

The Role of Space Education in Promoting Regionalization in Asia

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Abstract: *In 1959, UN General Assembly set up the Committee on Peaceful Uses of Outer Space (COPUOS), “to govern the exploration and use of space for the benefit of all humanity: for peace, security and development.” In 1990, UN General Assembly endorsed the recommendation of COPUOS that “the United Nations should lead international effort to establish regional centers for space science and technology education in existing national/regional educational institutions in the developing countries.”*

The paper examines the crucial role “space education” plays in regionalizing Asia – a district of natural, social and economic diversity. Toward the end, barriers and solutions are being analyzed based on observations of real situations and policies by international organizations.

Why Space Education matters?

When it comes to space, one may imagine it being far away from our daily life, but in fact, space exploration has direct connection with earth, and affects our society as well as economic in a considerable way.

Space education may be more than learning about the star systems thousands of light years beyond. In NASA’s 2014 Strategic Plan, the administrator addressed that with abundant knowledge of space science and aeronautics (航空学), we gain new medical knowledge, knowledge about the dynamics of other planets, explore whether humans are alone in the universe, and introduce more efficient air travel to the public. We may also discover the complex natural patterns surrounding earth thus take precautions against natural disasters. (NASA 2014)

Space studies is not confined to science. Sub-categories within the field of “space education” includes earth science, space science, space engineering, and space law. Regarding space law and special equity for all, UNCOPUOS 2016 outlined a “universal and equal access to outer space for all countries without discrimination”, but stated that “the existing legal regime with respect to outer space was not sufficient to prevent the placement of weapons in outer space...and that it was important to further develop international space law in order to maintain outer space for peaceful purposes.” Space education range from elementary level to higher and vocational education, and not every student becomes astronaut or engage in aerospace-related jobs after receiving space education, but introduction of space laws and ethics in school curricula may raise awareness regarding fair use of outer-space resources and spatial peace.

Thus, space education can be a rational investment since it ensures greater sustainability of earth’s future.

Why regionalization in Asia matters?

The region Asia encompasses considerable diversities in many aspects such as historical, cultural, social, economic, political, ethnic, geographical and natural, which urges multilateral cooperation.

Geographically, Asia has the biggest surface area among all continents, spanning across both hemispheres. It has rich cultural diversity which may be the product of diverse climatic distributions. However, the heterogeneity of historical backgrounds has fragmented the Asian region into some socio-economic “blocks”, from Socialist countries, kingdoms, former colonies, to developed nations. Fragmented political structures and obstruction by geographical barriers causes difficulties toward negotiation and reaching consensus in modern days. Each country adheres to different norms, develops own standards, and sign different agreements. Taking

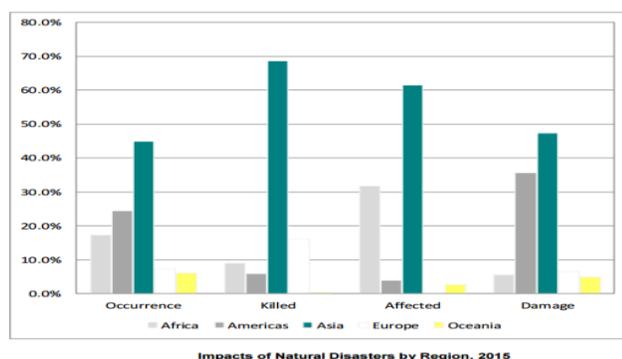
the example of Human Rights, Asia has not yet reached a common agreement to date unlike most continents in the world.

Many parts of Asia witness a widening social and economic discrepancy. There are around 30 developing countries in Asia. Studies show that “four-fifths of Asia’s population live in countries where inequality has risen over the past 20 years”. (Kanbur et.al, 2014) Main causes behind are technological changes, globalization, market-oriented reform, and inequality of opportunity. Speaking of opportunity inequality, gender disparity can be a major issue in Asia. Some countries respect the notion of non-binary genders and grant everyone equal rights, while in other countries, females are subjected to dress codes and are not entitled to drive. Ethnicity and family backgrounds are also main concerns regarding opportunity equality.

Political instability may be a major contributor of inequalities of all kind. Due to historical and geopolitical backgrounds, some countries persist their strategies against the global trend, and pose threats to world peace. UN Committee in 2016 stated that “the view was expressed that the continued attempts by the Democratic People’s Republic of Korea to legitimize its ballistic missile-related programme as a peaceful space activity was highly regrettable”. To tackle the issue and maintain peace, identifying solutions toward “bridging the gap” should be a crucial task in Asia.

Natural disaster is another issue for Asia to tackle jointly. According to *Natural Disasters Data Book 2015*, Asia suffered natural catastrophes far more than other continents in recent years, and negative aftermaths surmounted occurrence greatly.

The extent and quantity of the adverse situations mentioned require an urgent regionalization in Asia.



Why space education can regionalize Asia?

“Space” is a universal topic which encourages any individual, sans cultural, economic, political, or ethnic background to invest in. With shared comprehensive knowledge and joint collaboration, it promotes peaceful cooperation among Asian states. By agreeing upon common spatial objectives such as fair use of space, co-development of technology and co-management of space debris, the region may strengthen ties and increase collective awareness.

Regional centers for space education can play important roles in education and development in Asia. UN General Assembly in 2016 stated that “the *regional* centers for space science and technology education ... played an important role in providing teaching and training opportunities in space law. The Committee noted that greater use of the *regional* centers could be made in order to provide more opportunities for academic linkages with other institutes and universities, as appropriate.”

Space education in Asia to date

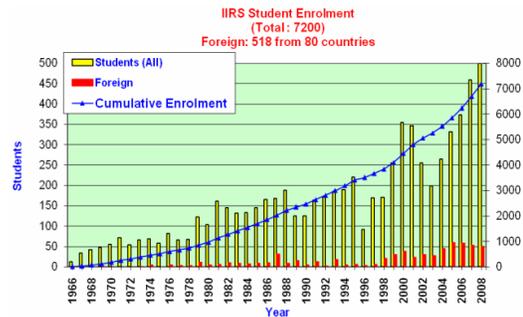
Japan and India hold leading positions in space research and education in Asia.

- Japan: JAXA (Japan Aerospace Exploration Agency) partners with JICA (Japan International Cooperation Agency) to achieve SDGs which includes quality education, by 2030. “Space Education Center” was established within JAXA in 2005, to coordinate with local schools and organize programs for students from elementary to high school levels. JAXA seeks to elevate human resource in the technological field by

promoting related education and private sector's participation, while collaborates with JICA for capacity-building in developing nations.

PNST (Post-graduate study on Nano-Satellite Technologies) is a long-term fellowship program hosted by Kyushu Institute of Technology under affiliation of UN. It supports students from developing countries, including many of them from Asia. During enrollment students not only learn about special technology but also life skills and cultural exchange. After participating the program, many students share positive feedbacks, such as "(being able to) return home in short time with great knowledge" and "PNST encourages graduates to return back and maintain a solid and sustainable peaceful use of space and space technology."

- **India:** Several institutes and organizations regarding space education of all levels exist within India. IIST (Indian Institute of Space Science and Technology) is the first university in Asia to be solely dedicated to research outer space. It is frequently visited by foreign institutes including those of Europe and America. ISRO (Indian Space Research Organization)'s role in promoting space education in Asia is also unignorable. The IIRS (Indian Institute of Remote Sensing) under ISRO contributes to education and capacity building of remote sensing and geo-informatics. Student enrolment has been increasing, and attracts more foreign students in recent years. Other space education organizations such Space Kidz India and SPACE India are also eminent in India and abroad.



The predominance of English language is beneficial for India to collaborate globally, and along with IT sector, space science is a new field beyond traditional categories of caste system, thus space education can reduce socio-economic gaps and enhance social mobility in the case of India.

- **Regional organizations and Collaborations of Space education:** Unlike ESA (European Space Agency), although there are regional organizations for space development such as APRSAF (Asia-Pacific Regional Space Agency Forum), educational aspect has not been prioritized, and joint organization for space education in Asia is almost unheard of, except CSSTEAP (Centre for Space Science and Technology Education in Asia and the Pacific) which only consists of developing countries.

Collaboration of space education in Asia may not yet have attained a regional level, but inter-country collaborations are achieved. In November, 2017, the 24th session of APRSAF is to be held in India, under the title of "Space Technology for Enhanced Governance and Development". (APRSAF, 2017) The forum is co-organized by ISRO, MEXT Japan and JAXA. The forum features four working groups and aims to "promote concrete regional cooperation" by open participation of diverse organizations. One of the working groups, "Space Education Working Group" which is composed of participants from 13 countries, seeks to promote space education especially toward youth population through innovative activities such as programs, events, seminars and contests. (Biyo and Sakuraba, 2016)

Barriers and Solutions

- **Large gap:** A comprehensive and empirical analysis is required in the region to understand situations of each nations and sub-regions. In terms of space education, a big gap exists between the developed nations and least developed ones, since there exists no unified pedagogy, text, curriculum and policy. Establishing a strong network of space education in Asia in a regional level, similar to ESA in Europe, can mitigate discrepancy by unifying the items. With multilateral open dialogues, texts can be updated since information of new discoveries is being shared. Wide geographical distance in Asia allows different countries to work simultaneously by outsourcing skillfully thanks to wide time zones. Developed and relatively developed countries can provide economic aids and technology, while developing countries can provide natural and human resources.

In terms of education methods, space education may not be restricted to formal school education but encourages actual participation and exploration when it comes to the technologies. Thus, non-formal and informal education can play a big role in space education.

- **Membership and Peace:** COPOUS 1959 addressed that its purpose of establishment being "benefit for all

humanity” and for “peace”. However, some regions/countries are excluded due to political factors, and national or international unpeaceful movements are sometimes overlooked. Although there are organizations and institutions for space education in Asia, joint collaboration by all Asian nations is almost non-existent. Some regional programs are established under UN affiliation, however non-members of UN are often excluded. Thus, fair participation should be provided to each individual, and separation of education from political objectives has to be agreed upon. By including influential players, organizations may have to watch over monopolization. Within curricula of space education, contents regarding peaceful utilization of outer space should be included. Collaboration with space education agencies in other regions or international organizations such as NASA and UNOOSA (UN Office for Outer Space Affairs) can maintain peaceful ties with non-Asian regions.

Regionalization can be a key to promote peace and development in Asia, but perspectives of *national* level may also be important. UN Committee agreed in that “international cooperation in research, training and education in space law was essential to build the capacity necessary at the *national* level to ensure that the ever-increasing number and type of players in space activities remained in compliance with international space law.”

- **Gender Parity:** Reaching a complete equal status of the genders can still be a challenge in Asian region, especially in the field of science and technology, although the situation continues to improve in recent years. In 2016, UN General Assembly urged the world to “Promote efforts to encourage science, technology, engineering and mathematics education, especially for women in developing countries.”

Conclusion

Despite the current adverse situations and multi-layers of difficulties, implementing an equitable scheme of space education for the whole region is far from hopeless, witnessing the skyrocketing socio-economic improvements in Asia, especially among developing nations. With the advent of new technologies and reformed regulations, the region will hopefully materialize the wonders toward the stars and the vast, as well as a common eternal harmony. Quoting *Arirang*, a Korean folk song, “Just as there are many stars in the clear sky, there are also many dreams in our heart.”

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