Building Peace in Young Minds through Space Education

Contributions of JAXA Space Education Center to Human Development

Committee on the Peaceful Uses of Outer Space, 52nd Session
5 June 2009, Vienna, Austria

Space Education Center,
Japan Aerospace Exploration Agency (JAXA)
PRINCIPLES

1. Stimulate the curiosity of children, cultivate their challenging spirit, and inflame their passion to pursue craftsmanship.
   → “Spirit of Never Give-Up”

2. Heighten the children’s awareness of the importance of life and their responsibilities in the society.
   → “Preciousness of Life”
WHAT IS SPACE EDUCATION?

“SPACE = Unique source of interest, imagination & inspiration.”

Engineering skills needed for space activities

Taking 13.7 billion years, from pieces of galaxies and stars to the formation of our lives on the Earth

Craftsmanship

Preciousness of Life

Curiosity

Adventure

Toward mysteries of the universe

Exploring into space

Space Education

Stimulating children’s curiosity toward the nature, universe and life while stressing the preciousness of life

Human Development using Space
MAIN AREAS OF ACTIVITY

Japan Aerospace Exploration Agency (JAXA)

Dep’ts & Offices
Field Centers

Space Education Center
20 staff members

Experts

Collaboration

Other entities

Space Education Office

☆ Formal Education Support☆
Support to teachers/schools in classroom teaching

Assist in developing teaching plans, teaching & learning materials, etc. in classrooms

☆ Informal Education Support☆
Community support by organizing events for school students

Develop unique programs for various levels for primary & secondary school students to learn in a progressive manner

☆ Home Education Support☆
Support to parents at home and through events for parents and small children

Develop education materials for parents and children to conduct simple experiments at home

☆ International Activities☆
Collaboration with entities outside the country

Collaborations within the frameworks of ISEB and APRSAF and with UNESCO and other UN entities, ISU, etc.

Space agencies and international organizations with space activities as well as research institutes within and outside the country to acquire knowledge in various fields
**Achievements: from FY 2005 to FY 2008**

- **Formal Education Support:**
  - from 20 schools (1543 students) to 50 schools (3009 students)

- **Informal Education Support:**
  - from 18 events (1273 children) to 103 events (5342 children)

- **Leaders Training:**
  - from 9 sessions (562 individuals) to 56 sessions (1805 individuals)

FY in Japan = from 1 April to 31 March

Space Education Center
SECRETS OF SUCCESS
School Support: Inspiring Teachers

< Working closely with teachers to plan activities to bring “space” into classrooms>

◆ BENEFITS ACHIEVED:
  (Teachers) Acquired new and broader perspectives to teach assigned subjects by using “space” into the class
  → (Students) Spontaneous learning motivation; awakening of interest

◆ RESULTS:
  More schools requesting collaborations with JAXA (transfers of the teachers who have collaborated with JAXA in the past)
  More requests for teachers training using space materials
◆ BENEFITS ACHIEVED
Enthusiasm among students by discovering that space materials can be used in teaching various subjects, incld. non-science (Nagasaki Univ., Faculty of Education)

◆ RESULTS:
More faculties of education seeking for collaborations with JAXA (e.g. Shimane Univ.)
Informal Education Support: Local Communities as the Main Organizer

◆ BENEFITS ACHIEVED:
Sharp increase in the space education events WITHOUT increasing JAXA resource requirements;
Almost all local communities that held “Cosmic College” with JAXA want to continue similar events

COSMIC COLLEGE: On-site events with various programmes developed by JAXA for kindergarten kids to high-school students, to help in their growing process

◆ RESULTS:
<2006> 30 events
↓
<2007> 60 events
↓
<2008> 103 events
Home Education Support: Space Education for Parents and Children

◆ BENEFITS ACHIEVED:
Enhanced interest of the parents in education;
(Joy of learning together with their children.)

◆ RESULTS:
“School of Space” model developed through JAXA & Kokubunji-City, Tokyo
↓
Carried out by Hino-City, Tokyo
↓
Spreading to Nagasaki and Okinawa

Home-learning materials
Entrance ceremony
Schooling
Presentations & Graduation ceremony
Final reports on experiments at home
OBJECTIVE: TO EXPAND SPACE EDUCATION ACTIVITIES USING THE EXISTING FRAMEWORK FOR SPACE COOPERATION

STRATEGIES:

- Focus on primary and secondary school teachers and children
- Support education initiatives taken within the framework of Asia-Pacific Regional Space Agency Forum (APRSAF)
- Support developing countries in other regions through initiatives by UNESCO and other UN entities and development agencies, e.g. JICA
- Maintain cooperation with space-faring nations in space education through International Space Education Board (ISEB)
APRSAF Space Education and Awareness Working Group

☆ Membership: Australia, Bangladesh, Cambodia, India, Indonesia, Japan, Kazakhstan, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Republic of Korea, Singapore, Sri Lanka, Thailand, Vietnam, AIT, UNESCO, OOSA

☆ Water Rocket Event
  ✓ 1st: Kitakyushu, Japan, Oct.05;    2nd: Jakarta, Indonesia, Dec.06;
  3rd: Bangalore, India, Nov.07;       4th: Ha Noi, Vietnam, Dec.08;
  5th: (planned) Bangkok, Jan.10

☆ Poster Contest
  ✓ 1st: “Importance of Space”, Jakarta, Indonesia, Dec.06
  ✓ 2nd: “50 Years in Space”, Bangalore, India, Nov.07
  ✓ 3rd: “Wonders of the Universe”, Ha Noi, Vietnam, Dec.08
  ✓ 4th: “Our Universe – Great Discoveries” (proposed), Phuket, Thailand, Jan.10
Asia-Pacific Regional Space Agency Forum (APRSAF)

★ APRSAF Space Education and Awareness Working Group
☆ Space Education Forum/Seminar (for teachers and/or students)
  ✓ Ha Noi, Vietnam (March 2006)
  ✓ Jakarta, Indonesia (December 2006)
  ✓ Colombo, Sri Lanka (September 2009)
☆ International CanSat Workshop
  ✓ Tokyo, Japan (February 2007)
☆ International Water Rocket Education Workshop
  ✓ Melbourne, Australia (June-July 2008)
United Nations Educational, Science and Cultural Organization (UNESCO)

☆ Space education workshops held in multiple cities of:
  -- Colombia (Dec.05), Vietnam (Mar.06), Ecuador (May 07 & Jun.09), Tanzania (May 08), Peru (Jun.09)
☆ Regional Space Camps:
  -- Ibarra, Ecuador (May 08), Salinas, Ecuador (Jun.09)
☆ World Space Week: water rocket events:
  -- Argentina, Brazil, Colombia, Ecuador, Nigeria, Philippines, Vietnam
Collaborations outside Asia and the Pacific

★ Through regional mechanisms for space cooperation
  ☆ Europe: ESA-Japan Annual Meeting
  ☆ Latin America & the Caribbean: Space Conference of the Americas (CEA)
    → Support hands-on activities, e.g. water rocket activities

★ Through cooperation with Japan International Development Agency
  ☆ Africa: as part of “Practice of Science Education for Secondary School” training programme organized by JICA
    → Introductory session on space education for secondary school science teachers (24 teachers from 9 countries from 2006 to 2008: Kenya, Gambia, Ghana, Lesotho, Malawi, Namibia, South Africa, Tanzania and Uganda)
Supporting Water Rocket Activities around the World

*Educator’s Manual for Water Rockets and DVD*
Japanese, English and Spanish

*Wiki site for water rocket information, materials & discussions*
Supporting Water Rocket Activities around the World
Current membership: CNES, CSA, ESA, JAXA, NASA
Established in Oct. 05: Current Chair = JAXA (Oct.08 ~ Oct.09)
Objectives: i) To increase science, technology, engineering and mathematics literacy achievement in connection with space; ii) To support the future workforce needs of space programs

ISEB: Heads of Education

Representative Working Group:
Representatives of member agencies

Task Group for Student Programmes:
Focal points of member agencies for student programmes
International Space Education Board (ISEB)

★ Joint projects:
  i) Student programmes: IAC & COSPAR Assembly (chair-lead)
  ii) Global Education Network for Satellite Operations (GENSO) (ESA-lead)
  iii) CanSat activities (ESA/JAXA/CNES-lead)
  iv) International Participation in NASA Academy (NASA-lead)
  v) Use of ISS as a learning platform (medium- to long-term goal)

Water Rocket Workshops Organized by Students for Local children

IAC 2008 Student Programme: Interactive Session with Heads of Agencies and Senior Representatives

GENSO concept

Image of IAC2009: Int’l Student Zone
Space Education Efforts of JAXA for Human Development

- Human development: at the societal level and the individual level
  - Balancing the focus of efforts between the prosperity of the society and the enrichment of individual human beings

- Establishing a network of space education efforts
  - Coalition of forces to use space materials to help young people lead lives that are full of happiness and joy of living

- Space education for enhancement of family relations, community building, social development....and...global peace!
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