

DEVELOPING PUBLIC AWARENESS OF SCIENCE IN INDONESIA

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Abstract

Public Awareness of Science (PAS) is a less pronounced issue in Indonesia, compared to other things which caused a direct impact to public, such as poverty issues, political stability, or security issues. Meanwhile, the society transformation e.g. from traditional culture, where has a tendency to interpret the natural phenomena in superstitious way (based on a mysticism) rather than in a rational way (based on science), is just in early stage compare to that in the developed countries. In such condition, it is an important issue to enhance the public awareness of science in an innovative way to support or back up the national plan in leveling up the education level and at the same time contribute in stimulating the people to catch up with the science and technology manner society.

We pay special attention to a science communication for the kids, in other word exposing a “public awareness of science” in the early age, since the kids are leaders in the futures. Starting from year 2001, we set up a center for fun science learning, with focused in children and family. We developed science pre-school and kindergarten, workshop, outreach program for school, birthday party, and special event. We combined science activities with outdoor adventures and using popular kids themes; such as wizard, spider, beyblade; to increase children enjoyment.

In collaboration with the Ministry of National Education, we set up Indonesian Science Festival since year 2003, consisted of fun interactive science exhibition (participated by schools), science show and parody, fun science project competition for students, innovative science teaching competition for teachers, science camp and tour, and teachers’ enhancement workshop. Ever since it is started, more than 500 students and teachers across the country participated in the competition, and more than 5000 visitors come to the festival.

Keywords: public awareness of science, science communication, kids

1. Introduction

Indonesia is a very wide archipelago country, consists of hundreds of islands, and having area of more than 1800 km². Population in Indonesia, based on year 2002 census, is more than 206 million people. The GDP per capita now is around USD1,700, very low compared to those in the developing countries, such as in USA which has GDP of USD 14,800. Government is still trying hard to decrease the poverty level while the inflation level is still somewhat rising up. Besides this, the terrorism issue is also taking much energy from government to handle it. In fact, started from the year 2000 there were several bombings arisen in some places, such as in Jakarta, Bali, Maluku, and Poso. This difficult issue, in some places, disturbed life activities, including education. In education issue, Indonesian government is still striving to increase the participation level of school age children to take the formal education at schools (until now the number is still 88.5%).

Although Indonesia faced all of these obstacles, the government has been showing its seriousness in an effort to increase the education quality by implementing competence based curricula. This mentioned curricula, however, is still needed to be refined in some areas. Some efforts have been taken by the Ministry of National Education, such as developing a project called Science Education Quality Improvement Project aided by the collaboration between the government of Indonesia and the government of Germany to increase the quality of science education at primary schools. The Ministry also sent some students to several science competitions, such as International Math & Science Olympiad, International Junior Science Olympiad, International Physics Olympiad, International Chemistry Olympiad, etc. Some achievements have been reached. In fact, several gold, silver, and bronze medals have been awarded to Indonesian students at such competitions.

But, those mentioned achievements were gained by small percentage of Indonesian students only and there were still many more students who had less interest in science. It is almost a public opinion that people felt fear to study science. It is may be due to stereotype opinion that science is too serious, sophisticated, and difficult to learn. They believed that their tacit knowledge was enough to solve their life problem. It is no need to learn such a sophisticated knowledge that they believe is not applicable for their life problem. In some cases, their tacit knowledge was related to some mysticism they believed. Such a vision was inherited to their children. Only few people felt the other way around. Indeed, a creative way should be taken into account to improve the public awareness of science.

2. Science Communication for Kids

An example of creative program

Referring to the abovementioned background, we decided to develop a science learning center based on fun learning education in the year 2001. We focused our first activities for children, since we believed that they will be our future leaders. We developed some programs, such as science pre-school for toddlers and preschoolers, science outreach program, fun science parties and science events.

2.1. Science Pre-school and Kindergarten

When we first launched this program, we have been criticized by some people that we introduced science too early for their group-age and they feared that the children would get bored or confused. To respond to their nervousness, we invited them to try our class for free before they join it. Soon, they changed their mind and realized that science could be introduced to their children as early as possible.

We set our program using the contextual learning approached, which is fun and lively. The science topics for this group age merely about themselves and their environment, such as five senses, plants, animals, water, air, and space. We taught children to learn it through role play, gross motoric games, fine motoric activity, and, of course, some simple and safe experiments. They really love our program and sometimes stay longer than their school schedule to play with fishes in the aquarium tank or search for some animal toys buried at the sand area. Some activities in this program are shown at Figure 2.1.



Figure 2.1 Activities in science pre-school and kindergarten program.

We also have written and published text-books in science activities to kindergarten students consist of working sheet activities, group games, and experiments using contextual teaching concept through the common themes used by the schools. Some articles regarding fun experiments for kids have also been written for Parents Guide magazine and some children magazines.

2.2 Science outreach program and teachers workshop

At school, children usually learn science mainly by text-book only. Experiments were rarely given since the teachers had so much topics to be taught to their students. In some cases, school has no sufficient laboratory and equipment to do such experiments.

We came to schools and offered our outreach program for their intracurricula or extracurricula science activities. We demonstrated to teachers that students still could do some experiments using a very simple material or even junks and did it at the common room or at the schoolyard. We always encourage students to find the answer of some natural phenomena through experiments rather than just read the text-book to find the theory about it. The reading could be done after they did the experiments in order to make them understand it easily. Figure 2.2 shows some activities at this outreach program.

To help teachers in teaching science more fun, we also developed a teachers' enhancement workshop. We introduced some contextual games and simple experiments using simple materials. We challenged them to create a new experiments at the end of the workshop session, to increase their confidence in making such a creative activities.



Figure 2.2. Science outreach program

2.3. Science party and events

We believed that if we wanted to make children fun, we have to enter their world of play. We have to use their imagination, their words, and their styles to get into their world. In order to have a good time in their birthday parties or school holiday activities, we used children's favorite themes for their parties or events, such as wizard (when they got Harry Potter fever), beyblade, spider (they really love to be Spider Man), and even detective (detective Conan was their most favorite one). Most of the time, we used a wide outdoor land to combine this science activities with outdoor adventures. When they learned to be a witch, they could fly using the flying fox equipment (a rope elevately joined from one tree to another tree making the gravity forced the person hanging under this rope flying down – it still a science concept, though). We believed that by having fun science activities that can feed their imagination, they will be more than happy to do it and learned many aspects from there.

It was proven that they had a greater time and learned faster in knowing the science concept behind those activities. By doing such activities, we found that children as well as their parents can enjoy science and grew a self confidence that they can learn science in fun way without being so weird or sophisticated. They know that they can apply science wherever they want, not only in certain technological area but also in music, sport, or art. Although we are not hoping that they all will be scientists, by having a good knowledge of science they will have an ability to analyze the concept of things and life rationally. Until now, there were more than seven thousand children have enjoyed our activities and, according to the parents, some children became more enthusiastic in learning science. Some adventurous events can be seen at Figure 2.3.



Figure 2.3. Science adventures activities

We are really glad to know that some big companies became more concern about public awareness of science. They invited us to develop a science program to children in their promotion effort. This is a good sign although as the nature of their company this effort was part of their commercial thought. Figure 2.4 shows some clients' promotion using our science activities.



Figure 2.4. Science events for client's promotion

3. Indonesian Science Festival

A first step to bring the idea nationwide

In the year 2003, we sent a proposal to the Ministry of National Education especially to the Director of Public Education to develop a science festival. Our proposal seemed interesting to them and they supported the event that was named Indonesian Science Festival. We did it at the University of Indonesia campus. Several activities have been done such as science project competition for students from primary school to high school, science teachers' workshop, science exhibition, science show, and science debate competition for university students. We found that although this event was good in design but people were still difficult to be attracted. Visitors for this a week long festival were not more than 700. We analyzed that it might be caused by the location which was "too serious" (in a university) and too far from the city center (around 10 km outside Jakarta).

In 2004, we managed to approach the Directorate of Kindergarten and Primary Education and Directorate of Secondary Education from the Ministry of National Education to take over the idea of Indonesian Science Festival in a bigger event. Learned from the previous year's lack, we held the main event at a new mall at the center of Jakarta, named Plaza Semangi, the place that people usually used for shopping and dining with the family members. The activities consisted of science project competition for primary school students and teachers (nationwide), science camp and tour for its finalists, science teachers' workshop (national), youth science jamboree for high school students (Jakarta & surrounded area only), science project exhibition competition for students from primary school to high school (Jakarta & surrounded area only), science show by Dr. Bunhead from Edinburgh and DoctoRabbit from Jakarta, and some entertainment from local artists. The science project competition for primary school students and teachers were participated by 114 students and 73 teachers from all over Indonesia, whereas the science exhibition competition have attracted 45 schools (from primary schools to high schools) to join. The public participation level rose tremendously. In this three days event, we were visited by more than 2000 people.

This event was continued in 2005. But, because of the tsunami disaster in Aceh and North Sumatera on the end of the year 2004, Indonesian government had to spend more money for the rehabilitation program for those devastated area and that also caused a cut of the budget of the Indonesian Science Festival from the Directorate of Kindergarten and Primary Education for around 50%. In fact, the Directorate of Secondary Education had no more budget to join this event. Although we faced this unfortunate situation, we could still manage to organize such an event at a famous mall in South Jakarta area, named Cilandak Town Square. With almost as the same program as previous year except the activities for High School students, we could attract 144 students and 96 teachers all over Indonesia to participate in the science project competition. More than 2500 people visited this two days event. This event was also in conjunction with the Independence Day Celebration at the Presidential Palace which invited the winners of the competition to attend such a celebration there.



Figure 3.1. Some mall activities at the Indonesian Science Festival

4. The Future Plan

To increase the snow ball effect of the Indonesian Science Festival, we proposed to the Directorate of Education for Primary School from The Ministry of National Education to do regional events (i.e. in a big city at each regional, such as Medan for Western Indonesian Area and Surabaya for Eastern Indonesian Area) prior to this festival held in Jakarta. We believed that such events could bring more attention to the media and at the end of the day would increase the public awareness of science in Indonesia. We also proposed to do a national science teachers conference as the part of this festival to have more attention from teachers on the importance of good communication in science teaching.

There are also a plan from the Directorate to invite neighbour countries to participate in the future event, whether in science project competition or in exhibition. The scope of area of study will also be broaden to science and mathematic. The next event will also be tied up with the Independence Day celebration at the Presidential Palace.

5. Conclusion

We understand that it needs more and more effort to increase the public awareness of science nationwide. But, we believed that by having a consistence effort in developing a program like Indonesian Science Festival across the country, the public awareness of science will become increase tremendously in Indonesia.