2009 International Essay Contest for Young People

List of Winners

No. of participating countries: 134
No. of entries: 4,506 (Children's category: 1,445 / Youth category: 3,061)

1st Prize

Children's category (1 entrant)

- *Our Sea, Our Future*
  Christ Soselisa (Age 11, Indonesia)

Youth category (1 entrant)

- *Science and Struggle: The Fusion of Research and Compassion*
  Parwiz Abrahimi (Age 23, Afghanistan & U.S.A. <Living in U.S.A.>)

2nd Prize

Children's category (2 entrants)

- *Building A Smarter Planet*
  Divya Gopinath (Age 11, U.S.A.)
- *Electricity for a Change*
  Amit Jung Himali (Age 11, Nepal)

Youth category (2 entrants)

- *Biodegradable Material for Electronic Equipment*
  Hamida Amalia (Age 19, Indonesia)
- *When Science Meets the World*
  Phang Wen Bin (Age 20, Malaysia)

3rd Prize

Children's category (5 entrants)

- Motoharu Fuchikawa
  (Age 10, Japan <Living in India>)
- Adeline Tiffanie Suwana (Age 12, Indonesia)
- Mizuki Hashimoto (Age 13, Japan)
- Denzil Furtado (Age 13, Australia)
- Tatsuhiko Hasemi (Age 14, Japan)

Youth category (5 entrants)

- Heidi Baumgartner (Age 16, U.S.A.)
- Lilian Kanaya
  (Age 16, USA & Japan <Living in U.S.A.>)
- Hikari Kunitomo (Age 17, Japan)
- Kim Pawliw (Age 17, Canada)
- Ruby Karmacharya (Age 21, Nepal)

Honorable Mention

Children's category (24 entrants)

- Sae Takabe (Age 6, Japan <Living in Ghana>)
- Sana Ghafoor Rahman (Age 8, U.S.A.)
- Mahiro Sena
  (Age 9, Japan <Living in U.S.A.>)
- Chavdar Lalov (Age 9, Bulgaria)

Youth category (25 entrants)

- Fania Octavia (Age 15, Indonesia)
- Christopher W. Eur (Age 16, U.S.A.)
- Narumi Takahashi (Age 16, Japan)
- Shoko Arima
  (Age 17, Japan <Living in U.S.A.>)

- Lovely Marian C. Masakayan
  (Age 9, The Philippines)
- Arjun Soni (Age 10, India)
- Jimin Kim (Age 10, South Korea)
- Nur Danya Shamun (Age 10, Maldives)
- Yashi Srivastava (Age 11, India)
- Lillith Bulawa (Age 11, U.S.A.)
- Yaislin Rivas (Age 12, Venezuela)
- Haruka Tada (Age 13, Japan)
- Rana Miyamoto
  (Age 13, Japan <Living in Russia>)
- Antariksh Mahajan
  (Age 14, India <Living in Singapore>)
- Hiroki Otake (Age 14, Japan)
- Taiju Sasaki (Age 14, Japan)
- Su bin Han (Age 14, South Korea)
- Suh Yoon Lee
  (Age 14, Korea <Living in China>)
- Sohum Rajguru
  (Age 14, India <Living in U.A.E.>)
- Valeria Liseichikova (Age 14, Belarus)
- Kenta Bani
  (Age 14, Japan <Living in Bolivia>)
- Hu Fangda
  (Age 14, China <Living in Singapore>)
- Taro Henmi (Age 14, Japan)
- Eriko Numata (Age 15, Japan)
- Kumiko Kato (Age 17, Japan)
- Hongkeun Jeon (Age 17, South Korea)
- Abhishek Raman Parajuli (Age 18, Nepal)
- Paula Szymczak (Age 18, Poland)
- Milicevic Luka (Age 18, Serbia)
- Anna Malinovskaya (Age 19, Russia)
- Ong Yong Ming (Age 19, Singapore)
- Istrate Irina Stefania (Age 20, Romania)
- Alexey Korenev (Age 21, Russia)
- Kamil Mroz (Age 22, Canada)
- Ty Rithya (Age 22, Cambodia)
- Ankit Sharma (Age 23, India)
- Carlos Antonio Alonso Bartesaghi Koc
  (Age 23, Peru)
- Irodahon Saidova (Age 23, Uzbekistan)
- Varuzhan Sahakyan (Age 23, U.S.A.)
- Daniel Noye (Age 24, Ghana)
- Wara Urwasi (Age 24, Indonesia)
- Elías Rubén Calizaya Mamani (Age 25, Bolivia)
- Marie Goto (Age 25, Japan)
- Zemfira Inogamova (Age 25, Kyrgyzstan)
- Manya Ranjan
  (Age 25, India <Living in U.S.A.>)

Best School Award

No School Applicable

2009 International Essay Contest for Young People
[Children's Category - 1st Prize]

Our Sea, Our Future

(Original)

Christ Soselisa
(Age 11, Indonesia)
SD Kristen Kalam Kudus Ambon

In my life, there are some people that inspire me. People that come from different backgrounds, but they were in common for their spirit to fight for what they believe and made a dream come true. People who dedicated themselves to make a better world for everybody else. They are Mahatma Gandhi for his life principle of truth and non-violence, Albert Schweitzer for his cares, love and respect for all living things, Thomas Alfa Edison the great inventor of modern science, and Jacques Cousteau for his passionate love for the sea.

Sea is two-thirds of the world. I live in Ambon, the capital of Moluccas province, Indonesia, where sea is ninety three percent of the total province. Moluccas has more than ten thousand six hundred kilometers long coastal side. Indonesia has eighty one thousand kilometers long coastal side. The sea and the coastal areas play important roles in our small place. We have many kinds of dishes made from sea product. In some area fishermen grow seaweeds to export. Sea vehicles are important as transportation infrastructure. Many people are depending on the sea.

But I am surprised to see that not too many people are taking good care of the sea. Many people only take benefit from the sea but give nothing except pollutant and damages in return. It is like symbiosis of parasitism. There are a lot of garbage, especially plastic garbage are floating, cast along the coastal side and sinking at the bottom of the sea. I saw also sedimentation of the sea as the impact of deforestation which damages the beach and coastal life.

I believe we should give something good to the sea as a return thanks for all the delicious food we eat, nice pearl accessories we wear, a wonderful scene it offers, and so on. Then we can continue to get a quality of sea products and its carried benefits. It is a cycle of life of giving and receiving.

I live in the time where the world is getting old. Pollution, deforestation, green house effect, climate change, global warming, are words that I often hear. All those give direct impact to quality of life of sea creatures. I want to participate in action to minimize all of them, even though in the future I want to become an oceanographer astronaut.

Currently, there are some research on the micro algae or also known as phytoplankton, like Bacillariophyceae and Chlorophyceae. These sea products can produce bio diesel, bio ethanol, and its waste used as a fodder. There is no waste product, and minimize pollution. I want to participate in this kind of research, to find more products to replace fossil oil. They are non pollutant, support the endurance of food, benefit to use also for medical purpose and all come from the sea.

Ambon has huge potential and facilities to support me in this research, in nature, expert people, and traditional knowledge. In nature, beside the sea and the coastal areas, we get sunshine almost every day of the year for the photosynthesis process. There are laboratory and library to use in the local university, and local expert both modern and traditional to consult.

I hope by the time more people realize there is so much life support we can get from the sea, then everybody will start to treat the sea with care and responsible manner with some respect.

In the future, I am going to continue this research to the next level. There are some planets which are like earth and possible to discover as the next earth, and has a sea. Micro algae are one of the living creatures that can survive with very limited living support. Micro algae also absorb carbon dioxide and produce oxygen. This research shall make micro algae as one of living pioneer to carry to the new earth. Some scientists believe that life has started from the sea. I believe sea is our future land. Our future life.

2009 International Essay Contest for Young People
[Youth Category – 1st Prize]

Science and Struggle: The Fusion of Research and Compassion

(Original)

Parwiz Abrahimi
(Age 23, Afghanistan & U.S.A. <Living in U.S.A.>)
Yale University School of Medicine, Yale University Graduate School

Science and technology seem a world away in the vastly populated Dasht-e-Barchi neighborhood of Kabul. Driving along its single congested road, one can see laborers lingering for a day's opportunity to work, donkeys bearing loads of sun-baked bricks, and antiquated buses adorned with colorful streamers and poetic Persian decals. Where the paved street ends, cars are forced to a halt by giant mounds of gravel placed in the middle of the dirt road for nearby construction workers. Hidden behind the mounds of gravel, a hundred meters down a muddy alley lined with dilapidated adobe houses, is a gem lost in the bustle of post-Taleban Kabul: Marefat High School. On the days that I am not instructing the biology and chemistry laboratories at the American University of Afghanistan, I volunteer as a science teacher at this community-led high school. It is here I decided that scientific research combined with social awareness and responsibility could make the conditions we live in better and more sustainable.

Once, after a class in which I introduced blood groups and blood typing, a female student asked, “If my blood group is Rh negative and my fiancé is Rh positive, what steps can I take to avoid problems during child birth?” She was referring to rhesus-sensitization, in which a mother can develop an immune reaction when bearing a child whose rhesus blood group differs from her own. In a Western high school setting answering this question would have been easy, but in this case I did not know how best to respond. In a resource-poor country like Afghanistan there is little health care infrastructure to address problems such as this. I was reminded of the great needs and meager means Afghans have for health care, and thought long about what future applications of science and technology might do to enhance medicine and health education for Afghanistan and other developing nations. In my vision for the future

of science there is greater fusion between scientific research and global health imperatives, creating a more prosperous world through improved health care delivery in the world's most vulnerable regions.

The marriage between science, which seeks to address a fundamental biological question, and global health advocacy, which seeks to reduce worldwide health disparities, is a vital component of my vision for the future. Scientific research must place more emphasis on diagnostic and therapeutic clinical interventions that can be transitioned for use in areas that currently lack human and financial capacity. This requires clinicians with an intimate understanding of basic science, and scientists who have a clinical end goal through which they can promote world health equity by developing culturally sensitive and cost-effective medical solutions that address local public health needs. I envision carving a role for myself at the center of the interaction between clinicians, engineers, and scientists. I am pursuing joint M.D./Ph.D. doctorates which will equip me with the clinical education and research experience to be a successful physician-scientist. I hope to partake in translational pharmacological and molecular medicine research in which I can combine my academic interests in medicine and science with my background in the developing world. I aim to study diseases and new drugs that can help alleviate the clinical burden on resource poor nations at the molecular level.

Through teaching, I have also come to see research and education as complementary. Science instruction in Afghanistan has traditionally been dominated by the look-and-listen pedagogical approach, and does not engage students' interests or encourage them to think critically. Like other schools, Marefat faces many technological limitations. When our electricity runs out, as it does often, we use a mirror and sunlight to illuminate objectives on our compound light microscope. Simple items such as salt, soap, water and rubbing alcohol become reagents to extract cheek-cell DNA. It is not much, but the students gain experience, build confidence in themselves, and are introduced to the scientific method. Accompanying this future direction of science, I see a vanguard of scientists who understand that science has a role outside of research centers, and will champion teaching, public outreach, and advocacy in addition to advancing scientific research. With the right support from scientists who are willing to serve as mentors and advocates, students like those at Marefat have the potential to become future leaders who can help further drive the direction of science in a positive way that benefits Afghanistan and the world at large.

2009 International Essay Contest for Young People
[Children's Category – 2nd Prize]

Building a Smarter Planet

(Original)

Divya Gopinath
(Age 11, U.S.A.)
Seven Bridges Middle School

As a typical American, I depend on energy. I'm a New Yorker, and we need heat in winter and the occasional A.C. to cool us off. Maybe we're not ready to conserve that much energy, but there are certainly feasible ways to cut down on energy consumption. Americans, no doubt the greatest consumers of energy, do have a slight issue when it comes to curtailing their needs and wants. In 2004, the U.S.A. used approximately 2,325.9 million tons of oil alone. Unfortunately, our energy consumption has consequences for the whole world. Global warming and the dependence of the world on oil is, in my opinion, the biggest challenge facing the world today. There are small things we can do such as buying seasonal foods so there is less of a transportation factor in getting the food to you, or turning of lights and taps when not in use, but this will not be enough to solve this crisis. Our only way forward is to use advances in science and technology to save our planet.

Just recently, I participated in a program where children from all around the world would invent or innovate to create something that would help people. My innovation, a machine called EcoFuels, harnessed solar power and used that energy to change carbon dioxide in to carbon monoxide, and from there, morphing it into a synthetic fuel using a catalyzed chemical reaction. EcoFuels is not fundable for large regions, such as the whole of New York, but small cities around the world could depend on it. Although EcoFuels is not yet scalable for practical use, the technology that it depends on, such as capturing carbon from the atmosphere and converting carbon dioxide into a synthetic fuel using the Fischer-Tropsch process, already exist. As part of this process, I also researched other technological innovations into cleaner fuels. I learnt that we have the knowledge to use algae to create bio-fuels, and that this fuel can even be used for jet engines!

We can also use our knowledge of science to develop better ways to deliver energy and to also better control how much energy we use. Imagine something as simple as a sensor installed in all our taps so that it would beep when the desired water temperature was reached. This way, we wouldn't have to waste water while we waited for water to turn hot or cold. Imagine a smarter energy grid that was capable of monitoring energy use and diverting energy to places that needed it.

Even as kids, we can use science to help educate our communities. Earlier this year, I participated in an international robotics program where I researched and reported about climate change and global warming. On both topics, I gave suggestions to the town board about how our town could prevent these two 'cataclysmic' events from happening. For global warming, I suggested, after evaluating two local libraries on how 'green' they were, that the libraries could accommodate small changes in their system, like motion-sensor lights which turn off automatically. Also, regarding climate change, there were certain floods on a parkway in my area, and I suggested to the parkway coalition to plant willow trees along the edges so that a) the willow trees would soak up the rain water and b) so that the trees could consume carbon dioxide. Additionally, I, along with my team, raised $3,000 donated to a public library to buy an interactive white board, or a Smart Board, that displayed our team website and tips to how to stay green, including a quiz so young children could learn. Also, aside from this website, we have climate change blogs that are designed so children can do their own part. After all, the kids of today are the future of tomorrow.

Barack Obama declared in his inaugural speech, "… we cannot help but believe that the old hatreds shall someday pass; that the lines of tribe shall soon dissolve; that as the world grows smaller, our common humanity shall reveal itself; and that America must play its role in ushering in a new era of peace." We should use this as a guide, and science and technology will help make all of us equally prosperous. Cell phone availability in places like rural India has helped poor farmers track the market prices of their crops; computer records have made public records easier to obtain in much of the developing world. We are the people of earth, ready to overcome any challenge that faces us, ready to help others because we care; ready to build a smarter planet.

2009 International Essay Contest for Young People
[Children's Category – 2nd Prize]

Electricity for a Change

(Original)

Amit Jung Himali
(Age 11, Nepal)
Siddhartha Love Dale

There's a lot of power cut off in our place, Pokhara. The production of electricity is very less as compared to the demand. Still we are having problem to get an easy access to the technological update like internet and other electricity devices.

We live in the urban areas and we are having such problems than what must have been to others living in rural areas of western Nepal? Most of the villages remain dark and they are not able to have the facilities of electricity. This ultimately hampers them from having easy access to internet, education, health, entertainment and information.

So this is also affecting the overall life style of such places. The people there have been deprived from proper facilities of quality education which has not made them competitive and capable. So, most of the rural people are not able to have equal opportunities and exposures. They are bound to live a less privileged life making their upcoming generations living an inequitable life. They are not able to get admission in good colleges and hence can't compete for better jobs and chances.

As they are not having good quality education and don’t have access to good government jobs, they are not able to make a proper reservations of their rights. This has made them to do low menial jobs not providing them enough wages to have the basic needs fulfilled. The most favorable ways of living for them is the traditional method of agriculture, carpentry, fishery and working as potters. Can this life give them a prosperous life? They were born poor and will die poor.

Likewise there have not been any activities that can make them aware about sustainability. No any better income generation activities and employment opportunities have been made. So they are wasting the resources around and destroying forests for fire wood.

Now the major question is are they living such a life forever? When are they able to make a better world for their living? The solution could be the provision of electricity. One village, one micro hydro power could be the vision for the betterment of those area. It can bring a lot of changes in such areas enhancing their economic and social life.

There are perennial fast flowing river in such areas. The fast current of such rivers are definitely helpful for the production of electricity. The micro hydropower is cheaper and easier to build. It can be easily build by the community and thus helps in the proper regulation and maintenance in the community level itself. This invention of Edison can easily bring a revolution in such areas.

When the electricity is abundant than it definitely helps in the development of job opportunities. Many kinds of local cottage industries can be promoted that can create a lot of employment opportunities thus encouraging the local empowerment. Local industries like herbal industry, handloom carpet, paper industry will definitely get a lot of aid from this. If there is enough electricity than the traditional industry can be modernized making it more efficient and productive.

It can create more chances of job creation. If there are more job opportunities than it will definitely help to alleviate poverty which will ultimately lead to prosperity.

The people of these areas are quite deprived because they are not having an access to the information. Media like internet, television, fm radios have not reached there. So people are not aware about their rights and facilities. If they can have constructive news on different issues and ways to solve the issues then it will help to erase the dominance and inequity that they have been facing for centuries long. Untouchables, caste system, witchcraft have been prevalent there and it could be eradicated. The discrimination between men and women can also be erased. Such type of information will help to enlighten them thus giving them ways to live an equitable life.

These areas are rich in different types of resources like herbs, minerals, forests .but due to the lack of information and proper utilization they have been destroyed and used in an unmanaged way. If electricity could be used in an efficient way then it definitely helps to replace firewood and minerals. It could thus help in the preservation of forests and different herbs. Thus electricity could help in the conservation of ecosystem thus leading to a sustainable development of the place.

I think to make the world a better place to live in electricity has an important role to play. I want to study in the field of energy and hydropower which will create major changes in such areas. To make revolution in a place we should focus on energy and electricity as it is the basis of every aspect of development leading to equitability, prosperity and sustainability.

2009 International Essay Contest for Young People
[Youth Category – 2nd Prize]

Biodegradable Material for Electronic Equipment

(Original)

Hamida Amalia
(Age 19, Indonesia)
Bandung Institute of Technology

When I heard about this contest, I was remembering my first conference about living environment held by Bobo magazine, the oldest kids' magazine in Indonesia. It was 2001 and I was in fifth grade, more than 30 children gathered from almost all provinces to make a declaration called Declaration of Children Conference 2001 in Living Environment. This declaration consists of two main ideas, The Water and The Waste. I was involved in composing The Waste declaration which one of the point says, "We will separate wastes between the organic and the non-organic ones". After this declaration was accepted by all of delegations, it was given to The State Minister for Environment as a promise from us to protect our environment.

Time goes by. World changes every second, making many differences in each aspect of our life. One aspect which changes rapidly is technology around electronic equipments. When declaration was made, cellular phone was a rare gadget taken by elementary students. But nowadays, every little kid in town brings this thing as communication need from their parents. Now, let us imagine what will happen if all of those cellular phones are broken then asking their parents to buy the new one. How many cellular phones do become non-organic wastes? How we can process the waste? Is recycling a right solution to solve this problem? As one of the delegation who makes a promise to my nation, I have an obligation to give another solution better than what my friends made eight years ago about these non-organic things.

Besides the age shifting of electronic equipment users, kinds of electronic good which develop every season make the problem of electronic waste or e-waste getting worse. iPod, BlackBerry, and Nintendo's Wii are examples of common technology upgrading. If there is a new edition of them launched, everybody seems to have the newest one as part of lifestyle. On the other hand, not every company handles their waste well. Based on Greenpeace data, Nintendo is the

worst company who manages their e-waste, with 0.8 as its index in November 2008. The first, second, and third place are Nokia, Samsung, and Sony Ericsson with their score are 7.5, 6.9, and 5.7.

This condition may become a huge problem in the future when the number of people increases and it is impossible to find wide area for e-waste recycling. Where we will process them is a question we have to answer together, if we want a safe and green environment for our children.

My opinion about biodegradable material for electronic equipment could be a good solution for electronic company to make this earth a better world for human living. Perhaps, this suggestion seems absurd but I have information that two electronic companies, Asus and Fujitsu, have been becoming a pioneer in the making of eco-book. They have used bamboo and cedar wood to replace the using of PVC for laptop's body. PVC produces hazardous gases for our environment such as chlorinated dioxins, a persistent material if it is burnt.

My optimistic mind says that if we concern about researches in biochemistry to find compatible materials for electronic equipment, the pile of broken keyboards which I found its photo in internet will be disappeared because its component can be eaten by bacteria. I have heard that some researchers have found the biodegradable plastic from starch. That is one step ahead to eco-friendly electronic equipment if this discovery develops in to the making of PVC. Even though other scientists say that biodegradable plastic will make two new problems about the using of farming area and genetically modified organism issue, I think it is an interesting topic which our scientists have to find out more comprehensive. After we have done this project successfully, I believe that our chance to discover other materials will be opened, like biodegradable integrated circuit or biodegradable memory card.

To answer this challenge, I wish I could engage in a research that involved microbiology, biochemistry, and ecology together to find those materials. I know I still need some help from other majors like chemistry engineering, electrical engineering, and material engineering. From this research, I hope we can make zero-waste consumption, a principle states that everything which consumed by human can be recycled by nature.

I understand that the path toward our goal is never easy. But with dream, hard work, and pray, we can change word impossible to I'm possible!***

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2009 International Essay Contest for Young People
[Youth Category – 2nd Prize]

When Science Meets the World

(Original)

Phang Wen Bin
(Age 20, Malaysia)
UCSI University

As I am typing this article, I have been thinking, if computer was never created in the past century, will I be able to type this piece of essay by using MS Word to take part in this competition? Without the great invention of World Wide Web by Tim Berners-Lee, can I witness this breakthrough of information technology by knowing the existence of this contest? As I put my thoughts into words, another question pops out of nowhere, "scientific discoveries have brought us to the exhilarating world today, but where are we, the younger generation going to bring the world?"

Standing at the crossroad, with much fear and excitement, my thoughts reeled back to the milestones achieved in science and technology in the past. We have Robert Hooke who came up with the Hooke's Law and the spring which has been very useful in many devices, Sir Isaac Newton who has contributed in Calculus, Gravitational Law, and Law of Motion, Marie Curie who found the elements polonium and radium, as well as Albert Einstein who has managed to revolutionize the physics world with his notable Theory of Relativity.

However, at the same time, we do see some unprecedented consequences appear alongside with the advancement in science. Nuclear weapons and biological warfare pose a lethal threat in causing massacre of mankind if they are deliberately used. With the growing understanding in genomics and biotechnology, cloning is made possible but artificial reproduction might cause a huge impact on the natural selection in the survival of all living beings. A tremendous increase in the consumption of fossil fuel has helped us greatly in transportation and brings in wealth to some countries, yet the environmental destructions caused such as the depletion of ozone layer due to greenhouse gases have put our Earth at stakes.

As a generation of the new millennium, I suggest that a holistic approach in science and technology should be taken. To form a more equitable and sustainable world, we have to ensure that science is being rightfully used to tackle educational, environmental, economic, and social problems.

In bridging the “knowledge gap” between the advanced nations and the Third World Countries, we ought to think about those children who might have lost the opportunities to learn at a very early age, let alone being interested in science. Worldwide competitions like Intel International Science and Engineering Fair (ISEF) and International Olympiads in Informatics (IOI) are indeed two successful initiatives in searching for distinguished young talents. However, these two are only catered for the crème de la crème. We might consider adopting the method, by organizing lower-level science camps and technology competitions, which are led by previous years’ winners in ISEF and IOI. They can teach and inspire their peers who do not have the chances to get in touch with the trainings and teachings in the field of science. This innovative idea is in line with one of the overarching objectives structured in the Medium-Term Strategy of UNESCO from year 2008 to 2013-Attaining quality Education for All.

Innovations in cross-fields technologies have brought mankind to a new and bizarre dimension which we have never thought before. Biomedical electronics, pharmacogenomics and green technology are the megatrends in the 21st century, which I believe will pioneer the developments and applications of science in the future. I remembered reading an article in the Scientific American, about tidal power is the emerging new energy source. It dawned on me that maybe we can adopt the biogas method to generate our vehicles. We all know that metabolism processes in our bodies produce sweat and carbon dioxide, but can we manufacture a waste-detector in our car so that the waste materials can be absorbed and used to fuel our vehicles? If this idea can work, the first organic car will be created and shake the world with its enticing features!

Furthermore, I wish to spearhead a research in biomedical electronics field. I dream of creating an electronic device, equipped with a complex algorithm which enables us to decipher what lies within our brainwaves and convert it to words. If we manage to achieve this, we might be able to help patients who are having problems in dyslexia, autism and depression. We will be able to listen to their thoughts and give appropriate medications.

Science dares us to dream the impossible, gives us the courage to venture into the unknowns, and challenges us to be determined when we are doubtful. But to me, the word Science has a different meaning too, where ‘S’ stands for solidarity, ‘C’ for compassion, ‘I’ for interdependence, ‘E’ for empathy while ‘N’ for neutrality. Science is about the perfect combination of knowledge and humanity values. Only by understanding them, we can create a better world through science and technology.

2009 International Essay Contest for Young People
[Children's Category – 3rd Prize]

Electrical Outages and Influenza

(Original in Japanese)

Motoharu Fuchikawa
(Age 10, Japan <Living in India>)
New Delhi Japanese School

"Hurry up and close it!"

My mother reminded me sharply. Oh no, I've done it again. I hurriedly close the fridge. Habits from Japan die hard and I do it time and again. I'm living in India because of my father's work and electrical outages happen all the time here. Food goes off if the outage exceeds four hours so I understand why my mother gets upset. From her perspective, opening the fridge during an outage is outrageously mischievous.

In Japan, where electrical outages seldom occur, I took having a constant electricity supply for granted. It wasn't until I moved to India that I understood the convenience of refrigerators and the value of electricity. I have always used large quantities of electricity without giving it a second thought, but in India, I learned that many poor people can't afford to use much electricity and others don't even own electrical appliances. In other words, in India, there are lots of people who lead healthy and active lives without the advantages of science, even in urban areas. People can live without the use of technology!

Science develops over time and things that were impossible long ago are now possible. Consider air conditioning and food preservation, for example. Appliances such as washing machines and irons make many peoples' lives easier, and televisions keep us entertained. Such technologies are useful when available. Science is a necessity for me now. However, many things aren't really necessary for people to live as humans. Poor people in India get by without using these technologies. Perhaps, just as I will never travel in space, there are certain extravagant aspects of science that normal people never encounter. I suppose it can't be helped that rich people use certain technologies that poor people can't. Technologies can make rich people's life more convenient and enjoyable. People who can't benefit from them may be

a little jealous, but they still live with vitality. That is the way of the world. However, there is one technology that should not discriminate between those who have access and those who do not, and that is medical technology. This is because medical technology affects people's lives, and whether they live or die. Medical technology is a field of science that should be equally available to both the rich and the poor. This year, there has been an outbreak of a new type of influenza, and my mother said, "Influenza is frightening, but we'll be okay if we get a vaccine."

However, I think that's easy for us to say because we are Japanese. Everyone in the world should be given a vaccine. I've heard the vaccine is still under development, but when there are made, I think they should be distributed to everyone equally. It is not right that rich people are helped and poor people aren't. We are all human beings so our lives are all of the same value. To be equally useful for all people—I think the beauty of science lies in this aspect of fairness. There are benefits of science that remain inaccessible to some people, but without a doubt, we also need some beautiful aspects that are accessible to all.

I haven't got a definite dream for the future, but I would like to become either a scientist who confronts fearful diseases such as new types of influenza, or to do a job that enables me to distribute new technologies fairly to the people who need them.

2009 International Essay Contest for Young People
[Children's Category – 3rd Prize]

Let It Light the Darkness: A Dream Comes True

(Original)

Adeline Tiffanie Suwana
(Age 12, Indonesia)
Jubilee

The chirping birds, fertile rice fields, clean-fresh-air, the clear blue sky and the shadow of children in the friendly community of Cilulumpang Village in the mountains of South Cianjur give me energy and power to reach them although I have to walk along the 3 miles terrain.

Cilulumpang is the name of hamlet in the village of Cempaka, Mekarjaya that is reachable within 4 hours drive from Jakarta where I reside and 2 hours walk to reach it.

The population of Cilulumpang reaches almost 300 heads of households with 4-5 members in each of the family. Their source of living is through farming rice and various crops. The Cisoka River flows continuously throughout the season to irrigate rice fields and also for day-to-day needs. All daily needs are met from their existing natural resources.

However, there is only one thing not in Cilulumpang that is lights. Electricity is a dream, longed by the children and the community. There is no electricity at school. Mothers cook with woods, children study under the patch light and they use small flashlight to light at night.

It is quite surprising, in the 21st century, many villages in Indonesia still do not have electricity. Almost 48% from the Indonesian population of 230,472,933 live in areas without electricity supply due to the absence of a power plant capacity and difficult areas to access.

With desire, determination and commitment, I try to fulfill their dream into a reality especially for the children whom I have met.: Euis and her friends, flowing the electricity into their houses for the children's studying, watching television and all other activities in the day and mainly at night.

The potential electricity we will apply is based on surveys and researches of the location combined with my school knowledge of Science, Electricity, Mathematics and Physics. These knowledge will definitely help me in providing a new source of energy that is environment-friendly without damaging the mother nature.

As today's crisis environment causes climate change, this draws me to create a power plant that uses natural potential nearby.

We will create a new source of electric energy that is environment-friendly. Cilulumpang has great potential for water energy which comes from “Curug Dendeng” Waterfall in which the water energy combined with a turbine and dynamo could be utilized and converted as a source of electric energy which we call as “Electric Generator Water Reel”.

For the turbine propellers, we use wood from jackfruit trees as it is resistant to water and does not break easily. Dynamo is created by rolling copper wire into a roll-ball.

The children and community of Cilulumpang helped me to assemble the turbine into position which would continue to revolve processing energy from the water into electricity.

The power which we get from the 18 metres head of the waterfall combined with the 14.16 litres per second flow(volume) of the waterfall will come into:

Power = Head X Flow X Gravity
= 18 X 14.16 X 9.81
= 2,500 watts

But, the efficiency of around 80% from 2,500 watts is expected from the mechanical energy into electrical energy which produces electricity for Cilulumpang.

Fourty families with children are prioritized to having the electricity with the power of 50 watt/family.

Living with electricity will provide a better life and development to the village. More development activities can be carried through with electricity that is previously impossible. This is definitely promoting better quality of life and economic growth to the villagers.

At the same time, we are utilizing an environment-friendly energy that does not increase the amount of carbon dioxide to the atmosphere, which worsens the greenhouse effects; as earth's temperature rises.

It is such a relief feeling seeing Euis, her friends and other villagers are very happy, grateful and excited having lights for the first time in their life. Now, they can also watch television and see other part of Indonesia and the world.

A new source of energy utilizing the abundant potential energy of water in Indonesia will definitely give hope and encouragement to improve the quality and way of life; increase productivity; improve education and health facilities, provide better economic activities; increase new employment opportunities; improve the growth of the village as a whole; provide peace and spirit of mutual assistance for all villagers; bring and unite all villagers' sense of togetherness in becoming an independent village which excels in welfare and better life without destroying the earth.

Nature's gift combined with science and technology has become more wonderful when we utilize them truly and rightfully. Nature has provided us the goods for our lives. Let us continue to keep this balance of nature combined with the knowledge of science and improved technology so that we can continue to feel the benefits without destroying our mother nature.

2009 International Essay Contest for Young People
[Children's Category – 3rd Prize]

Photosynthetic Masks and Global Warming

(Original in Japanese)

Mizuki Hashimoto
(Age 13, Japan)
Otsuma Ranzan Junior High School

The environmental issue that worries me most is greenhouse gasses, the main cause of global warming.

I say this because while ice on earth has started to melt and there are countries that are beginning to sink, some countries continue to emit huge volumes of greenhouse gasses. Japan too set a goal in the Kyoto Protocol to reduce emission of six types of greenhouse gasses by six percent over the five year period 2008~2012, but has actually increased emission by eight percent. My concern is that although we talk about fighting global warming, nothing much has improved.

Global warming is largely caused by greenhouse gasses. Of these, the substances regarded as being the main cause of global warming are carbon dioxide and nitrogen oxides.

Carbon dioxide is mostly produced by people's breathing and combustion of fossil fuels.

On the other hand, nitrogen oxides are mostly produced when fossil fuels are used. The warming effect of nitric oxide—a type of nitrogen oxide that is also a greenhouse gas—is 310 times that of carbon dioxide. Moreover, nitric dioxide, another type of nitrogen oxide, also causes phenomena such as acid rain and photosynthetic smog.

I think greenery campaigns are the best means of reducing carbon dioxide. This is because plants photosynthesize and convert carbon dioxide into oxygen, and although plants do emit carbon dioxide at night, they absorb a greater quantity during the day when the sun is out. So, having more plants can reduce the amount of carbon dioxide. Vegetation in urban areas declined rapidly due to increases in the number of buildings. However, having learned that this

affects global warming, campaigns are being launched to increase greenery and remedy this situation. Rooftop gardens and the planting of grass in school play grounds also serve this purpose.

As a means of reducing carbon dioxide, I would like to propose development of products that use chloroplast in a similar way to photosynthesis in plants.

My first proposal is a photosynthetic mask. Chloroplast would be jellified and a pocket would be incorporated into the mask where it covers the mouth. The chloroplast gel would then be inserted into this pocket. The chloroplast would be made so that it is effective for one day. By wearing this mask when they go out, people could reduce the amount of carbon dioxide they emit while breathing. Moreover, a system could be created to collect used chloroplast gels and utilize them as compost in much the same way as leaves.

Furthermore, if it is possible to interweave chloroplast into fibers without losing its efficacy, it could be all the more effective. Using such fibers in masks and clothing would make conversion of carbon dioxide into oxygen possible in many different places. On a farm, for example, lining cattle sheds and so forth with fabric made of these fibers could help to reduce the carbon dioxide emitted when animals breathe.

Filters are currently used in many ways. If the efficacy of chloroplast could be incorporated into these filters, they could reduce the amount of carbon dioxide emitted during combustion of fossil fuels. Installing such filters on all exhaust outlets could have a huge effect. We have to continue coming up with ways of converting carbon dioxide emissions into oxygen.

As a child I often caught tadpoles and crawfish, played “Tarzan” on a thick rope tied from a tree branch, and got covered in mud as I played in nature. In order to allow the next generation to experience and enjoy the same smell of soil and greenery, I would like to reduce waste and do what I can to improve the environment along with my engagement in greenery campaigns. I will do my best to stop global warming even a little bit sooner. Finally, I would like to think of ways to spread ideas and actions however small, not just in Japan, but throughout the world.

2009 International Essay Contest for Young People
[Children's Category – 3rd Prize]

Dynamic Science: The Makings of a Better World

(Original)

Denzil Furtado
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Xavier College Burke Hall

"Every great advance in science has issued from a new audacity of imagination" (John Dewey).

As people around the world strive for the increased growth of society, it is becoming increasingly evident that science and technology play key roles in addressing the needs and challenges we face in the modern world, every day of our lives. If we as global citizens are to achieve this vision of growth and development, it is integral that unified action is taken at local, national and international levels by everyone in order to achieve solutions to our common aspirations.

Despite the advancements made by our past and present-day scientists, it is clear that science in our communities needs refinement. In the words of Martin Luther King Jr., "Our scientific power has outrun our spiritual power. We have guided missiles and misguided men." It is time that people around the world come together in the name of science and technology to help break down the international, racial and cultural barriers between people, and to focus their combined efforts into changing the world for the better.

According to the United Nations, 2001-2010 is the "International Decade for a Culture of Peace and Non-Violence for the Children of the World" while 2005-2014 is the "Decade of Education for Sustainable Development". In order to nurture both of these values, it is important that we, as members of the global community, create an awareness of the current inadequacies within society, in turn becoming empowered to employ innovative initiatives [and play leading roles in them] to address and rectify these current short-falls.

This is where my role as a youth, citizen, and most importantly, catalyst for positive change, plays a part.

I believe that the key to development and growth on a global scale is in creating awareness and fostering scientific outreach within communities of every kind.

Thus, the strategy I seek to employ involves a holistic, comprehensive approach to bettering scientific communities. Right from aspiring kids acquiring analytical thinking skills through the use of specially-tailored ICT programs, to professional human-aid experts developing new novel-cell therapy technologies, my projected scheme encompasses every level of science in a generalized, yet radical, notion.

It is called the Dynamic Science Initiative (or DSI) and is centred on five main categories of science, (Power, Digital, Health, Eco, Creative) to be applied as a whole unit into the education system from a secondary schooling level. During the schooling years, each area will be explored through the use of various creative activities, after which students will have the choice to further pursue one category of the program as a career choice.

Power: This area explores alternative, eco-friendly land, aero and aquatic propulsion technologies and power sources. At a higher level, areas of research could include the enhanced study of magnetics (polarities) to provide reliable propulsion/power technology, and the development of nanotechnology to support the power industry.

Digital: In the information age, the advancement of safer global media and communications networks required for 21st century research is integral. This research will enable open collaboration, conferencing and communication across borders, thus striving for harmony among diverse peoples and cultures. At a youth level, the development of user-friendly digital and ICT programs is to be addressed, which will serve to stimulate and improve kids' learning, organisational, and analytical thinking skills necessary in later life.

Health: In this section, youths will learn about the physical obstacles and impediments facing humans and ways to overcome them using science and technology. Professional engineers will pioneer new ideas for improved human health, such as novel drug discoveries, biomedicine, and even bionics, looking to past inventions (such as the i-Limb) for inspiration.

Eco: This area deals with the conservation and protection of the biological, earth, and environmental sciences. Children will learn to appreciate and care for the ecosystem, while

scientists will search for new ways of reducing our impact on society, through programs such as biocatalysis (the manufacturing of renewable sources for sustainable development) and enhanced biomimicry.

Creative: This last section allows youths and scientists to explore their creative side in areas such as entertainment, gaming and sporting technology.

Applying the DSI in this way will allow for two major outcomes. One, students will be granted a wider awareness of science and technology from an earlier level, and will thus be able to acknowledge, address and act on pressing issues within the community. Secondly, students who develop a strong passion for science will be able to establish, nurture, develop and follow their chosen paths through life from an early age, hence, not only setting themselves up for a brighter future ahead, but also bringing us the enhanced ability for positive change through our leaders of tomorrow.

Ultimately, the DSI will help to build a better and stronger science innovation system for the twenty-first century.

2009 International Essay Contest for Young People
[Children's Category – 3rd Prize]

"Science" Equals "Humans"

(Original in Japanese)

Tatsuhiko Hasemi
(Age 14, Japan)
Fuzokuchuugakkou Senior High School, Honjouhigashi

What kind of world would truly be a "better world"? It would certainly be a peaceful place where there is no war; however, I believe that the future direction of the world will depend on science.

Take nuclear power as an example. Presently nuclear power is used to produce energy, and because it has great power we are able to obtain a large amount of energy from it. But if this tremendous power is misused, terrible consequences will follow. An atomic bomb was actually dropped on Japan, killing many and leaving serious aftereffects on people.

Science is useful yet, if its use is misguided, it will end up going in a bad direction. Today, "science" itself is evolving and changing rapidly. We often hear that science is "for the good of humanity," but can we really say that it is for "all humanity"? Personally, I believe that it is only good for a small number of developed nations. This is evident if you look at how science progresses in a way that is completely irrelevant to the plight of developing regions and nations. In other words, people who are advancing science have only themselves in mind.

What should we make out this situation? Even if people say that they are "dedicated to helping the world," they are "dedicated to helping themselves" after all. If we are really concerned about the world, we should visit different places themselves, experience life there, and create science that could remedy the problems found in such areas. If that is not possible, we should at least do our best to collect information and understand the current conditions of the world.

The state of the world is not as good as we think it is. In order to improve global conditions, therefore, we must proactively explore ways to make best use of scientific accomplishments. I myself too, would like to engage in such research when I become an adult. I want to be

involved in the development of excellent science that would be really useful for the world—science that would have an impact on all of humanity.

I have been thinking about what “science” should do, but during the process, I realized that “humans” come before “science.” It is humans that develop science, and it is humans that use science. In other words, science is a creation of humans. Then the role of science must be the role of humans. In order to build a better world, however, human beings must change first.

Civilization has made remarkable advances, and these reflect human progress. Along the way, however, people lost sight and became only able to see themselves. As a result, we see disparity of wealth and gaps between nations.

I feel that right now we need to stop thinking about “I” and start thinking in terms of “You.” If we don't develop science with a selfless spirit, we would not be able to create science that is truly “for the good of the world.” This is certainly a difficult task. However, if we do not do it now, I think it will be too late. All humans have desire for benefits; this cannot be helped. But by controlling that feeling, and by starting to think about others, I believe change is possible. When that change of mind brings about change in science, I believe we will begin to see a better world.

In conclusion, the “better world” I envision will be created not by the “achievements of science,” but rather by the “hearts of people.”

2009 International Essay Contest for Young People
[Youth Category – 3rd Prize]

The Power of Science Illuminating the World

(Original)

Heidi Baumgartner
(Age 16, U.S.A.)
Hunter College High School

Only twenty hours after I took off from JFK airport in New York, I was behind the barbed wire fence of a hotel in Liberia in total darkness and stifling heat. The electrical generator had stopped working. It was an unreliable substitute for the power grid that had been destroyed during the 14-year-long civil war. On the street, trucks spewed thick black smoke that choked the air. I held my breath and hoped that no one would use the darkness as a cover for crime. During the following two weeks, as I helped conduct high school science workshops for Liberian students, I witnessed a broad range of problems afflicting the West African failed state. And in that time, I made the decision to devote my future career as a scientist to solving them.

Liberia's problems are by no means unique. About one third of the Earth's population has no access to electricity, and for many more people electric power remains an unaffordable luxury. Every year the poor spend the equivalent of over $35 billion in kerosene lighting and disposable batteries—a large portion of development aid that should be used more productively. Many have limited access to fuel, and the consequent foraging for firewood causes deforestation and destruction of the environment. Without access to cheap energy, developing countries will not implement modern agricultural, manufacturing, information, and communication capabilities, thereby trapping themselves in economic stagnation. It is also undisputed that without reliable renewable energy sources to replace rapidly disappearing combustible fuels, the future of all human kind is jeopardized.

Just as scientists have time and again solved many of humanity's problems, for example by mitigating famine and disease that plague third-world nations, they now must solve the world's next biggest problem. They face the task of developing clean, renewable sources of energy that will terminate our dependence on fossil fuels and ensure the stability of our planet's climate. Their development of an inexpensive alternative energy source can assure

the prosperity of the poorest countries. This is possible by harnessing the power of nature, and in particular, the radiance of the Sun.

Methods of converting light energy into electricity are already known, but present solar technology does not yet constitute a viable replacement for other means of electricity production. The present limitation on the effectiveness of solar panels is the insensitivity that silicon in solar cells has towards a large part of the light spectrum. However, there exist other kinds of crystals that function like silicon, which are sensitive to a far larger range of wavelengths of light. These crystals are known as quantum dots, because they are so tiny that they are governed by quantum mechanics, the type of physics that reigns at small scales. A compilation of these crystals embedded in plastic can form a solar cell whose efficiency exceeds 90%. The sun shines everywhere, and a solar cell produces no greenhouse gases.

Quantum dot solar materials are on the brink of commercial viability; they are not a futuristic fantasy. Once this technology is implemented, it will change the world. Clean, cheap, and sustainable solar power will vastly improve the quality of life for people in the most remote areas of the globe. It will boost every person’s production capability and stimulate even the poorest economies. Cheap electricity will power pumps that access water deep underground in areas with drought, and light lamps that keep streets safe at night. With quantum dot solar panels, even the most remote village will power computers that bring it the vast databases of knowledge of the internet. Individuals will be empowered like they never have been before, and as the shackles of the power grid are broken, the only limit to learning and innovation will be the human mind.

With good governance backing the constant stream of innovation that science provides, humanity will be able to continue on the path of economic, environmental, and social development. As I write this article, I am working at the Jefferson National Lab Accelerator Facility in Virginia, where I have been funded to do my own research. I am building a cyclotron, an instrument that I am using to create antimatter, a potential energy source that may be exploited in the future. As long as such projects are actively supported, science will perpetually open new doors in more ways that we can imagine. Deployed within the appropriate political, economic, and organizational framework, science and technology will continue to provide solutions to overcome poverty, promote sustainable development, and protect the environmental integrity of our planet. Once I embark on my career, I will ensure that all

children in Liberia have electricity to study by after dark. If we work together to capture the energy of nature, the power of science will transform the world into a better place.

2009 International Essay Contest for Young People
[Youth Category – 3rd Prize]

Proposal: Innovating Solar Power Systems to Improve Lives

(Original in Japanese)

Lilian Kanaya
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Chicago Futabakai Japanese School

When we think about improving the lives of people around the world, the first obstacle we face is "disparity." In order to overcome disparity and make the world more equitable, "distribution" and "circulation" must take place. These two words are the key to making the world a better place. It is of utmost importance that the wealthy countries willingly lend a hand to other countries. Rather than giving things, they should "distribute" energy, which is the source of all things.

The fundamental problem comes down to energy, and the energy source I'm thinking of is zero cost. Although the world aspires to become a low carbon society, we currently depend on oil resources that emit carbon dioxide. It is nothing less than human arrogance to exhaust only in the past few centuries these resources that took hundreds of millions of years to make. Depletion of oil resources is foreseeable and atomic energy is accompanied by danger.

Then what kind of power can we get for free from nature? Without a doubt this must be the Sun. I would like to focus on the solar power—the blessings of the Sun shared equally among all people. Let us consider using this for our homes, which is a part of our daily lives. (Refer to photographs) Japan lead other countries on an individual level in that public subsidies for homes that install solar power systems have been available for some time, and households use this to lower their energy bills and sell any surplus. Other advantage is that the Sun does not emit carbon dioxide and therefore its use would prevent global warming.

On a national level, regions such as Africa that have summer conditions year-round are best able to benefit from solar power. These regions could store particularly large quantities of solar power which could be used in daily life for water supplies, air conditioning, lighting and engine. Utilizing it for engine would facilitate a large number of production activities and stimulate

economies. African nations could also benefit by exporting stored energy to regions in Northern Europe with white nights. African nations which have been regarded as developing countries could become countries taking the initiatives to distribute and circulate energy. Perhaps developed countries could provide developing countries with free solar systems in order to help their progress. The developing countries would be the ones to reap the benefits, but this could be the most effective way to uplift the standard of the whole world. Solar energy can be used in many fields such as solar utilities, solar means of transportation and solar street lights, and it would contribute greatly to local communities.

Next, I would like to think about the use of solar power on a global level. It is a project on a UN level in terms of budget and scale to create a large-scale reducing device that uses solar energy to electrolyze water. Reduction would produce oxygen and hydrogen, and the hydrogen could be used as hydrogen gas in air conditioning. Furthermore, I've heard that hydrogen is useful medically for aging and cerebral infarctions. Another merit is that it is effective at preventing degradation of industrial products. On the other hand, oxygen is used in human treatments such as sterilization and detoxification. The installation of solar systems in Africa, as I have proposed above, will not only produce energy but also its secondary products, which could raise the level of healthcare in these regions. At any rate, it should be introduced on a trial basis in Africa, and if it's successful there, it should then be introduced in South America, another developing region.

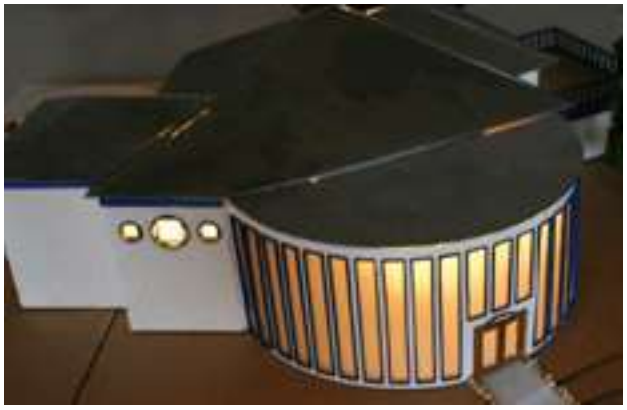
An agency for the peaceful use of solar energy should be established within the UN and entrusted with overseeing these projects. Then, various countries should send administrators, engineers and medical practitioners. A system could be established so that ordinary companies cooperating in this project could receive some kind of score as an incentive, and be given a reward such as special tax treatment or financial incentive for accumulating this "cooperation scores". These companies would be recognized globally as progressive environmentally-friendly companies corresponding to their scores.

Put simply, the second key word "circulation" refers to "reuse." Resources and products are all limited so we have to build technological systems that facilitate the recycling and reuse of these energies.

Partnership and cooperation between all countries in the world is indispensible to the implementation of this dream project. In other words, we can only eliminate disparities and

make the world a better place if there is peace in the world, and our perception of which comes first, the chicken or the egg, is being questioned.

Accompanying Photographs:
The miniature house below was designed and built by me.
(Upper left) The black paint on the roof over the main building as seen from above is made of a new type of highly sensitive solar paneling; it doesn't detract for the house's appearance because it is the same size as the roof.
(Upper right) View from the back
(Bottom) The glass blocks in the semi-circular front entrance are designed to absorb solar energy.



2009 International Essay Contest for Young People
[Youth Category – 3rd Prize]

Scientific Development and the Coexistence of Animals and Humans

(Original in Japanese)

Hikari Kunitomo
(Age 17, Japan)
Fukuchiyama Seibi High School

Have you ever thought about the feelings of animals that have lost their mates as a result of global warming or animal testing, and are suffering themselves?

My love of animals comes from having a pet dog as a child. Living creatures—from insects such as ants and spiders to animals as large as elephants—are striving to ensure the survival of themselves and their kind. I have learnt so much from observing these animals.

There was a time when I wanted to become a vet in order to help them. Being a vet is a wonderful job as you can help animals that are suffering. However, you can only help the one animal in front of you at any given time. I wonder how many other animals suffer or die during that time. This thought frightened me, because it might make me feel powerless.

Then, what can I do to help my beloved animals?

The first time I found studying at school interesting was in science class in elementary school. During science experiments, I was able to solve a long-held mystery and was amazed by unexpected results. Over time, I came up with more questions and more things I wanted to know. I want to continue solving more mysteries and learn more about things I don't understand. It was while I experienced such feelings that I decided to become a scientist and tackle environmental issues that cause so many animals to suffer. Then, even indirectly, I could help save animals, including wild ones.

However, as my dream for the future grew, I came face to face with a cold reality: involvement in the field of science would probably involve conducting animal tests. Wasn't I becoming a scientist because I loved animals and wanted to tackle environmental issues out of a desire to

help them? Would it be right for me to assume a position in which I might hurt animals rather than help them? Of course, it is true that animal testing has played a major role in scientific development.

Is it possible for me then to become a scientist dedicated to animals instead of a scientist dedicated to mankind? I took this opportunity to think deeply about this in my own way.

In the end, I could not reach a conclusion. What I did understand was that this was a very difficult and profound issue for me as I aspire to become a scientist.

So, I would like to devote a lot more time to this question as a theme in my life, and think about it deeply by listening to lots of other people's opinions and undergoing various experiences. If my thinking should become biased once I become a scientist, I would like to remember this feeling and continue to question myself: What is the purpose of this experiment? Is this really the best method?

Also, I would like to do the best as I can to protect the natural state of our precious earth. To this end, when I am a university student, I would like to study not just my own field but also as many other fields as possible, and learn how to look at the problems from various perspectives. Then, I would like to work as a volunteer in nature reserves around the world and observe the ecologies of animals living in near-wild conditions. I would also like to visit facilities in countries tackling environmental issues and areas affected by environmental problems, and listen to various opinions in order to verify whether science dedicated to animals is really appropriate. I hope that future scientists like myself would also think about this question.

There is a limit to what I can do. However, even trivial things cannot be changed without action. On the other hand, even if tiny, actions taken by many people will no doubt lead to a good result.

I hope to realize in this world what may seem difficult and only an ideal today. My wish is to use the power of science and everyone's cooperation to create a bright world for all living creatures, including animals. Surely this must be the future role of science.

2009 International Essay Contest for Young People
[Youth Category – 3rd Prize]

Favoriser l'accès aux sciences pour construire un monde meilleur

(Original)

Kim Pawliw
(Age 17, Canada)
Cégep de Sherbrooke

Il y a quelques années, alors que j'étais en 3ième secondaire, un professeur a remarqué mon intérêt pour la biologie et les sciences. Elle m'a proposé de participer au concours régional d'expo-sciences. L'idée m'a immédiatement plu. Ce que j'ignorais à ce moment, c'est à quel point ma vision du monde allait changer. Pendant tout l'été qui a suivi, j'ai lu des articles scientifiques et j'ai visité des musées afin de me trouver un sujet de recherche captivant. Mes intérêts m'ont mené vers la biodiversité marine et les richesses de cet écosystème. Passionnée par mes lectures j'ai réalisé que bien des menaces rendaient fragile cette vie sous-marine. J'ai aussi compris que des sources inespérées de médicaments potentiels pouvaient s'y trouver et que c'était inquiétant de voir la façon dont on traitait cet écosystème. Lors des expo-sciences, j'ai rencontré des gens de partout, des étudiants comme moi, des professeurs de sciences et des chercheurs. J'étais comblée, car je me retrouvais dans un univers où tous partageaient la même passion que moi et espéraient faire une différence dans le monde.

Comme moi, beaucoup d'élèves ont été attirés par les sciences lorsqu'ils étaient plus jeunes, les petites expériences nous fascinaient, mais lorsque les cours de sciences et de mathématiques arrivent au secondaire, on ne voit plus le côté magique: il n'y a plus de place ni de temps pour l'émerveillement. Les programmes sont trop chargés, les professeurs et leurs élèves sont bousculés. Des heures et des heures de mémorisation de notions qui seront vite oubliées, car elles ne seront plus utiles après les examens. On nous demande d'avoir des notes formidables pour accéder à certains programmes: les étudiants n'ont quasiment plus le droit à l'erreur. Plusieurs jeunes abandonnent les sciences, étant démotivés par la charge de travail, ils ne se sentent plus concernés. Pourtant, je ne crois pas que ce soit seulement les personnes ayant toujours eu de la facilité dans leur parcours académique qui deviendront nécessairement les meilleurs scientifiques. Certes, il faut une rigueur en sciences, mais il faut aussi cesser de

la réserver pour une soi-disant élite. Il faut raviver la passion initiale et redonner à la science sa place dans la vie de chacun. Notre planète se portera mieux lorsque les gens se sentiront impliqués. Ce qu'ils voient présentement, c'est une planète en détresse, des inégalités entre les peuples, des ressources non partagées, des choix de société douteux et peu de moyens pour agir.

Pour arriver à donner à la science un rôle positif, j'encourage les jeunes à s'impliquer dans les expo-sciences. C'est un moyen efficace d'acquérir des connaissances et de trouver des pistes de solutions pour changer un peu le monde. J'ai la chance de vivre dans un pays, le Canada, où l'on ne manque de rien, mais il m'est impossible de fermer les yeux sur les catastrophes que vivent des millions de gens. Il m'est impossible de fermer les yeux sur le sort de notre belle planète. Pour l'instant, je fais ma part en animant une chronique scientifique à la radio communautaire de ma ville. Une fois par mois, je me donne comme mission de sensibiliser les auditeurs aux problèmes écologiques et aux découvertes scientifiques. Pour moi, trouver un sujet scientifique, le maîtriser du mieux que je peux et ensuite le vulgariser en ondes constitue une source de motivation incomparable! Sentir que la science est accessible et magique comme lorsque j'étais plus jeune, voilà une merveilleuse façon de se donner du pouvoir pour construire un monde meilleur. C'est en partageant nos connaissances que la science se portera mieux, c'est aussi en modifiant les exigences d'admission dans les facultés de sciences que nous verrons un véritable vent de renouveau. On ne changera pas le monde en répétant toujours la même chose. Oui, la science doit avoir la mission de créer un monde plus juste, prospère et durable, mais sans l'implication d'un plus grand nombre de jeunes dans un parcours scientifique j'y crois difficilement.

Je vais terminer par une citation éloquente d'Albert Jacquard, tirée de son livre : « L'équation du nénuphar », en parlant de la société et du système d'éducation, ce généticien et philosophe écrit : « Un changement radical d'orientation est nécessaire. Il implique de proposer aux jeunes non pas de se faufiler dans la forteresse, mais d'en abattre les murailles ».

Encouraging the Access to Sciences to Construct a Better World

(English Translation)

Some years ago, a teacher noticed my interest in biology and sciences. She offered me to participate in a regional expo-sciences competition. I liked that idea immediately. What I ignored at that time is how deep this moment will change the way I perceive the world. Throughout the following summer, I read scientific articles and I paid visits to many museums and exhibitions in order to find a captivating and inspiring research theme. All these studies have led me towards the biodiversity of the sea and the richness of this amazing ecosystem. Enthusiastic about my readings about the ecosystem of the oceans I realized the various threats sea-life (under-water world) is exposed to and affected by. I also realized that this aquatic ecosystem offers unexpected resources of potential medications, and I also became aware how alarming it is to see how we are dealing with and misusing this ecosystem. At the expo-sciences events, I have met people from everywhere, students like me, teachers and scientific scholars and academic researchers. I was overwhelmed, because I found myself in a universe where everybody was sharing the same passion and enthusiasm than I did, and all came with the hope to make a difference in the world.

Like myself, many pupils/students have been attracted by science when they were younger. We have been fascinated by the little experiments, but as we move on to higher school grades, we have been disenchanted by classes in sciences and mathematics. We couldn't see and feel the magical side of sciences anymore due to the way they were taught to us: there was no more space and time allowed for wondering. The school (academic) programs and curricula are too much filled with learning content; teachers and students feel stressed by a huge amount of learning stuff. We spend many hours to memorize knowledge and formulas we forgot as soon as we have passed the exams. We are requested to have excellent credits/grades in order to be able to have access to specific study programs: it is almost forbidden for students to make mistakes. The consequence is that many students are giving up on sciences and are demotivated and frustrated by the huge amount of learning and memorizing stuff. Many of them are no more interested in sciences. Nevertheless, I do not believe that academic students having excellent credits are automatically becoming the greatest and most innovative scientists. Of course, there is a certain need of rigorism in sciences, but it is also necessary to stop reserving it to a certain so-called elite. What is truly necessary is to reawaken/revitalize the passion in each of us to discover things in life and to put science back in everybody's daily life. The state of our planet will improve when every

human being feels involved and concerned. What people do see today is a planet in peril, disparities among peoples, non-shared resources, unsustainable decisions and few ways for people to take action and get involved.

In order to give science a positive role and to reenchant science, I encourage young people to get involved in expo-sciences events. This is an efficient way to get some interesting knowledge and to find new pathways for solutions in order to change the world a little bit. I am very lucky to live in Canada, a country of plenty, but it is impossible for me to shut my eyes and not see all the distress millions of people are going through. It is impossible for me to close my eyes on the destiny of our beautiful planet. At the moment, I currently do my share by leading a scientific program on the community radio of my city. Once in a month, I give myself the mission to raise awareness of my audience about ecological problems and scientific discoveries. For me, finding a scientific topic, to learn about it and to master it the best as I can, so that I can share it with my audience of my city community through radio waves, constitutes a deep and fulfilling source of motivation! Feeling that science is accessible to many people and magical just like those times when I was a kid discovering my world is a marvelous way of self-empowerment for creating a better world. It is by sharing each other's knowledge that science will improve. It is also by changing the current requirements for having access to scientific/academic institutes/faculties that we will truly see a wind of change and renewal. We will not change the world to the better by repeating always the same things. Yes, science should have the mission to build a better, more just, prosperous and sustainable world, but this will be quite difficult to realize without involving a great number of young people in the scientific process.

I would like to end with an eloquent quote from the philosopher and genetic scientist, Albert Jacquard, picked from his book "Equation of the Nenuphar," when he speaks about society and the educational system: "A radical change of orientation is mandatory. This consists in proposing to young people not to hide into fortresses, but to tear town walls."

2009 International Essay Contest for Young People
[Youth Category – 3rd Prize]

The Role of Science in Building a Better World: Shifting the Paradigms!!

(Original)

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(Age 21, Nepal)
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The last century was an era of scientific feats and marvels of technology. There were unprecedented developments in science that marked not only the great achievements that man made in terms of accelerating the development but also the ruthless uses of technology that slowly made mankind to raise doubts about its future when left totally with the power of science. It is redundant to discuss the achievements and also the negative impacts of science because these are discussed everywhere else. I would rather prefer to write more about the areas that are unique in the context of science and the society.

An important aspect that had been so far undermined is that the last century not only saw the unimaginable progress in the technological development in all the sectors, but the distribution of development that had been extremely skewed. Hence, this was also the era of increasing inequity and there were significant differences between places in reaping the benefits of development. This, if continues, will create even greater rifts between society and hence the great works in science will be overshadowed. This applies not only to the differences in the level of health care between countries, but also in the advances in information technology and the impacts of climate change. Poor families in sub-Saharan Africa languish with the ravages of HIV/AIDS without even the access to antiretrovirals. A young student in Latin America graduates without having touched a computer. Kids in rural Asia make risky journey of hours just to reach their school. And the list continues. It will be difficult to boast for the marvels of science, when such disparities hover all around. There is no magic solution to this. However, due consideration to pro-poor technologies and simultaneous efforts to bring down the costs will lead to a better world, crafted with the beauties of science. Similarly, the language of researches and the discussions on various issues are generally limited to the handful of few experts. Very few things get understood by common people and they have negligible input in major discussions. Hence, efforts should be taken to make things more understandable and

also bringing the common people in the loop. Science represents the truth but truth is not just limited in science. Hence, if attempts are made to incorporate the social views and values, science will definitely be in a better state to have an impact in the world.

Another important aspect in this context is the consideration to human values. Technologies succeed when they are meant to augment human relationship and values, and fail when they tend to replace these. In the frenzy of the new scientific development, scientists very often forget these things. The weapons of mass destruction that were initially thought to curb atrocities are themselves creating the greatest chaos in the world. It is apparent now that peace is not won by war, neither, victories are gained by confrontations. In the long run, understanding this will prove to be the key to success for a better world. Another point linked to this is the harmony with nature. Science can make the world better when it tries to become a friend of nature, not the rival. Momentous glories seemingly thought to be victories against nature are ultimately doomed to fail sooner or later. The grave threats the world is facing with global warming is a testimony to this. Time and again, nature backlashes against the crimes committed against her. Wise will understand this beforehand and hence take precautions not to disturb nature, while fools rush in to create empires by destroying the rules of nature.

As a person who grew up in rural Nepal and having seen the sufferings of the people for the basic lack of health care, I chose to study computer engineering with the hope that someday I shall be able to use the best of the technology to the rural poor. My special interest is in the area of telemedicine. If I were to take any such initiative, I shall start with the relationship building exercise between the rural health workers and the health workers of bigger centers. Studies have shown that there are more effective consultations when people deal with those who they know. After this only I shall train the people on the aspects of technology. Although the road is full of challenges, it is worth trying such a community based and relationship based approach to telemedicine. We may not expect that it solves all the problems, but at least it takes primary health care in developing countries a step ahead, which will pave a road to more successful endeavors of saving lives and reducing human miseries. This is the time to shift paradigms. A better world is created through lives living happily- and together!!