FENG	1000162 HU, QIU-MEI
1000088 CHEN, CHUN-KUANG	1000129 SHEN, MEI-JIN	1000163 WU, GUI-XIANG
1000090 XUE, YU-QING	1000130 PENG, GUANG-TANG	1000165 LIN HOU, XIU-ZHU
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1000093 YANG, WEN-CHUAN	1000134 LEE, SHAO-MEI	1000167 CHEN, SHU-DAN
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1010080 YU, DE-XIAN	1020017 HE, YI-WEI	1020049 LIN, JIN-YAN
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1010085 HUANG, WAN-WAN	1020021 YANG, BI-HUI	1020055 GUO, GUI-XIANG
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1010089 LIN, GUI-ZHU	1020027 CHEN, JIN-ZONG	1020060 GUO, CHUN-QING
1010090 QIU, JIN-SHUN	1020028 CHEN, JU	1020061 ZENG, HONG-YOU
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1010092 LEI, SHAO-YING	1020030 JIANG, YING-XUAN	1020063 ZHAN, QIU-YING
1010093 CHEN, GUI-ZHU	1020031 ZHANG, TIAN-XIN	1020064 QIU, XIAO-ZHU
1010094 CHEN, LING-NA	1020032 WANG LIN, YUE-YING	1020065 LUO, PEI-RU
1010095 YAO, HUI-JI	1020033 CAI, LAN-XIANG	1020066 TU, QIU-YU
1020001 CHEN, HUI-ZHU	1020034 ZHANG, CUI-HUA	1020067 ZHANG, CHENG-FANG
1020002 SONG, YUE-YING	1020035 XUE, YI-XIONG	1020068 ZHENG, DING-FU
1020003 ZHANG, TIAN-YONG	1020036 LEI, SHAO-LAN	
1020004 FANG, CONG-RAN	1020037 CHEN, BANG-QUAN	
1020006 WANG, XIN-LEI	1020038 DU, YI-YUN	
1020007 SUN, YI-NAN	1020039 HUANG, HUI-ZHU	
1020008 CHEN, ZHEN-YU	1020040 HU, HUI-HUANG	
1020010 CHEN, ZHI-FANG	1020041 HUANG, XUE-JIAO	

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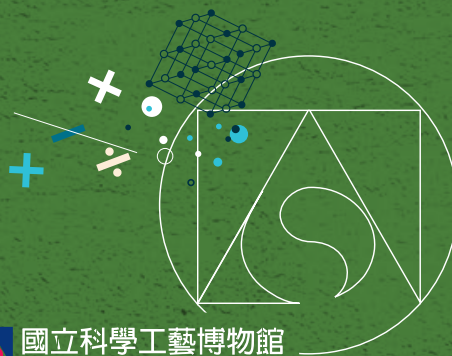
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