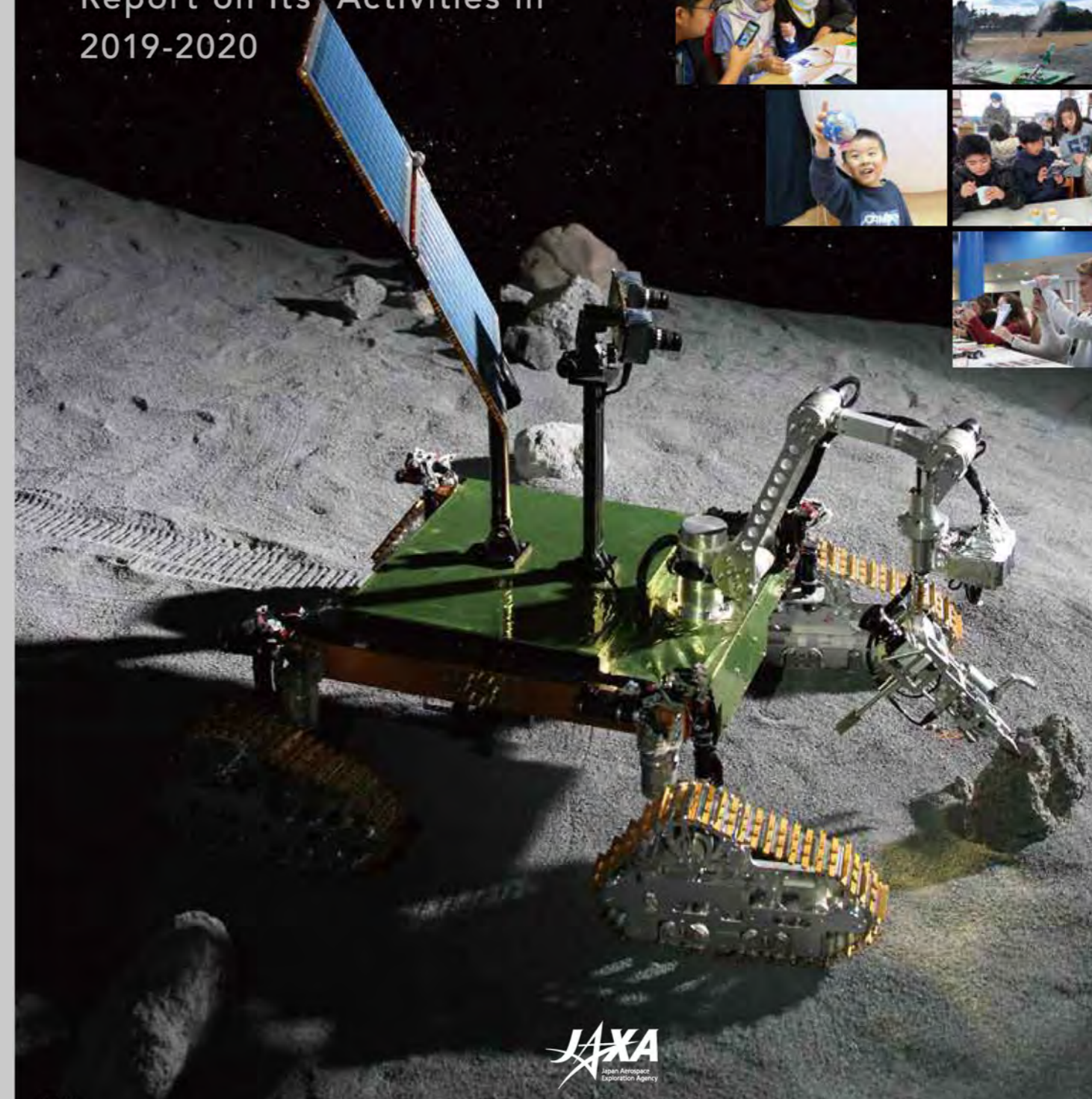


JAXA Space Education Center

Report on Its Activities in
2019-2020



Report of JAXA Space Education Center

On Its Activities in 2019-2020
(Information as of March 2020)

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From the Director

Our philosophy in space education is maximized in a society of co-creation

Children's enthusiasm for objects and phenomena, motivation for experience and learning, struggle toward achievement, joy of success, and discovery of new horizons – JAXA aims to assist in such learning as well as physical and emotional growth and development, by considering space education as one of the pillar tasks of JAXA. The activities of the Center take advantage of diverse achievements in the fields of space and aeronautics, as one of its lead projects and carrying out projects in collaboration with teachers, who are directly involved in the education of children.

Today's society is characterized by changes in the environment that surrounds us, including innovations in information technology and shifts in the economic balance, which make it difficult to have a long-term outlook. Under such circumstances, the perspective required for children's education is also evolving. In order to foster the ability to identify and solve problems, merely having rich knowledge and high individual performance is not sufficient. Rather, it requires abilities such as in collaboration, co-creation, and continuous learning, which also pose a major challenge on the part of educators. We take advantage of the synergy generated through networking with diverse parties concerned, not only government institutions that play a role in the fields of space and education but also industries and non-profit organizations, in the hope of achieving our ideal space education.

JAXA's activities are based on its missions to realize a world where JAXA's achievements are utilized by society, through which they become well-established, to pursue challenging research and development that opens up a new world, thereby leading the country and the world, and to actively invite new partners and adopt new technologies, and so create innovations. Similarly in the field of education through space, we strive toward growth of the children who will lead the next generation and evolution of the global community, and from a more advanced perspective, the space community.



2020

Kaori Sasaki

Director,
JAXA Space Education Center

THE YEAR IN REVIEW

4
APRIL

Cosmic College and Space School for Families

Cosmic College and Space School for Families start their new year every April, and are held year-round on weekends and school holidays across the country. Every year, many children participate in these programs as an opportunity that opens new doors for their intellectual curiosity.

Cosmic College is an interactive science education program hosted by local communities across the country. Recently, the program has been increasingly held at libraries by taking advantage of the functions of libraries, such as introducing books related to the theme of the program.

Space School for Families consists of schooling for gatherings of local participants and at-home learning. Students and their parents learn together, using original textbooks that take advantage of familiar material. Last year we offered a telescope craft workshop at multiple venues. The participants worked with their families to build a telescope or a large pinhole viewer, enjoying the inverted views and deepening their understanding of the mechanism of the telescope.



5
MAY

Partnership Agreement Signed with the SEISA Group

We signed a partnership agreement with the SEISA Group, a general incorporated association, on May 7, 2019. This is our first partnership agreement with a general incorporated association. The SEISA Group is engaged in diverse educational activities through affiliated schools, across educational levels from kindergarten to university (excluding elementary school), the benefits of which are expected to be comparable to those of our other partners. Moreover, additional unique advantages are anticipated of this partnership, including cooperation from the Group's varied constituent institutions and the prospect of being able to gauge the outcome of space education over a long period of time.



7
JULY

Space Education Regional Forum

The Space Education Regional Forum was held on July 26 in Kuwana city in Mie Prefecture, one of our partners. This forum is intended for our space education partners and for those engaged in educational activities in nearby communities, with the aim of exchanging information on various learning support activities and building a network of educators. Under the theme of "Learning in the Community, Learning Continuously," this year's forum featured a lecture on active learning by a guest speaker and a panel discussion, and welcomed 59 participants.



7 8
JULY AUGUST

KIMISSION (Making Your Own Space Mission)

Eighteen high school students gathered at the Institute of Space and Astronautical Science (ISAS) to participate in a five-day intensive program. With the guidance of ISAS graduate students and faculty, the students formed three groups. The groups designed from scratch original space missions based on their investigations of the themes of the space elevator, exploration of Venus, and the search for evidence of extraterrestrial life. This was followed by a presentation on the fourth day. During the five-day program, the students were greatly inspired and took home valuable experiences that are distinct from school classes.



8
AUGUST

Aerospace School

Aerospace School was held at Taiki Aerospace Research Field, Kakuda Space Center, Tsukuba Space Center, Chofu Aerospace Center, Nagoya Flight Research Center and so on, with 99 high school students participating from across the country. Themes were set according to the characteristics of each center: space science experiments (Taiki), rocket engines (Kakuda), space environment utilization (Tsukuba), aeronautical technology research (Chofu), and aerospace engineering (Nagoya). These themes were addressed through tours of the facilities along with intense discussions among the participating high school students.



10
OCTOBER

International Space Education Board (ISEB) Student Program and annual meeting in Washington D.C., United States of America

Under the ISEB international cooperative framework, 61 undergraduate and graduate students were sent from around the world to participate in a seven-day special space education program, consisting of activities such as a cross-cultural awareness workshop, an interactive session with the heads of space agencies, lunchtime sessions, space education outreach to local junior high school students, and participation in the annual International Astronautical Congress (IAC), through which they deepened mutual understanding. The six JAXA-sponsored students also visited the Washington Japanese Language School to give special interactive space education lessons for local children. At the ISEB annual meeting, all eight institutions and organizations gathered to share their latest information and engage in active discussions about future collaborative activities related to space education.





The 26th Session of the Asia-Pacific Regional Space Agency Forum (APRSAF-26) in Japan

The Asia-Pacific Regional Space Agency Forum (APRSAF) was held in Japan for the first time in five years. The annual session of the Space Education Working Group, which is one of APRSAF's four working groups, had 52 participants from space agencies, educational institutions (universities and high schools), NPOs and private companies from nine countries. There were 24 presentations in the session, including Space Education Seminar for Educators and interactive remote exercise session on a robotic Mars exploration mission from Australia for the first time. The first joint session of the Space Education and Space Environment Utilization Working Group attracted participants' attention. They have experienced the difficulty of verbal communication between International Space Station and ground control using a video of JAXA astronaut, Akihiko Hoshide. The session was concluded with a consensus to collaborate with other working groups for the future space education program, including new experiments and space utilization.



APRSAF Poster Contest

Under the theme of "See you in Space!" 29 excellent posters were entered from 10 Asia-Pacific countries, and a student from Indonesia received the highest award through votes by APRSAF-26 participants. A 2020 calendar featuring all exhibited works can be downloaded from the following link.

http://www.aprsaf.org/working_groups/se/





APRSAF Water Rocket Event

Prior to the APRSAF annual session, the APRSAF Water Rocket Event, which began in 2005, was held in Japan for the 15th year. This year, 65 junior high and high school students from 13 Asia-Pacific countries along with 24 teachers and educators gathered for three days of substantial international exchange. A student from Sri Lanka won the water rocket launching competition. The teachers and educators from each country shared their space education efforts through the workshop.



Open Campus at JAXA Sagamihara

As part of the JAXA Sagamihara Open Campus on November 2, the Space Education Center hosted a workshop entitled "Play with invisible forces!" The invisible forces here refer to magnetic force and static electricity. In the magnetic force session, the participating children observed magnetic field lines, visualized by sprinkling iron sand on a magnet, and received a lecture on why a compass floating on water points north. In the static electricity session, the children tried spinning a straw with another electrically charged straw, and levitating narrow strips of plastic rope above an electrically charged balloon. More than 1,000 children experienced the "invisible forces" through the workshop.





Classroom Partnership: Budounomi Second Saginumaen, Budounoki Inc.

The Space Education Center engages in classroom partnerships and with kindergartens and daycares. In the class, the children created rockets with plastic umbrella bags by trial and error methods, discussing with their friends how the rockets could be made to shoot up farther. When making mini-globes, we observed children's amazement; they asked questions about the earth's many oceans, about where Japan is located, and the daily changes in cloud cover. We aspire to continue cultivating such "curiosity, spirit of adventure, and craftsmanship."



Sora no Tobira (Portal to Space) and the Soratobi Science Pocketbook Published

The Space Education center published the 50th issue of Sora no Tobira (Portal to Space) and the Soratobi Science Pocketbook. The year 2019 marked 50 years since the launch of Ohsumi, the first Japanese satellite. The 50th milestone issue of Sora no Tobira featured the 50-year history of satellite development in Japan and the future of space exploration. In the 51st (March 2020) issue, we published an interview with Brian May, the guitarist of the British rock band Queen, who is noted for his knowledge of space, and received excellent feedback. With deliveries of Sora no Tobira now being made to libraries and individuals, it has become available to a wider audience. All published issues are also available online at <http://edu.jaxa.jp/contents/soratobi/archive/index.html>.



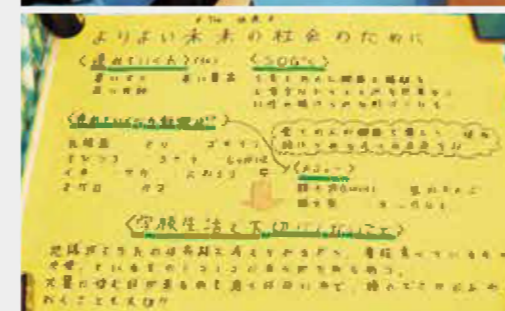
JAXA-hosted Teacher Training: Hachinohe City, Aomori Prefecture

The Space Education Center has been hosting training for teachers. The aim is to incorporate space as a learning material in school education, thereby enriching children's activities and deepening their learning. In order to further spread space education, we hosted training sessions in Aomori and Fukuoka Prefectures for the first time. The session held on January 7, 2020 in Hachinohe city in Aomori Prefecture was designed to include practical training, using teaching materials and creating and sharing lesson plans. The intention was that the participating teachers and students who aspire for teachers, at educational levels from kindergarten/daycare to high school, can link the training to specific actions. The training was received well, and we plan to continue to offer teacher training that can be more easily put into practice, based on an assessment of the training's impact.



Classroom Partnership: Sagamihara City Unomori Junior High School

At the Space Education Center, we value the perspective of cross-curricular learning and the designing of lessons together with teachers, in order to foster students' qualities and abilities. At Sagamihara City Unomori Junior High School, during a period of integrated study, we covered the issue of migration to other planets under the theme of "What is the ideal society?" The students discussed and decided in groups which organisms to take to a new planet if the earth becomes uninhabitable, based on what they have learned previously and from the perspectives of ecological balance, diet, cost, and leisure. The students further discussed what kind of culture to value on the new planet, with reference to the 17 sustainable development goals (SDGs). Due to the nature of an issue that has no answer, discussions with classmates taught tolerance and deepened various views. JAXA aspires to continue to support such cross-curricular lessons using the subject of space.



Workshop for incorporating space in education: Space Exploration Educators Conference (SEEC)

The SEEC is a workshop hosted by Space Center Houston, where more than 500 educators gather from around the world to present and share their teaching methods and materials in order to incorporate space in education. Every year, JAXA sends school teachers to the SEEC to present teaching materials featuring space. This year, Mr. Manabu Fujita of Okayama Prefecture Tamano High School attended the conference. He gave a presentation and demonstration entitled "Learning about the Flight Stability with a Tethered Paper Plane: Let's Enjoy Tethered Paper Plane." A paper airplane does not fly well if the paper is just folded and launched without giving it much thought. In Mr. Fujita's workshop, students learn the principles of flight and perform a swing test prior to flying their paper planes. The participants successfully built stable paper planes by repeating swing tests, and were impressed by Mr. Fujita's teaching material. It can be used in physics class to encourage trial and error methods and foster students' motivation to take on new challenges, which are critical in the learning process.





Classroom Partnership: Kuwana City Tadoaoba Elementary School

On February 6, 2020, the Space Education Center cooperated a joint lesson with Tadoaoba Elementary School in Kuwana city, our partner. The lesson was designed together with the school's teachers. This year's theme was space food for astronauts. After learning about requirements for space food, including nutrition, preparation, and packaging, students compared the tastes of curry prepared as space food and commercially prepared retort curry to examine the differences and possible factors. Through this activity, students reflected on the importance of their daily diet.



Launch of Space Education Center's Redesigned Website /New Instagram Account

The Space Education Center's official website has been redesigned. The renewed website is more user-friendly, with added pictures and illustrations, and the content is organized so that users can more easily access the information they seek. The website also adopts a responsive web design, which allows for optimal rendering of pages according to screen size, making the website accessible whenever and wherever needed, including on smartphones and tablets. In addition to Twitter, we also started posting on our Instagram account. We will continue to ensure timely delivery of information that is straightforward and approachable.



Remote Classes

The Space Education Center offers remote classes on request. As an example, we hosted a space food workshop on a Sunday in March for approximately 20 children and their parents living in the Netherlands, who gathered at a local community center. Using a remote conference system, the participants learned about JAXA's activities and about space food, and tested samples of curry and canned mackerel prepared by the same method as actual space food. The children also received comments from JAXA's Astronaut Medical Operation Group on their original ideas of space food.



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Learning Assistance during Temporary School Closure: "Spring Break in Space"

As part of the measures to control the spread of COVID-19, schools were suddenly closed and the public was asked to refrain from leaving home. To help children spend their long days at home productively, the Space Education Center hosted "Spring Break in Space: Let's try together!" We offered diverse learning content to convey the fascination of space, including simple experiments and craft projects, observations, and recommended books that were specially designed for this occasion. We also invited children to submit their unique challenges. Many challenges were submitted from around Japan and from overseas, including a Shrinky Dinks project to build Hayabusa, creating a model that replicates the solar system, and building a base on the moon with great teamwork.



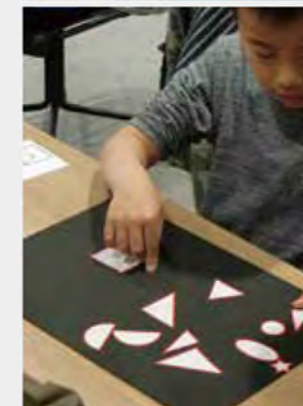
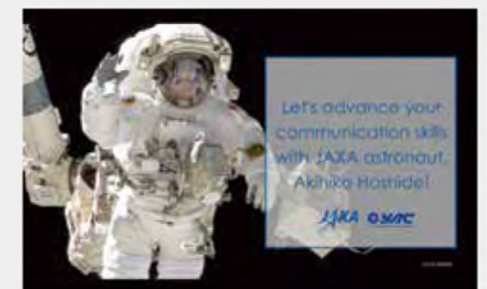
Astronaut Educational Materials Released

The Space Education Center has released more than 200 educational materials on our website, among which the materials related to astronauts are particularly popular. This year, we newly released educational materials that feature astronauts Takuya Onishi, Norishige Kanai, and Akihiko Hoshide.

The video by Astronaut Onishi covers high school physics, encouraging viewers to explore the reasons why objects roll, and about the center of rotation when objects are rolling, through ground and space comparison experiments. Other material introduces the poems written through space-ground communication between Astronaut Kanai, who is staying at the ISS, and children on the ground. It invites viewers to think about what it's like in space, and the existence of the earth, with beautiful background images of both.

The video by Astronaut Hoshide entitled "Let's improve your communication skills!" teaches the importance of communication, which is essential for astronauts, through simple games using diagrams. Encouraged by the high popularity of the Japanese version of the video, an English version was developed and is now available online. We invite you to try the materials.

<http://edu.jaxa.jp/materialDB/contents/detail/#/id=50002>



WHO WE ARE

SPACE IS A UNIQUE SOURCE OF INTEREST AND INSPIRATION, AND GIVES FLIGHT TO THE IMAGINATION. THE SPACE EDUCATION CENTER OF THE JAPAN AEROSPACE EXPLORATION AGENCY (JAXA) WORKS WITH CHILDREN AND YOUNG PEOPLE TO NURTURE THEIR INHERENT CURIOSITY ABOUT THE NATURAL WORLD, THE UNIVERSE, AND ALL LIVING THINGS. OVER THE PAST 14 YEARS, WE HAVE INCREASED AND EXPANDED OUR PROGRAM, BRINGING SPACE-RELATED TOPICS AND MATERIALS INTO SCHOOLS AND HOMES ACROSS THE NATION AND AROUND THE GLOBE. OUR MISSION IS TO STIMULATE INTEREST IN NOT ONLY SCIENCE AND TECHNOLOGY, BUT ALSO IN HUMAN BEHAVIOR.

THE HISTORY OF JAXA SPACE EDUCATION CENTER

Space education has long been a part of the Japanese space program's mission. The early years were marked by the Public Affairs Department's efforts to increase general awareness of space and gain the public's understanding of how society could benefit from space-related activities. One team involved in this outreach specialized in working with children and young people, using compelling, space-related educational materials to connect science to everyday life; the hope was that a greater interest in science would positively influence their intellectual growth. With the creation of JAXA in October 2003, it was increasingly recognized that education is fundamentally distinct from public relations. Combined with the foundation already laid by the student outreach team, this led to the establishment of the Space Education Center on May 1, 2005, by executive order of the then-president of JAXA. Since then, the Center has been a vibrant presence on JAXA's Sagami-hara Campus.



OUR GOALS & PRINCIPLES

Children love the natural world, and look at life with wonder. In particular, the mysteries of space tug on their curiosity and fire the imagination. Space exploration calls to their spirit of adventure. But alongside the spirit of **curiosity** and **adventure** is another spirit, just as important. Without hands-on perseverance to match the adventurousness, there can be no reaching what you seek. This is the spirit of creativity-**craftsmanship**. To ignite these three spirits within children is the core philosophy of the Center. Children will then grow their own knowledge and experience, driven by the joy of learning. With space as an effective educational material and the preciousness of life as underlying message, we aim to use the wealth of knowledge and technology gained from space development to nurture young minds. The spirit of curiosity, adventure, and craftsmanship. By learning "with space" rather than learning "about space," children develop the capacity to learn continuously. That, we believe, is the key to raising people capable of creating knowledge and techniques on their own, and all their lives.

WHAT WE DO

THE SPACE EDUCATION CENTER CONSISTS OF TEAMS THAT SUPPORT EDUCATORS, SERVE COMMUNITY LEARNERS, STRUCTURE INTERNATIONAL ACTIONS, AND SHARE INFORMATION WITH THE PUBLIC IN A MEANINGFUL WAY.



FORMAL EDUCATION SUPPORT

TEACHER TRAINING & CLASSROOM PARTNERSHIP

Space is a great fit for classrooms, and not just in science, technology, engineering and mathematics (STEM) courses. The possibilities for application are many: social studies, language learning, art, ethics, even life skills. From lesson plans to educational materials, the Space Education Center is there to support teachers. We work with education boards and other groups to organize lectures and workshops targeting educators for all age levels throughout their career: preschool and kindergarten, primary, middle, and high schools, education majors and seasoned teachers.

Number of Sessions and Participants of Teacher Training programs

	FY2015		FY2016		FY2017		FY2018		FY2019	
	Sessions	Teachers	Sessions	Teachers	Sessions	Teachers	Sessions	Teachers	Sessions	Teachers
For teachers	35	1,929	34	1,550	50	1,545	29	1,413	28	1,198

NOTE: The Japanese fiscal year runs from April 1 to March 31.

By bringing space into the classroom, we change perspectives and encourage observation. The classroom partnership program consists of thematic lesson activity, information about space-related educational materials, and lesson planning advice. In one example, students in a life skills class conducted a taste test of two instant curries, one for astronauts and one from the supermarket, discussing the noticed differences in ingredients and properties to build their analytical thinking skills.

Number of schools supported by the Center and students who have benefited from the program

	FY2015		FY2016		FY2017		FY2018		FY2019	
	Schools	Students	Schools	Students	Schools	Students	Schools	Students	Schools	Students
Kindergartens	3	207	4	284	3	188	3	245	5	220
Elementary Schools	74	6,669	69	5,400	75	6,194	79	6,253	84	6,930
Junior High Schools	24	5,714	31	6,549	31	3,278	34	3,118	22	2,085
High Schools	17	1,450	13	1,084	17	1,499	18	1,176	13	811
TOTAL	118	14,040	117	13,317	126	11,159	134	10,792	124	10,046

WHAT WE DO

INFORMAL EDUCATION SUPPORT

EXTRACURRICULAR AND HOME ACTIVITIES

Weekends and holidays offer a wonderful opportunity for informal space education. The Space Education Center has a raft of cohort-specific programs that children of all ages, their parents and even grandparents can participate in.

For the youngest learners, **Space School for Families** represents an opportunity to not only gain early exposure to science but also grow a stronger family unit and a more close-knit local community. Co-organized with the NPO Kodomo Uchu Mirai Association (KU-MA), the program consists of hands-on group sessions with "homework" in between and a final presentation by each family; to date, the Center has developed 108 homework texts in various subjects.

Number of Courses and Participants of Space Schools for Families

	FY2015	FY2016	FY2017	FY2018	FY2019
Courses	53	54	56	52	50
Participants	4,799	4,701	4,989	5,144	4,668

The **Cosmic College** is an interactive program focused on fostering inspiration through hands-on experiences such as crafting and experiments featuring space. The program is designed to kindle children's curiosity and spirit of inquiry through the experience of the fun and mystery of science, to help children grow up spiritually rich. The program is hosted by local teachers for children in the region in order to ensure sustainable learning, and the JAXA Space Education Center continues to support such local initiatives.

Number of Courses and Participants of Cosmic Colleges

	FY2015	FY2016	FY2017	FY2018	FY2019
Courses	328	405	481	525	466
Participants	18,326	27,046	27,876	24,701	16,924

EXPERIENCE-BASED LEARNING OPPORTUNITIES

PROVIDING OPPORTUNITIES

The Space Education Center supports and creates learning opportunities for students and educators domestically and internationally.

In JAXA's **Aerospace School** program, high schoolers live and work as a team for several days in space center facilities across Japan. The program brings students into direct contact with scientists and engineers of the cutting-edge Japanese space program, state-of-the-art research facilities and aerospacecrafts, and authentic experiences that emerge from working with other teens.

Number of Courses and Participants of Aerospace Schools

	FY2015	FY2016	FY2017	FY2018	FY2019
Courses	7	5	5	6	5
Participants	142	98	100	124	99

Making Your Own Space Mission (Kimission) is another program for high school students. They team up and plan space missions from the ground up under the supervision of graduate students of the Institute of

Space and Astronautical Science. The young mission planners spend five full days in JAXA Sagami-hara campus, exploring their own ideas along with space. Their missions are presented to the audience of JAXA professionals on the fourth day, and the teams have the option to develop their mission further and give presentation at the annual meeting of the Astronomical Society of Japan.

The Center also provides learning opportunities for students, teachers and educators in Asia-Pacific region. In the **APRSAF*1 Water Rocket Event**, junior high and high school students across Asia-Pacific region gather and share skills and knowledge of Water Rocket. Cultural exchange is also an important element to know each other. The **APRSAF Space Education Seminar** and the **Educator Workshop** are valuable opportunities for teachers and educators to experiences, insights and achievements from their own space education activities. The aim of these educator programs is to enhance the quality of teaching in order to nurture the next-generation talent capable of true innovation. **ISEB*2 Student Program** provides opportunity for university and graduate school students to attend IAC sessions, present their research, network with space professionals and fellow students, and conduct outreach for local students. The Center sponsors Japanese students to attend the program every year.

INTERNATIONAL ENGAGEMENT

INVESTMENT IN A SHARED FUTURE

With the aim of contributing human resource development for next generation, the Space Education Center has been actively collaborating with international partners under global and regional frameworks.

The **International Space Education Board (ISEB)*2** was founded by CSA, ESA, JAXA and NASA in October 2005. It now grows larger with nine space agencies (AEM, CSA, CNES, ESA, JAXA, KARI, NASA, SANSa and UAESA) and one space education entity (VSSEC). Every year, the Heads of Education of the ISEB member agencies meet and discuss cooperative space educational projects. Once action plans are agreed upon by the ISEB HoE, working group representatives implement the plans throughout the year.

Now the **Asia-Pacific Regional Space Agency Forum (APRSAF)*1** is the largest space conference in the Asia-Pacific, with attendees from public, private, academic, and non-governmental sectors from more than 40 countries and regions. The APRSAF Space Education Working Group (SEWG), formerly known as the Space Education and Awareness Working Group, was established in 2001 for promoting space education activities including space topics and providing opportunities for space education. The Space Education Center serves as co-chair of the APRSAF Space Education Working group and assists in organizing the water rocket event, the themed poster contest and educator seminars.

Number of Agencies and Students who attended the ISEB program

	FY2015	FY2016	FY2017	FY2018	FY2019
Host Country	Israel	Mexico	Australia	Germany	United States of America
Agencies/institutions	4	7	6	7	8
Students	19	52	54	73	61

Number of Countries/Regions attended APRSAF Space Education Working Group programs

	FY2015	FY2016	FY2017	FY2018	FY2019
Host Country	Indonesia	Philippines	India	Singapore	Japan
Water Rocket Event	14	13	12	12	13
SEWG meeting	13	13	13	13	9

WHAT WE DO

CONTENT PUBLISHING

INFORMATION AND EDUCATIONAL MATERIALS IN PRINT AND ONLINE

Curating information about space science and our own activities is also a major part of the Space Education Center's mission. We use a variety of media to deliver knowledge and learning to people of all ages.

Sora no Tobira (Portal to Space) is a quarterly magazine for children, edited jointly by the Young Astronauts Club and JAXA. It delivers the latest information on space exploration, interviews with space-related individuals, and information on interactive space education activities to young readers. Issues are available at libraries, science museums, and online (<http://edu.jaxa.jp/contents/soratobi/>), and can also be delivered to individual readers.

The Space Education Center is also posting information on **Twitter** and **Instagram**. These are also great ways to stay in touch with one of our many international outreaches. We invite you to follow and like us.

Twitter: @spaceedu_info

Instagram: jaxaedu

Developing educational materials is an essential support for space education. Utilizing images and videos linked to JAXA's R&D achievements, we develop materials and tools that work with a variety of space education programs in collaboration with outside experts. The results are released online for anyone engaged in space education to use in their own learning activity. (<http://edu.jaxa.jp/en/materialDB/>)

The Center's series of **educational materials designed for the classroom** are linked to subjects mandated by the official curriculum, for easy implementation in classes such as social studies, science, and even ethics.

The **textbooks for Space School for Families** are designed to be provided in sets (of 30 over one year) for home learning. 108 textbooks have been created to date, and we have been seeing expanding use of individual textbooks, and beyond the setting of family homes at that. We have translated 46 of them into English to date.

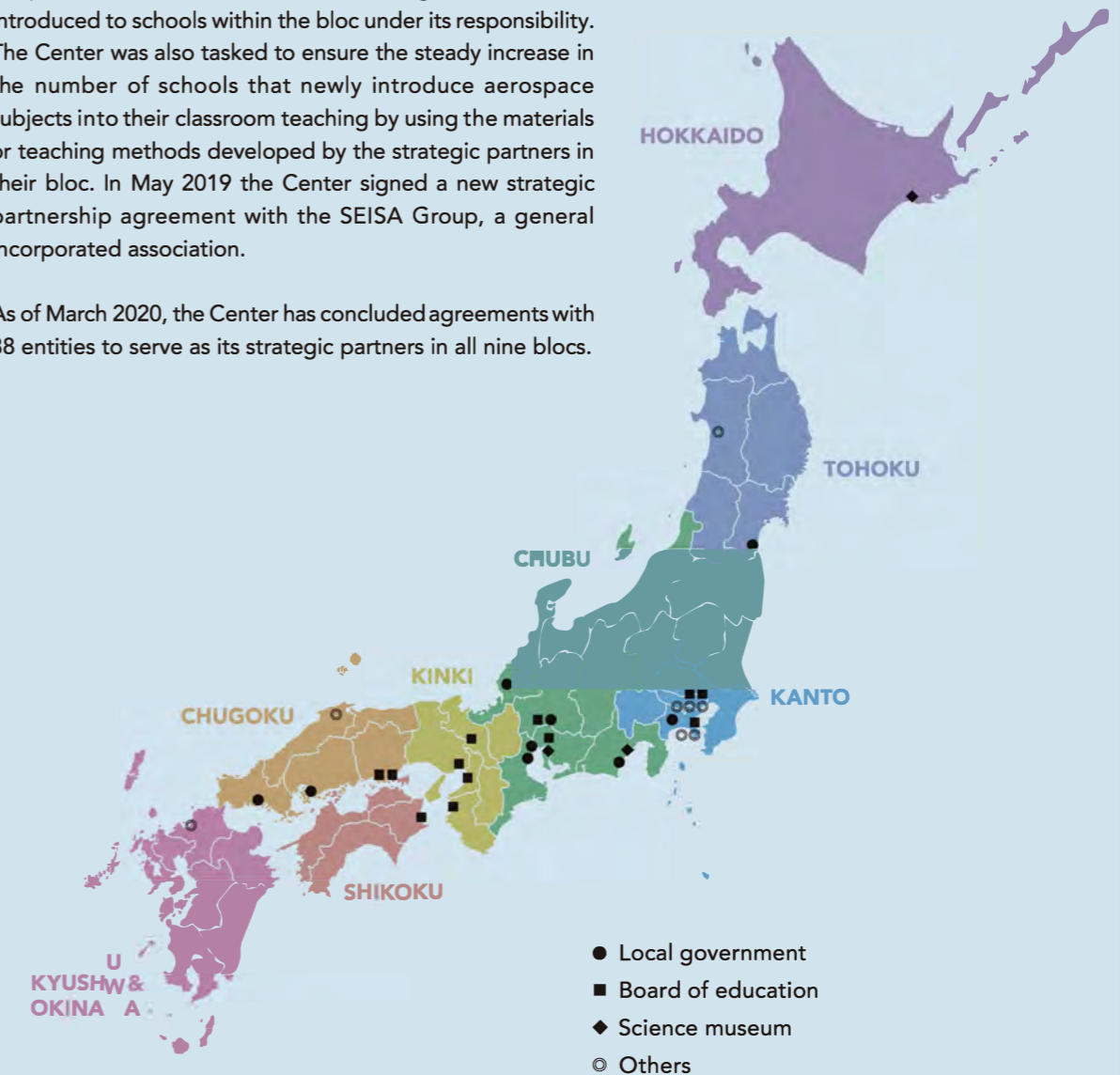
On a related note, our educational materials extend to recordings of simple **experiments conducted in the Kibo module** by JAXA astronauts during their multi-month stay on the International Space Station. The contrast with earthbound iterations of the same experiment brings home the mystery and allure of space.



ESTABLISHING STRATEGIC PARTNERSHIP

As part of the executive directions set by the management of JAXA, the Space Education Center has been tasked since the fiscal year 2008 to establish strategic partnerships in all nine regional blocs of Japan, i.e. Hokkaido, Tohoku, Kanto, Chubu, Kinki, Chugoku, Shikoku, Kyushu and Okinawa. This is to ensure that the kind of classroom support provided by the Center continues to be expanded and further enhanced in an effective manner to benefit each of the primary and secondary schools without requiring direct and intense support by the Center itself. While it does not need to be a school, and it could well be a science museum or a board of education in a local community—strategic partners should endorse the goals and principles of the Center and should actively pursue the development of space education materials and teaching methods to be introduced to schools within the bloc under its responsibility. The Center was also tasked to ensure the steady increase in the number of schools that newly introduce aerospace subjects into their classroom teaching by using the materials or teaching methods developed by the strategic partners in their bloc. In May 2019 the Center signed a new strategic partnership agreement with the SEISA Group, a general incorporated association.

As of March 2020, the Center has concluded agreements with 38 entities to serve as its strategic partners in all nine blocs.





Lunar rover test model ©JAXA