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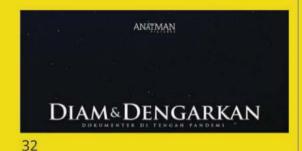
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QITEP in Science









## Editor Message

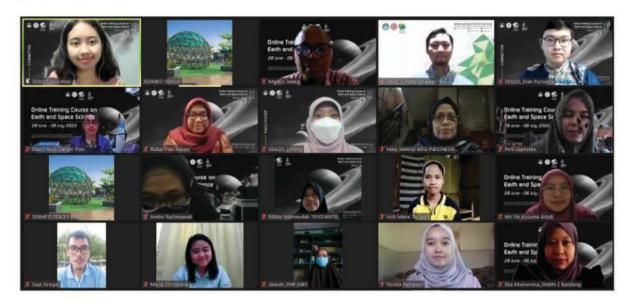
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Welcome to our seventh edition of Q-Science Magazine. First and foremost, we would like to express our gratitude to Almighty God because of the publishing of this seventh edition. Also, we would like to appreciate our editorial staff and contributors who had worked hard for composing this magazine.

Several mistakes and errors in this publication might exist; therefore, critics, comments, and suggestions are very much welcome as they will help us to improve for the next edition. In this edition, we present several prominent activities including regular training on Earth and Space Science (ESS), collaboration training with PT PHR WK Rokan, and so forth. There are also some interesting articles created by teachers from SEAMEO member countries.

Hopefully, this magazine provides you with a lot of new insight regarding the current issues in Science.

Thank you and enjoy reading!



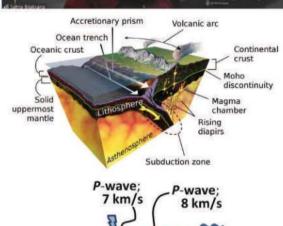
## Training Course on Earth and Space Science

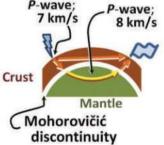
Understanding how Earth and space systems interact, and also how our climate is changing are vital for our survival. SEAMEO QITEP in Science (SEAQIS) as a Centre focusing on the enhancement of science education quality has been developing whole school approaches in the promotions of Earth and Space Science Education since 2009 which was conducted through partnership with many institutions.

In order to develop the teacher's comprehension related to Earth and Space Science for improving the quality of learning process in a class, SEAQIS conducted a virtual regular training entitled "Earth and Space Science (ESS)" from 28 June to 6 July 2022. This year, SEAQIS collaborated with the Centre for Climate and Atmospheric Research (PRIMA), National Research and Innovation Agency (BRIN), and universities in providing deeper issues about Earth and space science related to climate. There were 38 participants from primary and secondary schools in Southeast Asia.

There were several experts who delivered their knowledge in this training: (1) Prof Dr Satria Bijaksana (Bandung Institute of Technology); (2) Prof Dr Ir Eddy Hermawan (Centre for Climate and Atmospheric Research or PRIMA); (3) Dr Judhistira Aria Utama (Indonesia University of Education); and (4) Dr Irwan Meilano (Bandung Institute of Technology). Meanwhile, the facilitators of this training were the SEAQIS team consisting of Mr Dian Purnama







(Programme and Training Officer), Ms Lintang Ratri Prastika (Head of Partnership and Publication Division), and Mr Reza Setiawan (Deputy Director of Programme). From this training, participants were expected to develop knowledge and skills in managing class activities related to earth and space.

In this ESS training, the participants had a lot of fruitful discussions with the speakers, facilitators, and also among participants related to earth science (solid earth and theory of plate tectonics), meteorology (climate issues), space science (solar system), as well as DRR (Disaster Risk Reduction) and mitigation. Moreover, they had to do a pre-test, several individual and group tasks in the form of worksheets, present their best practice and action plan, create a lesson plan, as well as do a post-test.

Two of the participants gave their testimonies in the closing ceremony, which are Mr Mariano Nathanael (Indonesia) and Ms Irish Marie Tacuyan (Philippines). Both agreed that they were blessed as they had been selected and participated in ESS training this year, which broadened their insights and networks. In the future, the participants hope that this training will be conducted face-to-face to maximize all potential they had and gain more knowledge.

D=5

Online Training Course on





## The 13<sup>th</sup> Governing Board Meeting





The Director of SEAQIS, Dr Indrawati, expressed her appreciation for the support from all parties. "It is an honour and a privilege for me to work with all of you and look forward to more engaging collaboration and warmer relationships in the next year."

There were nine GB Members joining in this meeting along with three observers from the Bureau of Cooperation and Public Relations; Secretariat of Directorate General of Teacher and Education Personnel; Balai Besar Guru Penggerak; and Indonesian Ministry of Education, Culture, Research, and Technology.

At this meeting, nine working papers were presented and all the GB Members endorsed the papers.

At this meeting, nine working papers were presented, such as a follow-up action from previous SEAMEO meetings; SEAQIS' financial report; SEAQIS' programmes and activities last year; and proposed programmes for next year. Gladly, all the GB Members endorsed all the papers.

There was also one working paper to nominate the Deputy Director for Programme of SEAQIS in the period 2023-2025. As a result, Mr Reza Setiawan is chosen to serve as the Deputy Director for Programme of SEAQIS for 2023-2025 period.

The meeting was finally closed with conducting voting for the date of meeting next year. As a result, the third week of September 2023 was chosen as the week for the 14th GBM.















## Tridecafiesta – The Lucky 13 SEAQIS 13th Anniversary Celebration Event

To celebrate SEAQIS 13th Anniversary on 13 July 2022, SEAQIS conducted a series of events consisting of Comic Strip Competition for teachers and students in Southeast Asia, the 2nd Wide Games Competition, and an international seminar. The big theme of this series of events is "Act on Climate Change."

Comic Strip Competition was conducted during June 2022, starting from the registration until submission of works. Meanwhile, the assessment had been done on the first week of July 2022 and the winners were announced on 13th July 2022. There were 48 participants who had sent their comics, and most of them were Indonesian teachers, students, as well as a college student from Philippines. As a result, there were three winners for each category (teacher and student) based on these criteria: (1) creativity; (2) originality; and (3) conformity with the theme "Act on Climate Change". For teacher category, the winners are: (1) Meilina Fitrianing Tiyas (SDN Parang 3); (2) Surya Arif Kartono (Xin Zhong School Surabaya); and (3) Septhy Dwi Jayanthy (SMA Kartika XIX-1 Bandung). On the other hand, the winners for student category are: (1) Agy Whiedya Bella

(SMA Islam Terpadu Raudhatul Jannah Cilegon); (2) Fadli Fauzan Haikal (SMAN 2 Kota Sukabumi); and (3) Krizhianne Larind G. Cruz (Pangasinan National High School Philippines).

In addition, SEAQIS also held a face-to-face competition entitled "Wide Games Competition" which was previously conducted in 2019. The participants of this games should complete some post-to-post challenges related to climate change theme and enthusiastically perform their teams' yell on Tuesday, 12 July 2022 at SEAQIS and BBGP West Java offices environment. There were 11 teams from nine junior high schools in Bandung City and Bandung Regency: (1) SMPN 1 Bandung; (2) SMPN 9 Bandung; (3) SMPN 22 Bandung; (4) SMPN 1 Batujajar (two teams); (5) SMP Krida Utama Padalarang; (6) SMP Darul Hikam International (two teams); (7) SMP Laboratorium Percontohan UPI: (8) SMP Islam Cendekia Muda; and (9) SMP Taruna Bakti Bandung. Based on the total score from each post, it turned out that SMPN 1 Batujajar team B became the 1st winner, SMP Darul Hikam International team B became the 2nd winner, while SMP Taruna Bakti got the 3rd winner. This competition was one of the

SEAQIS' actions in order to invite teachers and students to be aware of the current climate change conditions as well as to understand the concept of science underlying those phenomena.

The peak of SEAQIS 13th Anniversary was on Wednesday, 13 July 2022 along with a hybrid international seminar entitled "Towards Sustainable Planet: Enhancing Schools Community Participation to Support Climate Resilience Schools", who was attended by approximately 100 participants. There were some experts in the fields of environment and climate change who delivered their knowledge in this seminar: (1) Prof. Hari Srinivas (Coordinator of Global Development Research Centre, Kobe, Japan) as the keynote speaker for "Global Climate Action and the Challenges of Civic Engagement"; (2) Mr Irfan Darliazi (Directorate of Environment of BAPPENAS) with "Indonesia Policy on Climate Action: (3) Ms Sri Renani Pantjastuti (Acting Chief of BBGP West Java-Indonesian Ministry of Education, Culture, Research, and Technology) for "Ministry Program on Developing Citizen Sustainable Lifestyle"; (4) Mr Dicky Edwin Hindarto (Thamrin School of Climate Change and Sustainability) for "Current State of Energy Use and Responsible Consumption to Achieve Zero Net Emission"; and (5) Mr M. Farhan Helmy (Thamrin School of Climate Change and Sustainability) with the topic "Empowering Schools Community to Develop". To close this event, SEAQIS team announced and gave the prizes for the winners of each competition, followed by tumpeng celebration for SEAOIS 13th Anniversary.





## A Collaboration Programme between SEAQIS and PT Pertamina Hulu Rokan (PHR) WK Rokan

In 2022, SEAQIS has been trusted to be the implementing partner of Corporate Social Responsibility (CSR) programme in the education sector of PT Pertamina Hulu Rokan (PHR) WK Rokan. This CSR programme is implemented in the form of increasing the competence of teachers, principals, and school supervisors in STEM Learning in the working area of PT Pertamina Hulu Rokan (PHR) WK Rokan.

This programme is a form of PT Pertamina Hulu Rokan (PHR) WK Rokan social responsibility to the community in PT PHR working area that will be carried out for six months with several stages of activities. There are seven cities or regencies that become the working areas of PT PHR, namely: Dumai City, Bengkalis Regency, Rokan Hulu Regency, Kampar Regency, Siak Regency, Pekanbaru City, and Rokan Hilir Regency.

To start the programme, PT PHR and SEAQIS held a Focus Group Discussion (FGD) preparation regarding the programme implementation from 19 to 21 July 2022 at Pangeran Pekanbaru Hotel. This FGD was attended by the representatives of Education Office from each city or regency of PT PHR's working area and also the representatives of Riau Province Education Office. The aims of this FGD are to socialise the programme, gather some information about the participants from each city or regency, and observe the schools' condition where the participants work. It is hoped that by carrying out this FGD, the education policy makers at the city or regency as well as provincial offices can fully support the programme implementation and suggest the potential participants who can receive and disseminate the materials to other teachers in their areas.

The next stage of the programme is In Service Training 1. Located at Hotel Pangeran Pekanbaru, Riau, the activity was held from 8 to 12 August 2022 for principals and school supervisors; while for teachers, the training was held from 8 to 13 August 2022. Selected teachers, principals, and school supervisors from seven cities or regencies in PT PHR working area attended this training with a total of 143 participants. In addition, eight representatives of the City or Regency Education Offices who participated in the previous FGD also attended this training as the observers.

Dr Indrawati (Director of SEAQIS) delivered her remarks and directions at the opening ceremony of the training. The Acting Head of Riau Province Education Office, Mr M. Job Kurniawan AP., officially opened the training, followed by Training Orientation presentation from Deputy Director for Programme of SEAOIS, Mr Reza Setiawan.

SEAQIS, Mr Reza Setiawan.

SEAQIS academic team served as the facilitators in this training, and participants were divided into five classes: (1) elementary school teachers; (2) junior high school teachers; (3) high school teachers; (4) principals; and (5) school supervisor class. During the training process, participants were receiving materials and carrying out various activities related to STEM learning. The teachers were also guided to develop STEM learning scenarios, student worksheets, and assessment instruments.

The closing ceremony of In-Service 1 was held on 12 August 2022. Dr Yaswardi as the Director of Secondary Education and Special Education Teachers from Indonesian Ministry of Education, Culture, Research, and Technology delivered his speech while officially closed this event. "This training is a prove that we need to collaborate in improving the quality of teachers and education personnel. We, the Indonesian Ministry of Education, would like to thank PT Pertamina that has initiated this event", said Dr Yaswardi. The Head of Public Relation Department of SKK Migas in North Sumatra, Mr Yanin Kholison, also shared his gratitude and appreciation to PHR. "We are very proud of PHR who keep supporting the community empowerment event in the local area." Overall, this training is successfully conducted, and the participants are thrilled while doing STEM activities.

There are still four more stages of the Collaboration Programme, which are: On the Job Learning-1 (preparation and development of learning material), On the Job Learning-2 (implementation of STEM Learning in the classroom), In-Service Training 2 (dissemination activity to the Teachers Group or Association), and STEM EXPO. Those scheduled programmes will be finished at the end of December 2022.









































Do you know that the fashion industry is one of the most polluting industries in the world? According to various estimates, the fashion industry contributes for between 4% and 10% of global emissions. The United Nations Environment Programme (UNEP) also stated that the carbon emissions from fashion industries have exceeded all international flights and maritime shipping emissions. The fact is proven by the data from UNEP and the Ellen MacArthur Foundation which shows that 3,781 litres of water are used to produce only a pair of jeans.

BECAUSE

THERE

IS NO

PLANET

Synthetic fibre or polyester has significantly applied for fast fashion in the 21st century, compared to cotton which had been far-famed

until the end of the 20th century. Nowadays, the use of polyester has reached 65% compared to cotton's 21%. It also takes about 342 million barrels of oil every year to manufacture synthetic fibres. Another fact is when we wash synthetic fibre garments each year, it delivers half a million tonnes of microfibres (equal to 50 billion plastic bottles) into oceans. After reading those jaw-dropping facts, do we still want to be consumptive buyers or try to consume less to conserve our earth?

Adapted from https://www.bbvaopenmind.com/en/science/environment/how-clothes-contribute-to-climate-change/ Picture from https://www.pinterest.com/pin/3096293485768171/

## Who is the Main Producer of

## Oxygen?

About 50-80% of our Earth's oxygen comes from oceanic plankton which can photosynthesize. Prochlorococcus, for instance, is the smallest photosynthetic organism on Earth that produces up to 20% of the oxygen in our entire biosphere, which is higher than all the tropical rainforests. The amount of plankton changes seasonally based on changes in the water's nutrient load, temperature, and other factors.

However, this amount of ocean's oxygen is also used by marine animals and plants—both the living and the dead. The living plants and animals need oxygen to breath as well as for cellular respiration; while oxygen is utilised for the spoilage of dead plants and animals.



This is especially troublesome when algal blooms die and the decomposition process consumes oxygen faster than it can be replenished. This can result in areas with extremely low oxygen concentrations, known as hypoxia. Because the oxygen levels are too low to support most marine life, these areas are commonly referred to as dead zones. Adapted from: https://oceanservice.noaa.gov/facts/ocean-oxygen.html

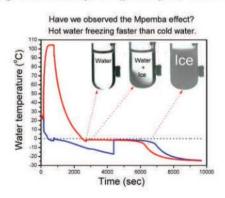


## **Mpemba Effect**

Scientists found that hot water sometimes can freeze faster than cold, or usually called as Mpemba effect. Aristotle first observed the Mpemba effect in the 4th century BC, and many scientists have observed the same phenomenon in the centuries since. It was dubbed the Mpemba effect in the 1960s after Tanzanian schoolboy Erasto Mpemba claimed in his science class that ice cream would freeze faster if it was heated first before being placed in the freezer.

There are some theories of Mpemba effect, which are faster evaporation of hot water; formation of a frost layer on cold water; and different concentrations of solutes such as carbon dioxide. However, this Mpemba effect does not always appear because cold water often freezes faster than the hot. James Brownridge, a radiation safety officer with the State University of New York, said he found water usually supercool at 0°C and only begins freezing below this temperature. Impurities in water that seed ice crystal formation govern the freezing point. Dust, bacteria, and dissolved salts all have a distinct nucleation temperature, and when several are present, the one with the highest nucleation temperature determines the freezing point.

According to Brownridge, the hot water cools faster due to the greater temperature difference between the water and the freezer, allowing it to reach its freezing point before the cold water, which is at least 5°C lower. He also stated that all conditions, such as the location of the samples in the freezer and the type of container, must be controlled, which he claimed other researchers had not done. Adopted from https://phys.org/news/2010-03-mpemba-effect-hot-faster-cold.html



## Environmental Education for Sustainable Development (EESD): From Learning to Practicing

**By: Ong Wei Siang** Seri Putera Sixth Form College, Malaysia

It was in August 2017 when I was given the opportunity to participate in the course Environmental Education for Sustainable Development (EESD) organized by SEAMEO OITEP in Science (SEAQIS). This training programme is expected to be an important part of improving the quality of science teaching and learning in schools with respect to the environment, ecosystem conservation, and their support for sustaindevelopment. One of the approaches I have learned from the training programme was employing project-based learning (PjBL) in science learning. Project Based Learning (PjBL) is a learning approach in which students learn by actively engaging in real-world problems or challenges in order to gain knowledge and skills by working to investigate and respond to an authentic and meaningful project for an extended period of time. Hence, I would like to share my experience in conducting a PiBL in science education with fellow science teachers in ASEAN countries.

A year after the training programme, I started to plan a project relevant to EESD to be carried out in my college, Seri Putera Sixth Form College. Fortunately, my college was awarded the River Care Fund cycle V established by Global Environmental Centre (GEC). The first phase of the project trained students to be environmental scientists. For pre-university students in science, I facilitated the students' discussion as their discussion was about the scientific investigations in the quality of river water and river clean-up. The result of the discussion was sent to subject matter experts in Sultan Idris University of Education (UPSI), Malaysia to seek for consultation and collaboration. Finally, this project was conducted collaboratively with the university. During the project, my students learn consultation and collaboration, as well as how to sample the river water correctly from three different locations of a

river. Other than this, the river water samples were studied based on the Malaysia Water Quality Index (WQI). Students also learned to investigate the amount and types of microorganisms present in the river water samples, as well as test the turbidity of the samples with Light sensor test Application in a smartphone. The students enjoyed carrying out this project as environmental scientists. By the end of the two-day investigation, they were required to analyze and interpret the data obtained, and present their findings to the facilitators, including the subject matter experts and me.





In the second phase, my students acted as science communicators to disseminate their findings to students in SMK Buntong in an awareness campaign. This is a secondary school located at the river where sampling was done. The secondary students learned about the importance of river to humans and other organisms. Then, they conducted a project in groups on how to develop a riverside sustainably. The students had done a series of reading and information searching one day before they created their models for riverside development. This project really challenged student's creativity, reasoning, communication and collaborative skills.

In summary, this PjBL consists of two phases: (1) students acting as young scientists to investigate the quality of river water, and (2) students acting as science communicators to disseminate the relevant information to local community. The PjBL covers curricula across different subjects, such as biology, chemistry, geography and mathematics. These curricula were framed within the project meaningfully. Through PjBL, students learned science and experiment skills by using inquiry approachs as well as higher-order thinking skills, data analysis, communicative skills, and learned to work in a team.



## My Son's Favourite Subject The World of Amazing Science!

Joan B. Aguilar

Leodegario Victorino Elementary School Schools Division of Marikina City, Philippines

Eldrich John is my seven-year-old son who is fond of doing Science and studying everything on it. He loves Science so much. It was all started when he was eight months old. The first thing about science that he knew was "Solar System". That was the time that he began to read and show interest in science.

As years passed by, he continued showing interest in it and learning new topics such as human body system, plants and animals, astronomy, and more. As early as three years old, we started vlogging about science lessons, and he was the one explaining and discussing. As a parent and a teacher as well, I served as his support system. I bought books, encyclopaedias, charts, and a laptop for him to search for the things he wanted to know about. I even bought through an online shop a "Human Torso" that he used in studying the different human body systems as well as its functions and locations. Those were indeed some kinds of support and ways for him to be discovered and featured on some Facebook pages. One of the best experiences was when we competed in the SEAMEO Pre-Congress Lecture Series 2021: Stories of Success-Transformation and Innovation in the Post-Covid-19 Pandemic. We did not win, but being part of that competition was already a great privilege and an honour for us.

Because of Science, my son wants to be a surgeon someday. His interest in studying human body parts made him realised how magical and amazing our body is. He has this study habit at home during daytime and a mandatory "Q and A" before going to bed. The best way to put him early to sleep is to answer all his

questions and listen to his trivia and Science facts read from his encyclopaedias and science books.

Those photos show that learning Science for this young man is never been an issue; it is never been difficult or boring. He always looks happy and interested by wondering how things happen in the world of Science.



## The Making of a Science Teacher's Credo

An Essay on the Traditional and Contemporary Philosophies of Education: Basis of Personal Teaching Perspectives

Louiesito Jr. A. Magnaye

PhD Science Education Student, Philippine Normal University-Manila Faculty, College of Education, Northwest Samar State University

As Sydney J. Harris said, the purpose of education is to turn mirrors into windows. This brilliantly demonstrates that, while it may seem simple to focus on learning our own concept of reality, education allows us to broaden our scopes of understanding by allowing us to view through the windows of what is going on around us. Through education, we are allowed to engage in observing and addressing problems around us that benefit the community as a whole. Along with these notions, education plays an important role in the society. Education serves a transforming purpose by exposing students to broad human principles and encouraging their critical thinking, thus building politically aware and active citizens (United Nations Development Programme, Educators then are given an enormous task in turning mirrors into windows by teaching the learners to think intensively and critically. Evidently, by doing so, teachers will hold viewpoints and beliefs which give them direction and guide them to think what kind of education would work best. Those teachers' viewpoints and beliefs are called their philosophy of education.

Subsequently, preservice teachers are tasked to craft their own philosophy of education that will give them direction as they embark on the teaching profession. During my practice of teaching, I can still vividly remember the night I wrote my "Teacher's Credo". I can still feel how emphatic I was in weaving those words to clearly paint a picture of my educational philosophy that is really within my heart as an educator-in-the-making. I was an Erasmus Mundus scholar then, so I had the opportunity to have such a practice as teaching as an exchange student at Cebu Normal University in 2013. This was the Credo I penned:

I believe in the teaching profession that centres on learners' development. I believe that every child's special and that they have special needs. Knowledge, wisdom's selflessly shared, Good values I utmost care, Love for learners I fairly give, Their success is my aim to build.

I believe in the spirit of good judgment as a measure of their achievement.

With warm support from the stakeholders and a community of believers. I believe that my colleagues' guidance and other stewards of my stance will help learners to advance in this complex world of chance. I believe in every excellent youth is a key to nation-building. I believe in this noblest profession. Tis' the greatest profession of all.

This credo was an offshoot of the wide array of experiences I had not only in my practice teaching but also throughout the years of my studies in the basic until tertiary education. In addition, there are countless lectures and learning activities I received from various kinds of teachers with distinctive teaching styles. Unquestionably, our teachers are the primary source of our educational philosophy for we got first-hand teaching and learning experiences from them. The beliefs of teachers may have an impact on how students establish their own beliefs (Aytac & Uyangör, 2020; Brownlee, 2004). Understanding the philosophy of education is important for it gives us the discourse of reasons on the different contexts of education. Notice that it is composed of two distinct terms which embrace each other complementarily and supplementarily. It is considered as the map for it gives directions in attaining ultimate goals. It also provides measures for teachers to analyse their students through varied perspectives. The integration of philosophy of education is a vital endeavour and a key aspect in developing education policy,

theory, and practice in order to suit society's aspirations (Mwinzi, 2020). Moreover, the goals of education, appropriate content, learning and teaching environments, and processes are all determined by educational philosophy (Ornstein and Hunkins, 2014). Through the philosophy of education, educational policies, reforms, and innovations are crafted to attune with the constantly changing demands of society and the educational landscape. Aguino (2000) argued that the philosophy of education has two notions – a set of beliefs for a systematic guide to action on the part of the educational worker, and an activity of justification by trying to prove or confirm the truth of philosophical beliefs that are relevant to education. Either of these notions would have a profound influence on the educational community, especially the teachers.

In my credo, it is highlighted that several philosophies of education are integrated. The merging of traditional and contemporary philosophies is actually evident. In the context of this discussion, I will highlight the similarities and differences between the traditional and contemporary philosophies of education. The philosophy of education was categorized (Aybek & Aslan, 2017; Sahan, 2020) as the traditional school which includes perennialism and essentialism and the contemporary school which includes progressivism and reconstructionism. Perennialism and essentialism were theoretical orientations influenced by realism and idealism whereas progressivism and social reconstructionism were the offshoots of pragmatism (Aybek & Aslan, 2017). There is also one modern philosophy called existentialism. In this article, I discussed the attributes of these theoretical orientations in terms of educational value. processes, and focus; subject-matter and curriculum; and teachers' roles to clearly distinguish its major similarities and differences. At the end of the article, I emphasized how these educational philosophies have influenced my personal teaching perspective as a science teacher and how my credo changes through time.

#### Idealism Versus Realism

Individual freedom is promoted in idealism. Idealists claim that education should centre on the development of the mind of students and should provide activities to encourage intellectual and moral judgment - ideas. Here, we are making a mental picture of how things are supposed to be – ideals and that considering mental processes as the true reality. The curriculum of an idealist classroom is subject-centred

which emphasizes human culture, values, and good manners. Obviously, teachers are highly regarded and that they should serve as role models of intellectual and moral excellence. The ability of an idealist teacher to learn and teach is linked to curriculum literacy (Yar Yıldırım, 2021).

Conversely, realism believes that education should focus on the realities of life and prepare students for their specific responsibilities. According to Maheshwari (2015), realism is a refinement of our shared belief that the world is exactly as it appears. Realists' curriculum provides opportunities for students to understand the material world through observations. Thus, this philosophy heavily underscores research and science through the practice of the scientific method.

Perennialism and essentialism are based on the philosophical underpinnings of idealism and realism.

#### Perennialism

Perennialism, which is primarily founded on realistic and idealistic philosophy, sees the universe in a spiritual light since it values metaphysics and absolute values, as well as revealing man's spiritual position in the universe (Egmir & Çelik, 2019). Besides, perennialists believe that education should be focused on ideas that are adapted based on universal attributions (Aybek & Aslan, 2017). In addition, it emphasizes subject matter, content, and knowledge, as well as humanities, grammar, reading, rhetoric, logic, mathematics, and great literature (Alsalem, 2018). Therefore, the focus of the perennialist education is the ideas that lasted over centuries and these ideas are considered to be relevant today as when they were transcribed. The keeping and passing of these ideas and culture from one generation to the next is always emphasized by the proponents of perennialism (Alsalem, 2018). In accomplishing this goal, teachers are assumed to use historical context, the classics, and religious books as tools in teaching. It is a subject-centred philosophy that heavily stresses the mastery of the content and reasoning skills.

#### Essentialism

In education, as based on idealist and realist perspectives, essentialism is a philosophy that certain fundamental ideas, skills, or disciplines are crucial to one's culture and should be taught to everyone using time-tested methods. The goals of education are to develop a person's intellect and will, to ensure that rules of the mind are used correctly and effectively, and to educate individuals in accordance with ideal and universal truths (Egmir & Çelik, 2019). It is teacher-centred which means teachers are regarded as authority in the classroom. Essentialist educational institutions are concerned with the proliferation and conservation of these long-held cultural features. It focuses on core subjects rather than students' behaviours (Sacli Uzunoz, 2016). In addition, teachers should use traditional ways to convey knowledge to passive students (Moss & Lee, 2010; Şahan, 2020; San Mateo & Tangco, 2003).

Perennialism and essentialism are based on the idealist and realist perspectives. Both underscore the preservation of the past through fixed and absolute educational value. The focus of these orientations are on teaching and subject matter. The teacher dominates instruction through dissemination and lectures while the students are merely passive receivers of knowledge. This orientation promotes cognitive and personal development.

#### **Pragmatism**

ragmatic philosophy is a practical philosophy that has no absolute or permanent ideals and that man is always inventing new values (Rai & Lama, 2020). Moreover, according to pragmatism, the person is pre-eminently engaged in the building of his reality and the meaning he derives in his life is the result of a complicated interaction between his received ideas and current experience (Maddux & Donnett, 2015). It pays importance to experiences and lays emphasis on man-made ideas and values resulted from experimental activities or through John Dewey's "learning by doing". For pragmatists, education is based on two main principles: (1) education must serve a societal purpose; and (2) education should provide the students with real-life experiences (Rai & Lama, 2020). Consequently, the pragmatic curriculum includes disciplines that allow students to participate in a variety of activities that are relevant to their needs, abilities, interests, and socioeconomic aspects. This is a child- centred philosophy and those learners are active in the construction of knowledge. Teachers, on the other hand, are facilitators who guide the students. Teachers need to prepare a conducive real-life environment wherein students can indulge in problem solving activities. Progressivism and reconstructionism are successors of pragmatism.

#### Progressivism

Pogressivism is rooted in the pragmatism

philosophy of education. This theoretical orientation stresses that educators should focus on the learner's interests rather than the subject matter. According to progressivism, education should continuously reconstruct students' experiences (Kaya & Kaya, 2017). As it is rooted in pragmatism, this theoretical orientation places students as the centre of the learning process and the teachers are mere guides and facilitators. Since learner is at the centre of the educative process, it is then proper to provide them with educational activities and experiences that are fitted based on their abilities, capacities and needs. With this, it is clear that progressivism subscribes to the notion of individual differences. Celebrating these individual differences, progressivists believe that learners shall be grouped heterogeneously. Progressivist believes that learning is an active and dynamic process and learners should be actively engaged so that learning is achieved accordingly. Schools, according to progressivists, are miniature communities that should focus on real-life problems that learners confront in school or will face in the future (Moss & Lee, 2010). Thus, problem solving is the main recipe for education in the progressivist view (Kaya & Kaya, 2017).

#### Reconstructionism

Reconstructionism, also based on pragmatism, is a philosophy that emphasizes social justice and equity as a means of eradicating societal inequities through analysis of world events and service in the real world (Sacli Uzunoz, 2016). Hence, the major goals of education are to bring peace and happiness to people, to establish a civilization based on socially accepted values, and to make the world a better place to live (Kaya & Kaya, 2017). It is then the duty of the schools to reshape society by instilling in the minds of the students the values and skills relevant to the changing demands of society. Reconstructionist paradigms in the classroom inspire students and teachers to become social change agents (Nugroho, 2020).

Progressivism and reconstructionism are based on the pragmatist perspective. Both of them underscore growth, reconstructing the present, changing society, and shaping the future through changeable and relative educational value. The focus of these orientations is on active self-learning. The teacher facilitates and coaches as a change agent through exploratory and discovery approaches while the students are active discoverers and makers of

knowledge. This orientation promotes personal and social development.

#### Existentialism

Existentialism, as a modern philosophy, stresses the human existence. Existentialists believe that human existence is 'fundamental'. and that it is best explored from within a person's experience rather than from outside ( Egmir & Çelik, 2019; Sanderson, 2004). In existentialism, learners must be themselves so that they will be able to find worth in themselves through the freedom to pursue a learning path that is tailored to their unique qualities, abilities, and interests (Kaya & Kaya, 2017; Mukaffa, 2017). As opposed to reconstructionism which emphasizes social reform, existentialists believe that authentic life begins when a person realizes his individuality and asserts himself to make his own choice rather than being said by others.

In contrast to a set curriculum that ignores uniqueness, existential pedagogy encourages self-worth and takes individual learners into consideration (G.M. Malik, 2013). Teachers in this perspective initiate critical inquiry and analysis of the meaning of the students' existence. In doing so, learners are able to know themselves very well. Freedom is also fundamental in this perspective. Learners are free to embark on activities that will enable them to create consciousness of self with guidance from the teacher. Further, Koirala (2011) argued that existentialists do not want the teacher to be a socially conscious arbitrator (as pragmatists seek) or a model personality (as idealists claim).

Through these educational philosophies and theoretical perspectives, our teaching perspective emerges. Although I believe that my credo was inspired by my experiences on each educational ladder that I went through, I also put consideration into these varied philosophical perspectives. I observed that I do not dwell on only one perspective in dealing with certain educational aspects but I see to it that ideals of each philosophical perspective are taken into account. And that ideal must be well fitted and connected to a certain educational aspect and concern I am addressing. I subscribe to some aspects of perennialism, essentialism, progressivism, reconstructionism, and existentialism. Along with this, I am reminded of eclecticism philosophy. Eclecticism is a philosophy by choice and is described as a fusion of all ideals from all sources.

To say nothing of, individual educational

philosophies that I mentioned do not have a bearing on all aspects of education, it may describe many aspects but not all aspects are well addressed and something seems to be missing. This is the very reason why I emphasize that the ideals of these educational philosophies are woven into my teaching perspective – a mixture of educational philosophies.

With an eclectic approach, I am flexible to choose a method or technique that I believe is appropriate and suitable for a group of learners and the topic as well. I always argue that teachers know their students very much more than anyone else and so they know what method or approach is suitable for their learners. The ideal way to teach is to employ an eclectic approach, which is a mix of methods based on the types of students, the materials available, the teacher's and students' cultures, the students' backgrounds, and the learning objectives (Mwanza, 2017). With these, I believe that science learning becomes more contextualized and localized without neglecting global aspirations.

I am maybe new in the science teaching profession yet I noticed that a lot of beliefs that I had in my early years in the academe have changed. I understand that these changes were the effect of my emersion and my experiences as a teacher who already taught in elementary, secondary, tertiary, and even in the graduate school. Ideals that I cling to before are already shifting into the considerations of reality. The credo that I believed before may seem to be changed. However, one thing is for sure that the shifting still benefits the learners even more. Thus, educational philosophies may be there to guide us yet experience is still the best basis for how we describe an education that would bring our leaners to their optimum potential.

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## DIAM&DENGARKAN

DOKUMENTER DI TENGAH PANDEMI

NARRATEO BY.
CHRISTINE HAKIM | DENNIS ADHISWARA | ARIFIN PUTRA | EVA CELIA | NADINE ALEXANDRA | ANDIEN AISYAH

AND LISTEN TO THE WISDOM OF THESE PEOPLE

REZA GUNAWAN ADELINE WINDY RYU HASAN NGATAWI AL ZASTROUW MOCH REZA CORDOVA RAMADIAN BACHTIAR MOH. BIJAKSANA JUNEROSANO DIDIET MAULANA NOVITA ANGGRAINI DEWI KAUW AFIF MUSTOPHA SALSABILA KHAIRUNISSA JAGARIMBA BUTET MANURUNG WIRATNO HELGA ANGELINA MAX MANDIAS PRAJNA MURDAYA ANDA WARDHANA TJOK ODE KERTHYASA

ANATMAN PICTURES PRESENTS DIAM & DENGARKAN A FILM BY MAHATMA PUTRA
EXECUTIVE PRODUCERS MAHATMA PUTRA AND TASHA MAY PRODUCERS TASYA ANINDITA ANGGITA PANJI NAYANTAKA

DOMINIQUE RENEE FERDINAND LOUISE CONSULTING PRODUCERS HELGA ANGELINA AND RIDHI MAHENDRA WRITTEN BY MAHATMA PUTRA FIKRI
RENA NOVIA SAVITRI FAHRIZAL MOCHAMMAD ISMAIL ABDUL AZIZ ABRIAN MAULANA AZMI PRODUCED AND EDITED BY MAHATMA PUTRA
RENA NOVIA SAVITRI FAHRIZAL MOCHAMMAD ISMAIL ABDUL AZIZ ABRIAN MAULANA AZMI CREATIVE DEPARTMENTS FIKRI
ACHMAD HASBIANSYAH DANIEL DHIRAJATI ANIMATON DEPARTMENTS GALIH WARDANI ACHMAD HASBIANSYAH
KAMALIATUL MUCHSINAH MUSIC BY ARIA PRAYOGI AND TIMOTHY LUNTUNGAN
SOUND RESENDER, SEX 6 MISTAG ENGINEER HARI KURNIA CREATED BY MAHATMA PUTRA

diamdengarkan.com





This documentary video that can be watched on YouTube is the result of the writers' contemplation during the Covid-19 pandemic in order to increase the universal awareness towards our environment, realise the interconnectedness between individual and universe, as well as to remind us that we are able and have to save our Earth start from now.

There are six parts in this documentary which describe different topics: (1) Kiamat yang Tak Terhindarkan at 3:17; (2) Mens Sana in Corpore Sano at 14:55; (3) Kerajaan Plastik at 25:20; (4) Air Sumber (Gaya) Hidup at 35:20; (5) Kehutanan Yang Maha Esa at 48:28; and (6) Samudra Cinta at 1:02:47. The first part depicted the origin of Earth and the prominent role of human for everything happen on Earth. The second part reminded us that our mental health was pivotal in order to increase our immune system, so that human could work effectively.

The viewers of this documentary would be enlightened through the third and the fourth parts that people lived closely related to plastic and water; however, those items might turn out to be harmful and wear off if people did not use them wisely. Kehutanan Yang Maha Esa showed the significance of biodiversity for life balance because it can decrease the massive impact of global warming, for instance. Last but not least, Samudra Cinta gave concrete evidence that money cannot buy eternal happiness; it comes from our collective awareness and gratitude for everything that we have and have not.

"Human beings with their brains and consciousness are the reflection of Earth's collective consciousness. The consciousness that we are Earth." -Diam & Dengarkan

Picture source:

Video: Diam & Dengarkan (Dokumenter Panjang, 2020)



## The Hidden City of The Angkor Wat Cambodia

In the old days, if people had any untold secrets in their hearts, they would run to the mountains, find a tree, dig a hole in the tree, and then tell the secret all in, and then seal the hole with mud, and that secret would stay in that tree forever, and no one would know. -(In the Mood for Love)-

Angkor Wat, also known as the Angkor Temples, is located in northwestern Cambodia, and together with the city of Angkor, it is the urban site of the Angkor Dynasty of Cambodia. The word "Angkor" is derived from the Sanskrit word "Nagata," meaning city; the original name of Angkor Wat is Vrah Vishnulok, meaning "Temple of Vishnu. The original name of Angkor Wat is Vrah Vishnulok, which means "Temple of Vishnu" and is also known in ancient Chinese texts as "Sanghyang Buddha House". It is the best-preserved temple among Angkor's monuments, famous for its magnificent architecture and detailed reliefs, and is the largest temple-like structure in the world, as well as the earliest Khmer-style building in the world.

In the 12th century, the Angkorian dynasty king, Suyabhumi II, wanted to build a magnificent cave temple on flat land as the capital and national temple of the Angkorian dynasty, so it took the whole country about 35 years to build it, and it is the best-preserved building of the Angkorian monuments, famous for its magnificent architecture and detailed reliefs. He was forced to move its capital to Phnom Penh. After that, Angkor was abandoned until 1861 when it was discovered by the French naturalist Henri Mouhot, widely publicized and introduced to Europe and the world to bring it back to its glory. In 1992, the UNESCO World Heritage Committee listed the entire Angkor complex as a World Heritage Site.





The left is from (Civilization) The right is from the photographer Lei (Chinese Geographic Magazine)

Angkor Wat is the pinnacle of classical Khmer architecture, combining two basic layouts of Khmer temple architecture: the altar and the cloister. Angkor Wat as a whole is surrounded by a bright mirror-like rectangular moat surrounded by an oasis of lush trees surrounded by a temple wall, and the building in the middle of the oasis is the Hindu Mount Meru Kongo Altar of Angkor Wat. Angkor Wat sits on the east facing west, a long causeway from the west to the east, across the moat, straight to the west gate of the temple wall, into the west gate, another long road, through the emerald green meadows, you can reach the temple. At the highest level of the pyramidal temple, five pagodas are visible, in the shape of plum blossoms, four of which are smaller and arranged around each other, while one large pagoda stands majestically in the centre, which is very similar to the layout of the Vajra Pagoda in India, but the five pagodas are widely spaced, with corridors connecting them to each other, and in addition, each level of Sumeru Vajra is surrounded by corridors, which is a characteristic of Angkor Wat architecture. The steps there are steep and must be climbed on hands and knees, signifying the many hardships one needs to go through to reach heaven.

In 2012, Chevance marshaled high-tech evidence for a lost city, after he teamed up with Evans, who is based in Siem Reap with the French School of Asian Studies. An international team, led by the University of Sydney's Dr Damian Evans, had mapped 370 sq km around Angkor in unprecedented detail. Mounted on a helicopter, the laser continually aims pulses toward the ground below, so many that a large number streak through the spaces between the



leaves and branches, and are reflected back to the aircraft and registered by a GPS unit. By calculating the precise distances between the airborne laser and myriad points on the earth's surface, computer software can generate a three-dimensional digital image of what lies below to record minute variations in ground surface topography.

Lidar technology has revealed the original city of Angkor, its origins its birthplace. The lidar survey of the hills revealed ghostly outlines on the forest floor of unknown temples and an elaborate and utterly unexpected grid of ceremonial boulevards, dykes and man-made ponds. New research has provided a clearer picture of the sequence of events that may have doomed Mahendraparvata. The Lidar data revealed that its population didn't engage in terraced rice farming in their mountain metropolis-which meant that they almost certainly relied on slash-and-burn agriculture. That would have depleted the soil rapidly, and probably contributed to the decline and fall of the city. The evidence backs up research

conducted by Chevance and a colleague, who analysed soil samples taken from a reservoir on Phnom Kulen. Evidence showed that vast amounts of soil and sand got washed down the valley, indicating deforestation. Soil from a later date contained a high concentration of jungle vegetation, which suggests that the land had been abandoned and taken over again by the tropical forest.

A lost city, was found. These new discoveries have profoundly transformed our understanding of Angkor, the greatest medieval city on Earth.

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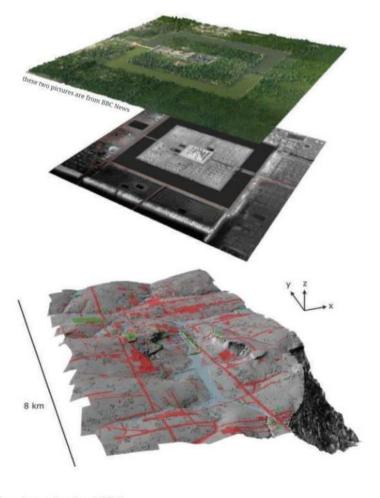
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## Let's Make Galaxy Roses!



Materials and tools:

Some white roses

Four small glasses

Water

Cutter

Four bottles of food colouring (red, green, blue, yellow, or any color that you like)

Rubber band

### Steps:

Prepare some white roses whose thorns have been removed.

Cut off the lower part of the stem diagonally.

By using a cutter, slightly divide the bottom of the stem into four parts.

Fill up the four small glasses with water.

Add approximately two drops of food colouring into the glass (one food colouring for one glass).

Put together the four glasses to form a square using a rubber band.

Dip the four tips of the rose stem into four glasses.

Leave it overnight, and you will get your galaxy roses!

Notes: How Science related to "Galaxy Roses"?

The white rose can change its colour due to a process called capillary action which happens inside the stem, when xylem pulls up the water molecules and distribute them to various parts of the plant, including the petals. Transpiration and cohesion also have roles in attracting more water to flow inside the stem without the help of an outside force.

Need more explanation? Kindly visit this link: https://www.youtube.com/watch?v=YewfElUNvRE





The sun is a wonderful (and free) source of energy just waiting to be harnessed. You can build a simple solar hot dog cooker for use on a sunny day.

This hot dog cooker uses a reflective parabola. A parabola is a symmetric curve that resembles the letter "U." The focus of a parabola is a point that lies along the axis of symmetry and acts as the special point around which a parabola (or any other geometric shape) is constructed.

Let us practice finding the focus of the parabola. A parabola graphed using the equation y=ax2 must first be converted into standard form. Standard form for parabolas is as follows:

$$4p(y - k) = (x - h)2$$

Where h is the horizontal distance of the parabola origin (the curve) of the parabola from the point (0,0) and k is the vertical distance of the parabola origin from the point (0,0). 4p is equal to (1/a). This is just a mathematics convention.

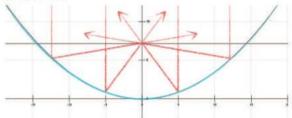
We plug our numbers in to solve for p, which is the vertical distance of the focus from the parabola's vertex, or lowest point.

So why would we need to use a parabola as our mirror, anyway? Here is what is so cool about parabolic mirrors: the focus is the point where all the reflected light passes through. This makes a parabola a perfect mirror shape for cooking a hot dog.

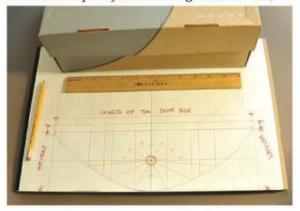
Problem: Build a solar power hot dog cooker. Materials

Oversized shoe box Aluminium foil Poster board Scissors, Craft knife or box cutter Tape, Glue, Pencil, Ruler, Skewer, Single hole punch, Sheet of graphing paper, Hot dogs, buns, and your favourite hot dog condiments!

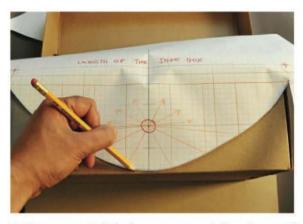
Procedure



1. Using the graphing paper and a pencil, graph the parabola y = 0.035x2. (Because this parabola is facing up, you can put the vertex of the parabola close to the bottom of the page. Be sure to scale the parabola appropriately to thgraph paper; for example, if the squares on the paper are 1/4 inch, make 4 boxes equal 1 inch, and mark your axes accordingly. Follow the same steps if you are using centimetres.)



- 2. Cut the along the parabola line so you have a template of the curve.
- 3. On a separate sheet of paper, calculate the focus of the parabola. Remember—why is this important? 4. Remove the lid to the shoebox. Trace the parabola curve on each long side of the shoe box.
- Remove the lid to the shoebox. Trace the parabola curve on each long side of the shoe box.



5. Have an adult help you cut out the shape of the parabola on the box.



- 6. Use the scissors to cut out a piece of poster board that fits perfectly into the curve of the parabola in the box.
- 7. Glue aluminium foil to the poster board, shiny side up. Try to keep the foil as smooth as possible.
- 8. Carefully insert the foil-covered poster board into the shoebox and tape it in place. Be sure the shiny side of the foil faces you.



9. Use two long scraps of cardboard to build supports for the skewer. They must be tall enough to hold the skewer above the focus.



10. Use the single hole punch to make holes at the focal point, which will be at the same height as the focus is from the vertex of your parabola. If you are not sure where it is, take your cooker outside, tilt it towards the sun, and look at where the sun shines brightest on the inside of your cardboard supports.



11. Attach a hot dog to a long skewer and set the skewer in the support holes to keep the hot dog suspended above the parabola. Direct the parabola towards the sun by propping one side up slightly.



much of the heat and energy from the incoming sun rays is redirected to the hot dog. This would not work with a material that was not reflective. Copyright © 2022 Education.com LLC All Rights Reserved

12. Turn the hot dog every so often to cook it evenly. Enjoy!

Results, The focus of the parabola is located at the coordinates (0, 7.14), which is 7.14 units (inches or centimetres, depending on the measurement you have chosen to use) above the vertex (bottom) of the parabola's curve. page7image3452912.

$$4p = \frac{1}{a}$$

$$p = \frac{1}{(.035)4}$$

$$p = 7.14$$

Placing the hot dog at the focus in the sun will result in a cooked (and ready to eat!) hot dog. Why?, The parabola is shaped so that it collects the sun rays and focuses them at one point, the focus, in the centre of the parabola. This is where the hot dog is placed, and the energy from the sun is used to cook the hot dog.

Because the sun is so far away from the earth, the light rays hitting us are essentially parallel. Parallel incident rays of light which strike a parabolic mirror all pass through the same point after they are reflected.

Light is reflected off nearly everything, but we used foil because it is highly reflective and



To celebrate its 5th Anniversary, SEAMEO CECCEP conducted inter-SEAMEO sports tournament in Indonesia with two kinds of sports that were competed: badminton and futsal. In order to enliven the 5th Anniversary of CECCEP, SEAQIS delegated five teams in total containing two teams of men's doubles and one team of women's doubles for badminton as well as one men's futsal team with one women's futsal team.

Dr Elis Rosdiawati as the Deputy of Administration in SEAMEO CECCEP officially opened this tournament on 24 July 2022 at SESKO AU sports arena close to SEAMEO CECCEP Lembang, West Bandung Regency, West Java. The five others SEAMEO Centres also competed in this tournament, which were BIOTROP, RECFON, SEAMOLEC, SEAQIL, as well as CECCEP.

The first men's futsal match was between SEAMOLEC team and SEAMEO BIOTROP team with final score 2-2 respectively. On the other hand, SEAQIS men's futsal team had to be satisfied with the result at the bottom of Group A. However, SEAQIS women's futsal team managed to the final round and defeated SEAMEO CECCEP team. Both teams in this final round

presented a great match for the audience at the venue. Lintang Ratri Prastika scored two goals for SEAQIS team and managed to maintain 2-0 over SEAMEO CECCEP team until the end of the match. This caused SEAQIS women's futsal team became the first champion of the women futsal match that had just been conducted this year.

For the badminton match, team A of SEAQIS men's doubles successfully became the defending champion for three times in a row by defeating the team A of SEAMEO BIOTROP in two sets. Meanwhile, SEAQIS team B only managed to the semi-final round after being defeated by the team A of SEAMEO BIOTROP. However, SEAQIS women's doubles team successfully to bring the trophy back as the runner up after defeating SEAQIL team in semi-final and being defeated by SEAMOLEC team in final round with rubber set. At the end, SEAQIS still maintained its position as the grand champion of inter-SEAM-EO sports tournament in Indonesia for three times in a row.





13 years is not a short term in creating uncountable memories in one place along with our colleagues. Jl. Diponegoro No. 12, the place where SEAQIS was firstly established by Ministries of Education in Southeast Asia, is a memorable place for SEAQIS members. Starting from working in an adequate room without partition to building rooms for each division, the office at that street unconsciously has become our "second home".

However, uncertainty always happens in our lives, and we should be ready anytime, right? Our lovely office should be moved after the 13th GBM on 14 September 2022. Although the announcement was in the blink of an eye, gladly we could manage packaging all the stuff right before 19 September. "Well, we have worked hard to package many things in boxes. I also brought the stone consisting of all signatures from Ministries of Education in Southeast Asia. It is quite heavy haha," said Octo, one of SEAQIS members.

Now, we have moved to Jl. Dr Cipto No. 9 (Building B) with a new atmosphere and spirit. We know that it is not that easy to leave our "comfort zone", but if we have to change, we will change for the better. Thank you for your never-ending memories, Diponegoro 12. Dr Cipto 9, let's create more outstanding memories!

"You're gonna live forever in me. I'll guarantee, just wait and see —John Mayer-"







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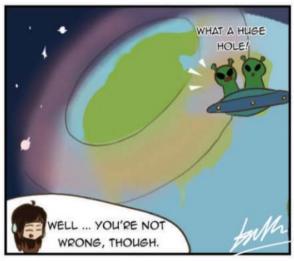
## "THE BIGGEST DONUT"











BY AGY WHIEDYA BELLA-SMA ISLAM TERPADU RAUDHATUL JANNAH CILEGON