

Science Blog Competition to Encourage Young Students to Do Science Communication

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Introduction

In the rapid changing world, most of actions and decisions are generally backed up by proper scientific thinking and knowledge. The necessary of captivating science and technology (S&T) for the benefit of a nation becomes crucial. Actions and decisions are generally backed up by proper scientific thinking and knowledge.

S&T communication becomes subsequently essential position and has been developed into a larger field. Scientists therefore should increase their science communication skill. Hayden revealed a research that there were large gaps between scientists and public when it comes to their opinion about hot debated issues, although the public still support science.

Youth are actually our source of future scientists. They should be prepared to be good scientists with better science communication skill. There are many science competitions for talented students, but almost all are focusing on the scientific knowledge and have limitation in enhancing their S&T communication skill.

The concept of science odyssey stimulates a portfolio creation to feature a wide variety of events with different size and scope. It is programmed to provoke youth engagement in S&T, from the level of elementary up to higher education. The odyssey is generally a showcase of S&T through lecture, wandering, competition, creativity, communication, etc. The models can be promoting S&T, problem solving opportunities, fostering original and divergent thinking, building a better environment for planet earth, etc.; with a media of scientific paper, team work assignment, up to laboratory work.

In the ASEAN community, a program called the ASEAN+3 (Korea, China and Japan) Center for Gifted in Science (ACGS) represents various approaches for youth engagement, including science odyssey. The ACGS is an international exchange program for the gifted in science, dedicated to the youth at the age of 13-15. The activities conducted such as: consultative meeting, teacher workshop, student winter camp, and science odyssey. The host is circulated among the member countries, elected in the Annual Board of Directors Meeting, prior to the event.

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Indonesia's bidding had succeeded as the host of the 4th ASEAN+3 Junior Science Odyssey, which was held in August 2015. The organizing committee had the initiative to put knowledge of S&T communication into the competition to enrich the students' skill. They are divided into teams consist of students from mixed countries. The assignment is to develop challenging ideas on protecting the marine and coastal environment in order to preserve biodiversity of ecosystem. The ideas then are retained into a science blog, using their creativity in designing and developing the blog, to deliver their ideas as well as to invite and persuade the viewers to follow their ideas.

This paper explains the necessity of the program internationally, to provide youth with an exciting learning experience combined with challenge, fun and friendship. The objectives are also equivalent, such as: introduce research and development for future engagement in S&T, build network and friendship among participants, challenge to solve divergent problem, and learn how to communicate their ideas to people. Teamwork plays an important role. As considered that by working in teams, the youth learn to communicate within teamwork, appreciate and understand each other, and discover the powerful thinking of teamwork.

Junior Science Odyssey

The ASEAN + 3 Center for Gifted in Science (ACGS) is located at Changwon City, as the Republic of Korea is the focal point of the program establishment. ACGS conducts annual activities since 2010, such as : student winter camp, teacher workshop, Junior Science Odyssey (JSO), that have been evaluated yearly by the Board of Directors. The implementation of Junior Science Odyssey (JSO) is on a rotational basis amongst member countries, depend upon the approval of the Board of Directors and the availability of the host country.

JSO is a learning sector for students age between 13-15 years. It is considered important to showcase S&T achievements that have been generated by future scientists from ASEAN+3 member countries. JSO is therefore designated specifically to develop talented individuals as well as teamwork in the field of S&T, and to nurture future scientists. The activity would increase the effort to encourage communication, teamwork, networking and friendship among participants.

The purposes of JSO:

- To improve and globalize informal education for gifted in science through sharing ideas of accumulated knowledge and programs among talented students.
- To provide students with opportunity to foster friendship and networking.
- To encourage and challenge students to excel in the field of S&T, and can be promoted through various access of S&T communication.
- To stimulate students' intellectual curiosity through various experiences and experiments.
- To motivate students to pursue careers in S&T.

For the students program, each country could send a maximum of two teams that consist of three students and one coaching teacher of each. The students program consists of:

1. General lectures and certain topic of lectures.
2. Teaching laboratory skills and laboratory skill assessment within the nation teams.
3. Cultural Performance.
4. Team project, laboratory work if necessary, and presentation (each team is formed from mixed nations).

The latest program is what the paper is discussed.

Method for Junior Science Odyssey 2015

The JSO 2015 was held in Indonesia on 24-29 August 2015, it was organized at the PUSPIPTEK complex, Serpong, South Tangerang, where most of R&D laboratories are located. The theme of JSO 2015 is: "Biodiversity towards Innovative, Smart and Green Society". This theme is actually to open the students mind that they live and apply S&T in the most responsible way, to give them a culture and understanding of threats and issues, so that they can adopt proper behavior in integral fields of S&T for sustainable development.

The assignments given can be categorized into three general approaches. The first approach is understanding-oriented. It consists of carrying out scientific activities, give students knowledge for problem solving, and give them understanding of the phenomena involved, so that they can determine for themselves the required behaviors. This approach focuses in general advantage of lending themselves well to this type of investigation.

The second approach is action-oriented. It consists of implementing role plays or action plans. So that students develop know how reactions to behave in certain situations to that which was faced. This approach is naturally focused on local risks, which could directly affect the students in their environments (most of students come from tropical climate). It should be noted that the factual problems are very present, and the smart way out is by using imagination, creativity and knowledge of integrated fields of S&T.

The third approach is communication-oriented. It consists of building a team work with the participants. Students learn to communicate, share and discuss their dreams, creativity, opinion and knowledge. They are also faced with leadership, sharing and manage people on the same time. This approach drives the students to communicate to public about their work, deliver their message in an understanding language, and they also learn about the beneficial usage of IT application. The activity enables students as important players as well as socializing to work in the problem solving and prevention of global issues.

All approaches are integrated in pleasant and comprehensive learning activities, which combine the local knowledge with global problem solving needs and future foresight plan. Creativity and out of box proposition as the keywords of the program, are specified in the mixed nation team assignment.

The theme of assignment given to the mixed nations teams is "Smart Marine and Coastal Environment Technology". This work is put in force the problems at sea, and how the teams could solve the problems, as well as to protect the marine and coastal environment to make a better world. Their ideas include preserving biodiversity ecosystem.

The ideas are further requested to disseminate through a science blog, which has to be informative, persuasive, and attractive. The teams then present their proposal, from the concept to the final result of their science blog design. Although the blog could be weird, out of the box, distinct, but participants have to keep in mind that the concept is still logical. The assessment

criteria for the team project are: scientific content, teamwork, creativity, communicative, applicability, and benefits to society.

Summaries

There were ten teams consisted of participants from mixed nations. In order to increase their understanding and information about coastal environment research and development (R&D), the students visited the Indonesia research vessel, called the Baruna Jaya IV. The vessel is dedicated for R&D in oceanography and fishery. The lectures were given in the vessel by our scientists, so that the students learnt how and what scientists conducted their R&D regarding marine and coastal environment.

Of from the ten teams, four winners were chosen, although it was difficult to find the best among the best. The time given for discussion and preparing the proposal were limited, but they could produce amazing concept and proposal. The students could express their ideas and creativity on their blogs informatively. Judges were also amazed that all ten teams offered different ideas with a high standard quality.

The first winner offered a concept of marine fertilizer. They applied iron fertilization that is necessary for photosynthesis in all plant and it is highly insoluble in seawater. To remove CO₂ from the ocean, they used a method of enhancing phytoplankton.

Fungi applied to degrade plastic pollution from the ocean in eco-friendly way was the concept of the second winner, while the third winner used microalgae to protect marine. The fourth winner proposed marine life conservation by protecting corals, planting seaweed, and preventing illegal fishing.

All teams initiated creative ideas in solving the problems, protecting the marine and coastal environment, as well as preserving biodiversity ecosystem. Their concepts were logical but out of the box. The presentation was displayed and explained in good communication skill, well ordered and solid teamwork. The blog designs were also attractive and inviting challenge to spectators. The students have certainly absorbed the knowledge of marine and coastal environment rapidly, and on the same time gained the ability of science communication approach through science blog.

Conclusion

It can be seen that the principle of success of the program is to choose the topic by current issue, solve problems, and simplified task. Besides, youth have to be hooked and connected to public, and have fun with what is implemented. The application of ICT is familiarized to spread the information and knowledge to spectators.

To choose the program, we must understand what youth are interested in, such as: newly known, out of the box, give great impact, proper timing, proximity. So that the program should be started with somewhat familiar to the youth, easily to be absorbed and engaged, and they will adopt the program as one of their favors. Regarding the activity, it should cater the global and current issues but can be resolved locally, depend upon the area and resources. Scientists are wisely advised to

be involved in the program, so that their excitement and enthusiasm may be induced to participants.

It is therefore, JSO is a good instrument to engage S&T to young people. The application of ICT in the topic allowed popular ICT and creative applications to be captivated. Youth also learn to produce S&T information content by science communication principles. On the same time, they prepare to open their mind with new and distinct ideas, in order to engage them with novel creativities, and to foresight them to become expertise in the future.

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