Abstracts of the Workshops

Day 1

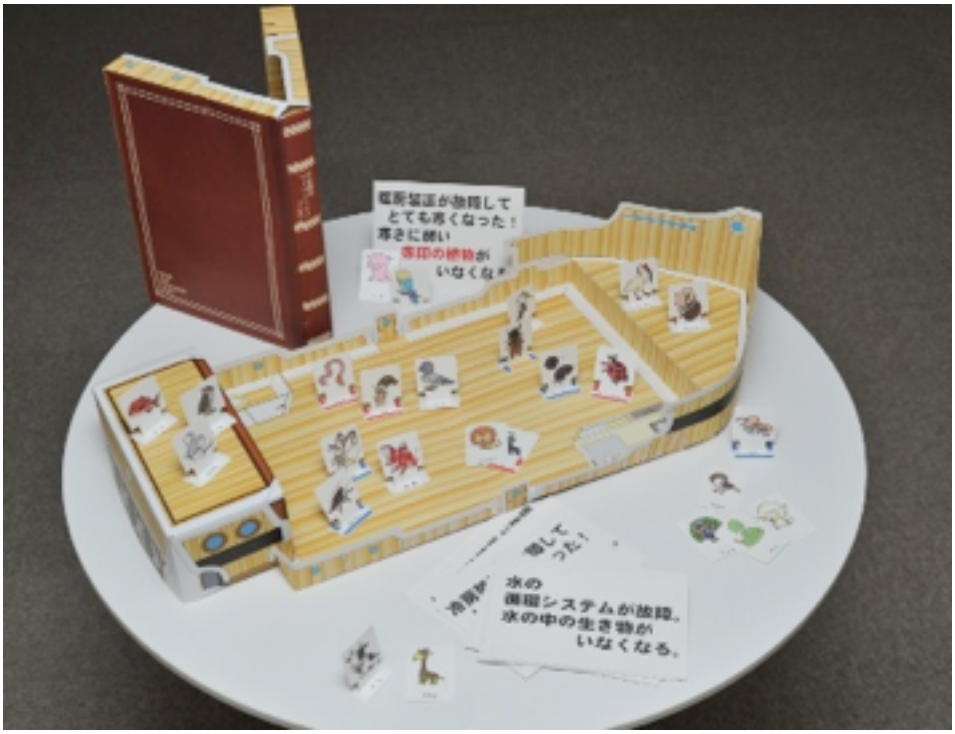
A3 "Space Arc" Workshop (120 minutes)

Presenter: Hiroaki Isobe (Kyoto University)

Keyword: Trans-science

* Free of Charge

Meet “Space Arc” – a space ship! If you migrate to another planet with the "Space Arc", what kinds of items, plants, and animals would you want to bring with you? And how do you plan a menu using these plants and animals? Through discussions in groups of 3-6, participants will recognize the importance of using science to make decisions and also realize that some choices have strong social and cultural components that will inevitably influence the answers.



Credit: KYOTO UNIVERSITY UNIT OF SYNERGETIC STUDIES FOR SPACE

A5 Make the Face of an Alien (120 minutes)

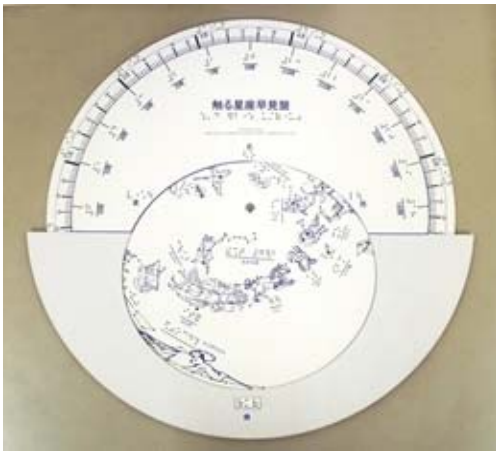
Presenters: Asuka Tosaka (Miraikan: National Museum of Emerging Science and Innovation) and Kojiro Hirose (National Museum of Ethnology)
Keywords: haptic sense, imagination, invisible face, "disability" in outer space
* Each participant will buy a bag of clay (300 JPY)

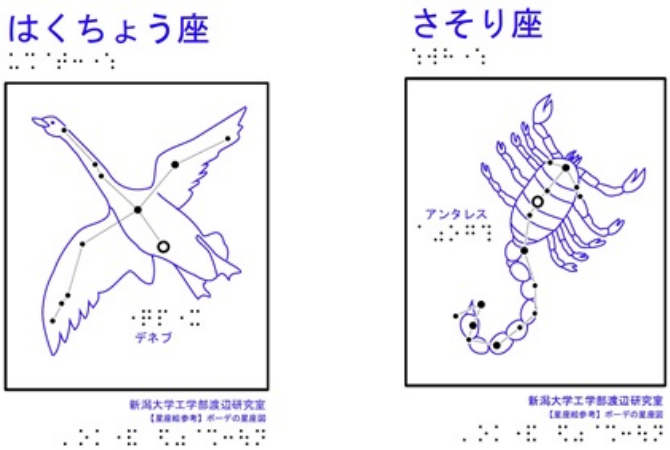
What kind of meaning and role does a face have? Sighted people see/show (not touch/be touched) faces, however, these faces also play the role of a tactile sensor. In this workshop participants will sculpt the “face of an alien” using clay. By touching his/her own face and by building the “face of an alien”, participants will recognize the significance of haptic sense.

A4 Touch the Constellations (60 minutes)

Presenter: Tetsuya Watanabe (Niigata University)
Keyword: tactile planisphere (star chart), tactile constellation pictures
* Free of Charge

Using "PIAF" the tactile image maker, participants will learn how to develop teaching materials for the constellations. PIAF is a machine which produces tactile graphics; it causes black lines and shapes drawn on capsule (heat-sensitive) paper to rise. Participants will also discuss about how to tailor/improve the activities in their own schools and countries.


Tactile planisphere



Tactile constellation pictures
The pictures of constellations were imported from www.study-style.com

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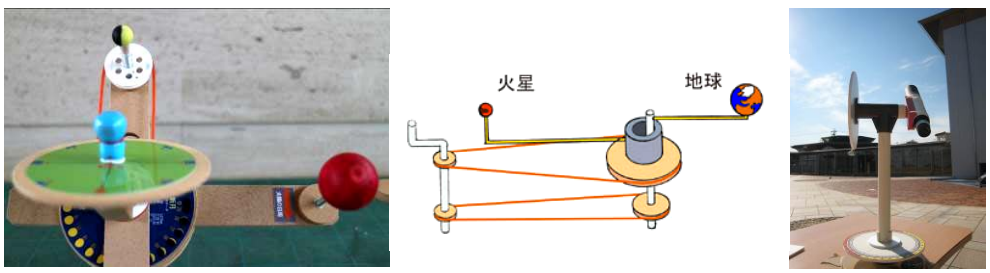
A6 Make Teaching Kits: The Phases of the Moon, the Motion of Mars, and Other Subjects in Handmade Materials (60 minutes)

Presenter: Hiromi Funakoshi (Heartopia Anpachi)
Keywords: astronomy teaching resources, handmade materials to understand astronomy
* Free of charge

How do you teach Moon phases and the motion of the Moon in the classroom? In this workshop, the presenter will teach participants how to produce easy-to-make teaching materials which he has developed. They will also learn how to use these materials and how to explain things in a way that is easy for children at schools and science centers to understand.



Left: Earth-centered model of the Sun, Earth, and Moon
Center: Model of the orbits of Earth and Mars
Right: Daytime Venus Finder

Day 2

B4 Are There Living Beings in Space? Experience Astrobiology through Your Sense of Touch (60 minutes)

Presenters: Keiko Saito, Harumi Fujiwara, Tsukasa Kaneta, Taichi Igarashi, & Josephine Galipon

Keywords: astrobiology, tactile models, Tanpopo Mission

* Free of Charge

Humans have long wondered whether living beings can survive in outer space. In this workshop, we will experience recent scientific knowledge through our sense of touch.

1) Organisms that can survive in space: the tardigrade
Tardigrades are very small animals that can barely be seen with the naked eye (–0.1 millimeters).Behind their nonchalant gait lies an incredible hidden strength. Workshop participants can touch stuffed toys based on electron microscopy data, and observe real tardigrades using an optical microscope.
2) What is "life"?
This will be discussed while touching 3D printed structures based on scientific data and hand-made pop-up books.
3) An experiment to look for life in outer space
The "Tanpopo Mission" (2015-) is an experiment designed to search for life in space by using miniature capture nets made out of aerogels. Can we imagine other ways to search for alien life?
4) Imagine ways to explore life around other stars resembling the Sun.

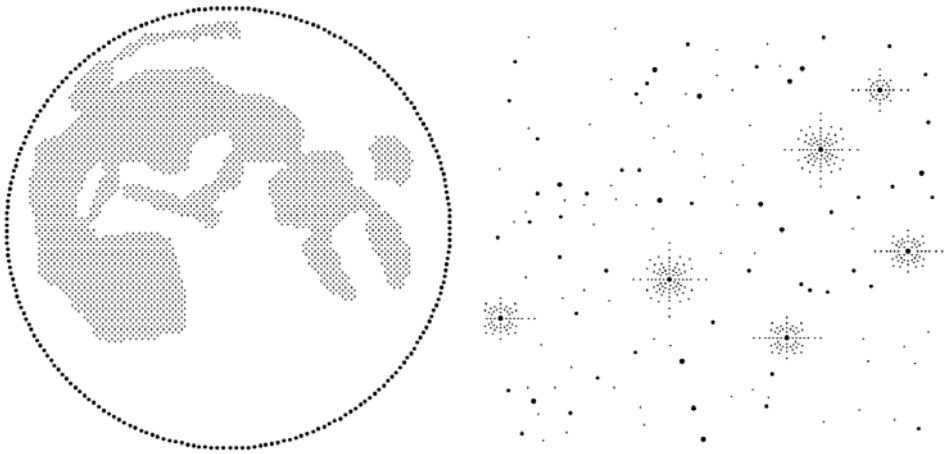
B5 Tactile Astronomy (60 minutes)

Presenter: Shin Mineshige (Kyoto University)

Keywords: extent of the Universe, the Sun, stars, planets, the Earth, life, and myself

* Free of Charge

The presenter has developed tactile versions of astronomical images such as stars, planets, and galaxies. Enjoy touching the images without seeing them, and imagine the Universe through the haptic sense. Participants will discuss about how to improve the tactile images and how to make a teaching program with them. They will also discuss about international collaboration.



Tactile images made with dots: The Moon (left) and the Pleiades (right)

B7 Making a Tactile Planetarium from Low Cost Materials (60 minutes)

Presenter: Lina Canas (IAU OAO/NAOJ)

Keywords: visual impairment, low-cost, textures, DIY

* Free of Charge

In this workshop the participants will learn how to build low-cost tactile resources, focusing on the example of a tactile planetarium. We will discover how and where to find low-cost activities and repositories. At the end, we intend to address the first steps to develop a program for inclusion, tailored to a country's needs.


Photo Credit 1: Dr. Kalpana Kharade from K.J. Somaiya College, Mumbai

Photo Credit 2: NUCLIO & José Fanica (teacher), Portugal

B8 Exploring the Universe Led by Sign Language Peoples (120 minutes)

Presenters: Haruka Suto, Ayana Hirose (Saitama Sakado School for the Deaf), Masami Kitamura (The Tsukuba Barrier-free Learning Consortium)

Keywords: silence, sign language

* Each participant will buy a set of earplugs (100 JPY)

In NAOJ's 4D2U (Four-Dimensional Digital Universe) Dome Theater, participants will express their feelings for the Universe without using verbal words. They will place earplugs in their ears and try to communicate with each other without making or listening to sounds. Based on their experiences in the workshop, they will discuss about how to communicate in silence.