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Greeting from Organizer



Dear Participants,

Welcome to the Summer Institute of Asia & ASEAN Center for Educational Research.

We are proud to announce to you the first opening of the Summer Institute of Asia & ASEAN center for Educational Research. The Asia & ASEAN center for Educational Research was established in February 2018 based on the achievements of the Twin College Envoy Program of student exchange "TWINCLE". TWINCLE was started in 2012, and it was designed to create mutual understanding among students from East and Southeastern Asia through activities of science and education. More than 1000 undergraduate and graduate students have participated as exchange students, and more than 25,000 high school students have joined the science classes over the course of one decade of TWINCLE activities. To date, 18 universities from eight countries have joined the programs of the center.

Under the difficulty of the COVID-19 pandemic, part of the TWINCLE activities this year have moved online. Taking this as an opportunity, the center has recently developed the Summer Institute Program for high school students in East and Southeastern Asia in collaboration with university students and faculty members. We hope you expand your knowledge and gain fruitful experiences.

Jun Nomura, M.D., Ph.D. Director, Asia & ASEAN Center for Educational Research Vice Dean, International affairs and Research Promotion Faculty of Education Chiba University

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Proceedings of International Research Meeting for Asia & ASEAN High School Students

Purpose of the Research Meeting

To find the subjects essential for the development and sustainability of the world is an essential ability for leaders in the next era. Furthemore, communication of those young people in the intellectual community will empower those young people. Therefore, this International Research Meeting aimed to create a platform for fostering nextgeneration leaders in the fields of science and education. In this meeting, every presenter shows their achievements in science and educational activities with you. Please discover the advancement of scientific findings and exchange of knowledge and friendship at the meeting site.

We hope every presenter will find some positive suggestions and solutions for the progress of your research.

Schedule

The timetable is written in Japan time Please click the button to enter rooms.



URL Questionnaire for International Research Meeting participants

Members

	Group A		ZOOM		
Chairperson	Ph.D. (Head of Internaional Office) Ni Nyoman Pujianiki	Udayana University	Indonesia		
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Assistants	Bagus Hermanto	Udayana University	Indonesia		
	Thanakamol Khongsonthi, Noprada Masuwan, Pornpinit Prasartkul	Mahidol Wittayanusorn School	Thailand		
	PDF Prediction of Anti P. acnes peptides from various protease hydrolyzed Riceberry rice bran				
Presenter	Kan Petyim	Kasetsart University Laboratory School, Center for Educational Research and Development	Thailand		
	PDF The Culture of Purple Non-Sulfur Bacteria Using Household Materials				
	SUDO Kyoko	Showa Women's University Senior High School(ASCENT Program)	Japan		
	PDF "Natto" suppresses plant d	isease			

Prediction of Anti P. acnes peptides from various proteases

hydrolyzed Riceberry rice bran

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Mahidol Wittayanusorn School, Nakorn Pathom, Thailand
 Kasetsart University, Bangkok, Thailand

Purpose and Background:

Acne vulgaris, which the major cause is *P. acnes* [2], is one of the most common problems in adolescence. The chemical or antibiotic treatments used for acne medication can cause skin allergy and drug resistant-bacteria induction problems. As we find more about the substances that can be used to treat acne and hypoallergenic, it was found that some proteins and peptides in rice bran can inhibit the growth of bacteria that cause acne. Riceberry rice bran was selected because it has hypoallergenic properties. Bioinformatics will save time, cost, and resources for study as it can look at upcoming trends and serve as the base for creating a three-dimensional model of complex molecules. Therefore, we were interested in investigating the antibacterial efficacy of Riceberry rice bran hydrolyzed protein using bioinformatics and testing it against acne-causing bacteria *P. acnes*. This would be beneficial for product development to treat acne more effectively.

Materials and Methods:

First, searching and collecting data of proteome from 4 major proteins in riceberry rice bran from the Genbank database were required. Computational method microsoft excel was used to predict the enzymatic cut site and screen for the peptides that consist of 5-50 amino acids and to convert all data into FASTA format. Next, they were classified into size S (5-20 amino acid sequences), M (21-35 amino acid sequences), and L (36-50 amino acid sequences). Then, iAMP and DBAASP were used to screen for their antibacterial properties and toxicity with ToxinPred, also used to select for non-toxic antibacterial peptides candidates. Next, dPABBs, CellPPD, QSPpred programs analyses were performed for anti-biofilm, cell penetration properties, and anti-quorum sensing properties predictions and separated them into 4 groups according to abilities. Then, Venny 2.1.0 program analyzed the multifunctionality of the peptides. Finally, COPid and PEP-FOLD3.5 program analyzed composition analysis and secondary structure prediction.

Results and Discussion

This study shows that antibacterial peptides have a length of 5-22 amino acids, and the secondary structure of the peptides mostly is random coil or alpha helix. Moreover, most of the antibacterial peptides which were studied contain hydrophobic amino acid about 21-40% and have a positive net charge.

Before AMPs can interact with the cytoplasmic membrane of Gram-positive bacteria, they have to traverse the cell wall composed of wall- and lipoteichoic acids and peptidoglycan. While interaction of AMPs with peptidoglycan might rather facilitate penetration, interaction with anionic teichoic acids may act as either a trap for AMPs or a ladder for a route to the cytoplasmic membrane [1]. So, the peptides should be positive charge, which can interact with anionic teichoic acid.

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The Culture of Purple Non-Sulfur Bacteria Using Household Materials

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Purpose and Background:

Purple non-sulfur bacteria (PNSB) are a group of anaerobic bacteria that is capable of photosynthesis. These bacteria have many uses in agriculture and for bioremediation and they can tolerate many harsh conditions. Past research done by Kim et al. (2004) found that PNSB can be used to effectively reduce COD and odorous compounds in water. This is demonstrated in a swine waste lagoon. However, PNSB suspensions can be expensive, so the ability to produce more bacterial suspensions using household materials may be useful. This study was carried out to test various common household ingredients as culture media for PNSB.

Materials and Methods:

In this study, three nutrient sources were tested: chicken eggs, unsweetened soy milk, and bovine milk. First, 21 grams of chicken eggs, with the yolk and the whites mixed homogenously, 67.4 grams of unsweetened soymilk, and 43.0 grams of bovine milk were each added to a 1.5 liter PET water bottle and water was added until each bottle weighed 1.4 kilograms, after which, 60 milliliters of a PNSB suspension were added to each bottle. Two sets of each media were made. The OD_{660} of each bottle was recorded daily, starting from two days after each bottles were prepared, for a total of 7 days.

Results and Discussion

Figure 1 shows the changes to the OD_{660} value of each media compared to the first day of measurement. It can be seen that only the egg media showed a change in the turbidity of the media. The soymilk media did not show any noticeable signs of PNSB growth. However, on the second and third day the media was producing CO2, a sign of yeast growth, which might have outcompeted the PNSB. PNSB growth in a soy milk based medium has been demonstrated by Wu, Zhang, and Li (2014). Both bovine milk media showed no signs of PNSB growth.

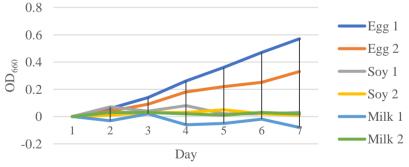


Fig. 1: A graph showing the changes of the OD₆₆₀ of each media bottle compared to the first day of measurement.

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"Natto" suppresses plant disease

Kyoko Sudo¹, Takuya Wada²,Toshiyuki Usami² 1. Showa Women's University Senior High School 2. Graduate School of Horticulture, Chiba University

Purpose and Background

Some researches indicate that Natto (*Bacillus subtilis* var. *natto*) has inhibitory effect for plant pathogens. *Bacillus subtilis* is used as a control method for pant disease, as exemplified by *Botrytis cinerea*, *Oidium lycopersici* and *Sphaerotheca humuli*. It's also applied to biological agrochemicals. For the above reasons, I want to gain insight into Inhibitory effect of Natto for plant pathogens.

Materials and Methods

We cultivate Lettuce (*Lactuca sativa*) in hydroponics equipment for 35 days and set 4 experimental plots: Not vaccinated, Vaccinated with Natto (plot N), Vaccinated with *Pythium irregulare* (plot P), Vaccinated with Natto and *Pythium irregulare* (plot N+P).

In plot N and plot N+P, we added about 10⁷cfu/ml Natto isolated from commercial one. The following day, we added *P. irregulare* in plot P and N+P.

Results and Discussion

After cultivation, we evaluated disease symptoms, root rot. We classified into 5 stage, depending on the propotion of root rot; 0: none damage, 1: slight damage, 2: 1/3 damage, 3: 2/3 damage, 4: more than 2/3. The following pictures are the root rot of Lettuce (*Lactuca sativa*).



Not vaccinated



Vaccinated with *Pythium irregulare*



Vaccinated with Natto (plot N)



Vaccinated with Natto and Pythium irregulare

From this experiment, A possibility that Natto inhibit the disease by *Pythium irregulare* in case of hydroponics was suggested.

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Members

	Group B		ZOOM		
Chairperson	Ph.D., Chusnul Arif	IPB University	Indonesia		
Chanperson	Ph.D., Siti Amanah	IPB University	Indonesia		
Assistants	Shally Wanda Hamzah	IPB University	Indonesia		
Assistants	Roya Hayatina	IPB University	Indonesia		
	Suchanunt Thanachayanont	Kasetsart University Laboratory School, Center for Educational Research and Development	Thailand		
	PDF Preparation of CuO Electrodes using Electrochemical Depostion				
	Rizqia Awalinda Sekar Purnomo SMA Pradita Dirgantara		Indonesia		
Presenter	PDF SLAP (Solar Lamp Air Purifier): The Effectiveness of Algae (Chlorella sp.) as an Air Purifier in the Jogjakarta International Airport Area				
	KAWAI Kotomi	Chiba Prefectural Yakuendei High School(ASCENT Program)			
	PDF Flower color variation in Oxypetalum coeruleum				
	LU, HSIN-YU, CHIANG LI-CHI, YANG, CHIH-HAN	Taipei Jingmei Girls High School	Taiwan		
	PDF Metallic Glass Nanotubes Array Fabrication				

Preparation of CuO Electrodes using Electrochemical Deposition

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 National Metal and Materials Technology Center, 114 Thailand Science Park, Paholyothin Rd., Klong 1, Klong Luang, Pathumthani 12120 Thailand.

Purpose and Background:

Copper oxide (CuO) is an attractive semiconducting material because it can be fabricated from copper sheets using electrochemical deposition. Nanostructured CuO nanowires have high surface area that is suitable for many promising applications such as solar cells, light emitting diodes, photo-catalytic, antimicrobial, electrochemical, electrochromic and sensing applications (Zoolfakar et al., 2014).

Materials and Methods:

In this study, CuO was prepared on Cu substrates. The Cu substrates were cut into a size of $0.2 \times 3 \text{ cm}^2$ and cleaned by soaking in 37% HCl for 1 minute and in acetone for 1 minute, 3 times each. For the electrochemical deposition of CuO, chronoamperometry at applied potential of -0.25V was conducted for 5 minutes in a 3-electrode system having the Cu substrate as a working electrode, Pt wire as a counter electrode and a Ag/AgCl as a reference electrode. 3 M KOH was used as an electrolyte. The obtained films on the Cu substrates were then annealed at 200°C for 3 hours to give CuO films.

Results and Discussion

Figures 1 (a) and (b) show an X-Ray Diffraction pattern and a Scanning Electron micrograph of the CuO films fabricated, repectively. A capability of electrochemical deposition of CuO nanowires has been demonstrated.

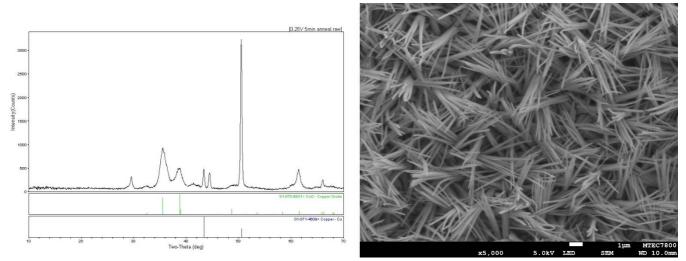


Fig. 1: X-Ray Diffraction pattern and a Scanning Electron micrograph of CuO films, repectively.

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SLAP (SOLAR LAMP AIR PURIFIER): THE EFFECTIVENESS OF ALGAE (*Chlorella sp.*) AS AN AIR PURIFIER IN THE JOGJAKARTA INTERNATIONAL AIRPORT AREA

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1. Pradita Dirgantara Senior High School, Indonesia

2. Pradita Dirgantara Senior High School, Indonesia

Purpose and Background

Current transportation technology is in the form of vehicles capable of traveling long distances in a short time so as to accelerate mobilization and also fulfill human needs. However, the transportation technology that is currently widely used is not environmentally friendly because it produces emission gases that pollute the air. By decreasing air quality, it will have an effect on decreasing the level of public health, especially in human respiration. If this is left alone without the right solution, it will have a bad effect on the future. By seeing that *Chlorella* is able to reduce air pollution and improve air quality with its photosynthesis process, as well as roads with many motorized vehicles passing by that produce pollutant emissions, street light algae air purifying can be a solution.

The purpose of this research to reduce air pollution with the tool that authors make before which is named SLAP. After that, a trial was carried out at the Kulon Progo international airport to find out the SLAP's effectiveness as air pollution purifier technology.

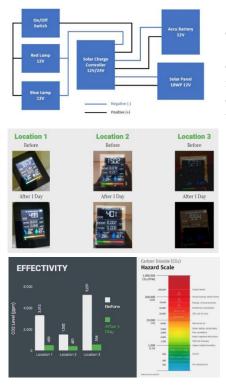
Materials and Method

Based on the formulation of the problem described in the previous sub-chapter, the methodology we chose was quantitative. Data obtained by:

- 1. Literature study: before making a tool that can reduce air pollution, we collected several references from both local and international journals.
- 2. Experiment: ffter getting a lot of info about algae, an innovative air purifier from algae was created.
- 3. Research: the research we conducted was to test how much effectiveness of SLAP can do in purifying the air. In three different places at kulon progo international airport

The tools to make a SLAP are Battery 12 V, Aquarium, Cable, Solar Charge Controller, Solar panel, Plywood, and *Chlorella sp.*. To check the effectivenes from SLAP, Air Quality Monitor used.

Results and Discussion



First, the solar panel will absorb light. The solar panel is a component of a photovoltaic system that has functions to convert sunlight into electricity because it is composed of several photovoltaic cells. The sunlight will be converted into electrical energy and stored in the battery. When the battery is charged by the solar panel, the charge controller will prevent overcharging to the battery by cutting off the DC flow from the solar panel. This prevents damage to the battery so that it can last longer. When charging is not in progress (at night), the charge controller prevents the flow of current from the battery back to the solar panel so that power can be stored properly. Then, the electricity is used to turn on the LED lamp. The lamps are arranged in parallel so that the light produced is brighter and support the photosynthetic process of algae more optimally. Then the algae will absorb carbon dioxide, convert it to oxygen, and finally clean the air. The effectiveness of SLAP was found. At three different places the CO2 level was measured first and then after one day it was measured again as the effect of the presence of algae as an air purifier. The measurement results from the table that air purifier is effective to reduce air pollution, especially from carbon dioxide by lowering the carbon dioxide level which is in the thousands (yellow color which can be said to be unhealthy air) to 400-500's (green color which is a sign of healthy air).

Flower color variation in Oxypetalum coeruleum

Kotomi Kawai

1. Chiba Prefectural Yakuendai High School, third grade, Japan 2. ASCENT program, Chiba University, Chiba, Japan

Purpose and Background:

The difference in flower color of a plant called *Oxypetalum* was investigated by analyzing the anthocyanin structure that forms the flower color. Anthocyanins, are pigments that exhibit a wide range of colors from red to blue, and their hue changes depending on their structure. In general, anthocyanidins, which are the basic skeleton of anthocyanins, determine the basic color, and sugars and organic acids bind to it to change the color tone. The structure of the anthocyanin of the light blue flower Blue Star variety of *Oxypetalum* used in this study has already been reported in Saito et al. (2012), and it is known that three structures of anthocyanin are accumulated. Therefore, referring to this result, we investigated the anthocyanin structure in other flower colors. As samples, we used a blue star that blooms light blue flowers, a pink star that blooms pink flowers, and a blue star that changed to purple over time.

Materials and Methods:

After sampling flowers, they were frozen using liquid nitrogen and tissue was grinded with a mortar and pestle. MeOH and TFA were added to suspend. Samples were centrifuged to remove precipitate. Samples were purified. 3N HCl was added to final concentration. Samples were heated to 100 degrees for30 minutes. Alcohol was added and samples were centrifuged to separate two layers. The samples were purified for High Performance Liquid Chromatography analysis. The High-Performance Liquid Chromatography was used to determine the composition of each anthocyanin. Each peak in the chromatograph indicates differences in structure.

Results and Discussion:

Each color was determined by different combination and the structures of anthocyanidins. The color variation is determined by the structure and combination of anthocyanidins. Cyanidin-3-glucoside can change with A3GXT to Cyanidin 3-sambubioside, which gives a pink or blue color. But when A7GT exists, the pink color is not possible. Which determines the blue or purple color. In all flower colors, the accumulated anthocyanidins were confirmed to be cyanidins. The main peak in the HPLC was Cyanidin 3-sambubioside. Especially in pink star, the structure modified to 7th place of cyanidin was not found. An explanation is that there is a enzyme gene that modifies the seventh place of anthocyanin. There is no difference in the composition of anthocyanins in the blue star and the blue star purple color change. The difference in flower color between blue star and pink star was considered to be influenced by the modification of anthocyanins to 7th place. On the other hand, factors other than anthocyanin structure are inferred in the difference between blue star and blue star color change flower color. Therefore, in the future, we will investigate why blue stars change color by focusing on the presence or absence of enzyme activity and pH.

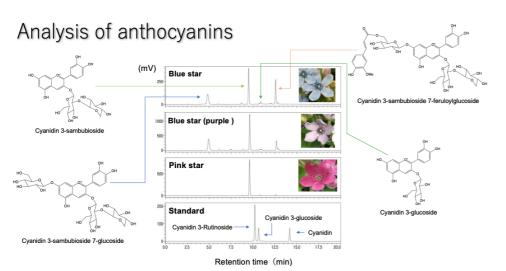


Figure: Each color in the three types of flowers of *Oxypetalum* (blue star, blue star [purple], and pink star) is determined by different combinations of anthocyanins. Standard is shown as reference. Peaks indicate prescence of each cyanidin.

References

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Metallic Glass Nanotubes Array Fabrication

LU, HSIN-YU/ CHIANG LI-CHI/ YANG, CHIH-HAN Jingmei Girls High School, Taiwan, Taipei

Purpose and Background

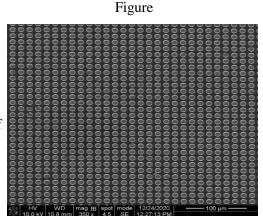
The first-ever metallic glass nanotubes were fabricated in Professor Chu's lab in 2017. The unique properties of strength, toughness, and durability make these nanotubes ideal materials of solar cells, medical instruments and so on. The target of our research is to find a way to build up the complete and neat structure of metallic glass nanotubes on silicon chips. In order to ensure the nanotubes to be neatly arranged, the silicon chips will be processed with a technical skill, photolithography process, to coat photoresist with regularized aperture on the silicon chips. Silicon chips after the photolithography process will be called as test pieces to be easily identified. Because of having photoresist with tiny holes on silicon chips, the last step of building nanotubes on test pieces is to tear off all the photoresist plus metallic glass thin film that has formed while constructing nanotubes. The reason for tearing off the thin film is to increase the contact area, also to make the nanotubes become independent individuals which can let each nanotube undisturbed by others.

Materials and Methods

The technique used for coating is based on the theory of sputtering. Sputtering is a kind of physical vapor deposition, also called PVD. Following is about the principle of sputtering. First of all the sputtering machine needs to be vacuumed. When it is turned on, the power will produce electric pressure, which generates electric field and free electrons in the machine. Those free electrons will hit molecules of argon, an inert gas, and cause the ionization of argon and electrons. Argon ions collide the metallic atoms of the target material, erode the material onto the test piece and deposit on surfaces in the vacuum chamber. By sputter-depositing a coating of metallic glass over an array template created in photoresist, metallic glass nanotubes are fabricated. The specific steps are as follows. First, put the target chosen into the chamber. Then put test pieces into the load lock chamber and start sputtering. When the set time reaches, stop sputtering and cool down the test piece for a while before taking it out of the machine. Next, soak the test piece into acetone liquid and wait for about one minute. Last, tear off the metallic glass thin film with photoresist on it.

Results and Discussion

The photo is what our test pieces look like with metallic glass nanotubes on it. With the help of a scanning electron microscope, tiny tubes that are invisible to our naked eyes can be seen. On the picture, the features of the nanotube array can clearly be seen. It shows the thickness of the tube wall is almost the same. Also, the arrangement of the nanotubes is extremely neat and the size of nanotubes are exactly equal. These details represent that this way of making metallic glass nanotubes is feasible.



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Metallic Glass Nanotube Array under the SEM

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Members

	Group C		ZOOM		
Chairperson	Ph.D., Ton Quang Cuong	Vietnam National University,The University of Education	Vietnam		
Assistants	Vu Trong Duc	Vietnam National University,The University of Education	Vietnam		
Assistants	Nguyen Thi Ngoc Anh	Vietnam National University,The University of Education	Vietnam		
	Pakornsit Sittivejthai	Mahidol Wittayanusorn School	Thailand		
	PDF The Development of Thermal Insulation from Sugarcane Bagasse Fiber				
	Puttipa Sasha Seraypheap, Nannapat Ratanasirivilai	Chulalongkorn University Demonstration Secondary School	Thailand		
	PDF Coating Material from Chitosan as Biodegradable Mulch Film				
Presenter	Luu Ngoc Phuong Linh	HES High School	Vietnam		
	PDF STUDY THE PROTECTIVE INFARCTION	EFFECT OF HERBAL EXTRACT ON MY	OCARDIAL		
	EZOE Narumi	Ichikawa High School(ASCENT Program)	Japan		
	PDF Extraction of Cellulose Nanofiber from Roasted Peanut Shells				

The Development of Thermal Insulation from Sugarcane Bagasse Fiber

Pakornsit Sittivejthai, Sirikan Kanjanasaard, Rata Auttama and Usa Jeenjenkit

1. Mahidol Wittayanusorn school, Nakornpathom, Thailand

Purpose and Background:

A problem of increasing use of plastic products, causes impacts on the environment, especially during the COVID-19 epidemic. Due to the lockdown strategy, it results in rising the number of plastics mostly through delivery logistic. Therefore, this study has invented a thermal insulation from sugarcane bagasse fiber instead of plastic for solving the problem and being a prototype of bio-wasted innovation for food delivery packaging. The product is made from bagasse and coconut coir as the main materials both of which can be degraded. Moreover, one of the selected materials; sugarcane, is wasted by an average of 6 million tons per year in Thailand. Therefore, the organizers have applied the bagasse as a main material into the product.

Materials and Methods:

The prototype contains bio-based substances which are cellulose, hemicellulose in bagasse, lignin, alpha cellulose in coconut coir. It is made in the form of a thermal insulation pad. We changed the ratio of biomaterials, compared the thermal insulation, and attached the activated materials with glues. This study tests 3 different ratios of bagasse to coconut coir: 50:50, 70:30 and 80:20 by mass (%w/w) to figure out the most appropriate ratio.

Results and Discussion:

From the properties testing, it is found that the ratio 70:30 by mass (%w/w) has the most insulating performance. It can also be degraded naturally and be actually used considering properties such as hardness, water solubility, etc. in all proportions.

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Coating Material from Chitosan as Biodegradable Mulch Film

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Purpose and Background:

Presently, herbicides, especially Paraquat and Glyphosate, are widely used in the agricultural industry to kill weeds because of their effectiveness. However, some of these weed killers are reported to cause skin cancer and can further develop into lymphoma and testicular cancer [1]. Furthermore, most herbicides will leave toxic chemicals in the environment. Therefore, chemicals that are less harmful to both the user and the environment are needed. Mulch film or weed control fabric is an alternative substance to block weed from receiving sunlight thus inhibiting weed growth. However, mulch film and fabric can be time-consuming and create more waste in the environment.

With this, we aimed to create a weed killer based on chitosan that is friendly to the environment. Chitosan is a natural polymer that is left over from discarded crustation shells. It can be used to coat the leaf and cover the stomata which will prevent carbon dioxide exchange and fixation [2]. Adapting the idea of the mulch film as a weed killer, hydrogen peroxide was also added into the substance so that it can cause oxidative stress in plants. Hydrogen peroxide is a reactive oxygen species usually used on the skin to prevent infection. Hydrogen peroxide can be broken down into oxygen and water which will not leave any harmful effects on the environment [3]. Our biodegradable mulch film will be effective and act as a weed growth inhibitor and can help solves the problem in the agricultural industry.

Materials and Methods:

Mulch films applied as weed killer were prepared using 3 different coating materials: Microcrystalline Cellulose (MCC), tapioca starch (TS), and chitosan (CT). The chitosan with a molecular weight of 265 kDa was diluted with 0.5% acetic acid and stirred at room temperature overnight. The 8% (w/v) of each coating materials were mixed with 0.1% (v/v) Silwet 408. The mulch films were prepared with or without 1% (v/v) hydrogen peroxide (H₂O₂). The spray treatments were divided into 7 following mixtures: MCC, TS, CT, MCC + H₂O₂, TS + H₂O₂, CT + H₂O₂, and using water as control treatment. The coating mixture of mulch film was sprayed to run off on the coco grass (*Cyperus rotundus*). Plant growth was observed and its survival rate was recorded every day for 10 days.

Results and Discussion

After 10 days of spraying each coating material, it was found that the grass sprayed with the microcrystalline cellulose and tapioca starch alone or combined with hydrogen peroxide did not show any changes similar to the control treatment. In contrast, the weed sprayed with chitosan combined with hydrogen peroxide started to wilt on the second day and continued to show wilting and leaf yellowing, resulting in 70% plant death. Furthermore, the weed sprayed with only chitosan also showed 30% plant death. The wilting and leaf yellowing could be due to chitosan coating forming a film covering the stomata and inhibit gas exchange. In addition, chitosan was also reported to induce stomatal closure [2]. Therefore, the photosynthesis capacity of the plants was reduced. Taken together, we conclude that chitosan with hydrogen peroxide is the most effective coating material to use as biodegradable mulch film inhibiting plant growth. In the future, we planned to mix squid ink in different concentrations to the mulch film and tested it. When spraying the coating mixture on weed, the black pigment will block the chlorophyll from absorbing the light and stop the plant from photosynthesizing. We hope that our biodegradable mulch film with squid ink will be effective and solve the problem of herbicide danger to people and the environment.

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STUDY THE PROTECTIVE EFFECT OF HERBAL EXTRACT ON MYOCARDIAL INFARCTION

Luu Ngoc Phuong Linh¹

1. HES High school, Vietnam

Purpose and Background:

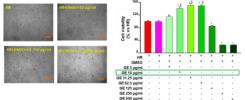
We have already known stroke and heart attack are serious diseases that appear when the blood flowing to the tissue is partially or completely reduced. The reperfusion of blood to the tissue can reduce damage to the brain and heart muscle. However, replenishment leads to a large-scale oxidation of lipids and protein, resulting an imbalance between free radicals in the cells; and possibly ultimately causing further muscle depending on oxygen transport by blood and blood flow.In recent decades, there has been great progress in screening and identifying natural compounds to develop new drugs. Medicinal plant has played the important role in the Vietnam healthcare system. In which, ginseng extract consists of constituents which play the important roles against diseases. Here, we study the protective effect of herbal extract on myocardial infarction.

Materials and Methods:

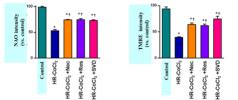
In this project, required materials incude: Vu Diep ginseng extract, H9C2 cells, Cobalt Chloride 300µM (CoCl₂), CCK-8 assay kit, Plate reader: 450 nm abs, DMSO, 96 well plates, ... To achieve our goals, we will be using some following methods. Firstly, ginseng extract will be extract from ginseng root. Then, we chose Cobalt Chloride to stimulate the Miocardial infraction (hypoxia/reoxygenatin–HR) model on H9C2 cells. After a period of researching, we made our experimental design. Firstly, the H9C2 cells were cultured at 37' degree Celcius with 5% carbon monoxide. Then we divided them into 2 groups, control and HR-CoCl2. In the control group, H9C2 cells were cultured at in normal conditions. On the other hand, in the test group, H9C2 cells were grown in DMEM contain CoCl2 in 24h. Then cells were continued to culture in DMEM contain DMSO or GE. Finally, the same were analyzed by cell viability (used CCK-8) and Mitocondrial function (NAO and TMRE kit).

Results and Discussion:

After applying the methods in our study, we came up with two distinct results. The first rresult is disease model approaches. To start off, the cell is stored in liquid nitrogen, being reactivated in 37' degree Celcius when needed. After being cultured, the cells will be transported into the MI model for testing. Finally, the remaining unused cells along with the cells after testing will be put back into the liquid nitrogen storage. Up next is the research about the MI model. The second rresult is cell viability and mitochondrial function result we have put out pictures of the cell viability and mitochondrial functions.



The cell viability of SVD groups were significantly higher than that of HR group. This indicated SVD strongly protected cardiomyoctes against myocardial infarction and optimal dose is 10 μ g/ml. Therefore, we have chosen a concentration of 10 μ g/ml for the next experiments. We continue to evaluate the influence of SVD on mitochondrial function through 2 indicators: Cardiolipin and mitochondrial membrain potential.



The NAO intensity (label Cardiolipin) and TMRE intensity (mitochondrial membrain potential) of SVD group was dramatically higher than HR group. This indicated SVD effectively preserved mitochondrial function against injury. Taken all together, our data presented that GE suppressed myocardial infarction by increasing cell viability and preserving mitochondrial function. Further, evaluating the protective effects of GE against CoCl2 induced oxidative stress targeting to cellular respiratory organelle.

Extraction of Cellulose Nanofiber from Roasted Peanut Shells

Narumi Ezoe

Ichikawa High school, Japan

Purpose and Background

This research aims to make an effective use of peanut shells to solve the garbage problem. Currently, about 1,600 tons of peanut shells are annually discharged in Chiba Prefecture. Peanuts are roasted after harvest to make them a snack or part of a snack. Therefore, the research materials are a roasted peanut shells because most of the discarded shells are roasted. Cellulose nanofibers are valuable materials based on various characteristics, such as high water retention and strength, and are used in diverse applications such as food, medicine, cosmetics, and health care [1]. According to a previous experiment using coffee beans, the cellulose nanofiber contained in the peanut shell is potentially extractable (2).

Materials and Methods

TEMPO extracted method for peanuts cellulose nanofibers was referred by the spent coffee grounds method [2].

1. Preparing the materials: The roasted peanut shells were crushed in a blender and made into a fine powder. The powder was washed with hot water to remove contaminants and let dry.

2.TEMPO oxidation treatment: Put the shell powder into distilled water containing TEMPO and NaBr. Stir for 3 hours while controlling pH using NaCl or HC1. The pH was adjusted between 10 and 10.5 during the reaction. When the pH became stable and did not change for more than 10 minutes, ethanol was added to terminate the reaction.

3. Cleaning process: The resulting jelly-like product was filtered with a vacuum and washed two times with distilled water.

4.Observation: Extracted nanofiber was treated with butanol and lyophilized for six days, and then observed with Scanning Electron Microscope (SEM).

Results and Discussion

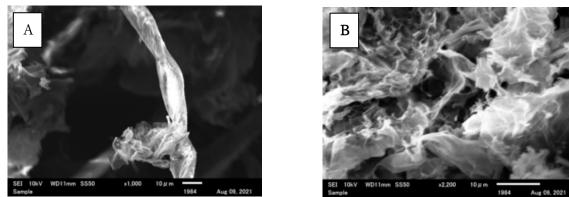


Figure 1. SEM images of TEMPO- Oxidized roasted coffee (A) or peanut shells (B) in scale bars $10 \,\mu$ m

Thick fibers and membranous structures were observed from both materials (Figure1 A and B). But cellulose nanofibers-like structures were not shown in those pictures. For solubilization of the fiber, Noriko et al. [2] used a sonicator. However, after drying, the specimens were directly treated for the SEM observation. This modification may affect the results. Therefore, extraction and treatment steps will be modified to get a clearer image of the fibers.

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	PDF USING SOLAR STERILIZA DIARRHEA FROM DRINKING WATER	TION TO REDUCE THE RISK OF GETTI	NG		
	OGUMA Kenta	Ichikawa High School(ASCENT Program)	Japan		
	PDF Search for foods that inhibit the growth of oral bacteria				
Presenter	Aretha Putri, Masterino Wisam Wannawijaya	SMA 3 Yogyakarta	Indonesia		
	PDF Effectiveness of Sambiloto (Andrographis paniculata) Leaf Extract With Chicken Embryo Model as an Immunostimulant In The Era of Covid-19				
	LU,CHEN-HAN	Taichung Girls' Senior High School	Taiwan		
	PDFREVEAL THE SECRETS HIDDEN IN FORAMINIFERA TESTS USING MICROCT-SCANNING TECHNIQUE: GLOBIGERINOIDES FISTULOSUS-TRILOBATUSSACCULIFER EVOLUTION SUCCESSIONS				

USING SOLAR STERILIZATION TO REDUCE THE RISK OF GETTING DIARRHEA FROM DRINKING WATER

Cao Phương An

1. The Olympia Schools, Hanoi, Vietnam

Purpose and Background:

Water sanitation remains to be a prominent challenge for many developing nations around the world with 2.2 billion people globally recorded to lack access to safe drinking water. In Vietnam, for example, remote communities and ethnic minorities are susceptible to lack of clean water, which leads to multiple serious consequences such as "diarrhea, pneumonia and parasitic <u>infections</u>", according to UNICEF. A major cause of these alarming situations is that water filtration systems are still unavailable, or poorly developed, in multiple areas due to their high costs.

One prospective solution to the problem is the use of solar sterilization to purify water. This is expected to be an inexpensive method to yield water that lowers the chance of getting diarrhea in consumers.

Materials and Methods:

Materials required to perform solar water sterilization include clear and clean plastic bottles and lowturbidity water. To perform solar sterilization, one needs to fill bottles and shake them so that the water can oxygenate. Afterward, place the bottles on a roof and leave them there for 6 hours to 2 days, according to the Centers for Disease Control and Prevention (CDC). The UV lights, heat, and "photo-oxidative destruction" damage bacteria's DNA and inactivate the harmful organisms.

To measure whether the water in the bottles is drinkable, tests must be conducted. One can send water samples from the bottles to laboratories in order to determine the level of bacteria in the water.

Results and Discussion

In the past, solar sterilization has been proven to inactivate diarrhea-causing bacteria in the laboratory, according to the CDC. Moreover, according to BMJ Journals, in ten studies regarding the effectiveness of solar sterilization conducted in Africa, Latin America and Asia, which consisted of "5795 children aged from 1 to 15 years", eight studies yielded significant statistical improvements in the risk of diarrhea in children, as shown in the figure beside. Overall, the risk ratio of children getting diarrhea in all ten studies is 62%, meaning that the chance of getting diarrhea decreased by 38% when the solar sterilization method was applied.

Risk ratio and 95% CI Model Study name Risk Lower Upper ratio limit limit Bitew et al. 2018 0.60 0.52 0.70 0.87 Conroy et al. 1996 0.66 0.50 0.63 0.75 Conrov et al. 1999 0.69 0.52 Conroy et al. 2001 0.05 0.16 Du Preez et al. 2010 0.36 0.16 0.81 du Preez et al. 2011 0.70 0.59 0.84 0 Hartinger et al. 2016 0.78 0.58 1.05 Mäusezahl et al. 2009 0.91 0.64 1 30 Mcguigan et al. 2011 0.37 0.29 0.48 Rose et al. 2006 0.64 0.48 0.86 Random 0.62 0.53 0.72 0.1 0.2 0.5 1 2 5 10

The above result suggests that solar

sterilization is an effective, inexpensive measure to temporarily provide relatively safe drinking water for people in developing countries. However, given its low capacity to filter water at a time and its incomplete elimination of diarrhea-causing bacteria, qualified water filtration systems are still needed.

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Search for foods that inhibit the growth of oral bacteria Kenta Oguma Ichikawa High school

Purpose and Background:

Teeth are important for health maintenance. Efforts to protect tooth health, such as brushing and plaque control, are ongoing. However, some people could not perform or get in touch with those protections. Therefore, find a way to keep teeth-health from preventing periodontal disease by using common foods is beneficial.

This report examined the ability of fermented foods, Natto and Kimchi, to inhibit the growth of the Mutans bacteria.

Materials and Methods:

Materials: Mutans selective medium (Dentocult SM, OralCare. Inc), Culture tube, Constant temperature bacteria incubator, Dental floss, cooked Rice, Natto, and Kimchi.

Methods: Volunteer brushed teeth and then chew Rice with/without Natto or Kimchi evenly and thoroughly in the mouth. After eating those foods, the volunteer did not take anything other than water. After more than 6 hours, plaques were taken from between volunteers' teeth with dental floss. The ingested plaques were applied on the culture sticks, and then those were placed in a culture tube containing a mutans selective medium, then incubate in a constant temperature bath at 37 ° C for 48 hours. Microscopic Photographs of colonies were analyzed by using the ImageJ (NIH), and then colony numbers and growth areas of mutans were evaluated by SPSS.

Results and Discussion:

The addition of Natto or Kimuchi slightly reduced the number of colonies in the oral cavity after more than 6 hours of taking foods. However, that suppressive effects were not significant. On the other hand, those fermented foods significantly reduced the growth area of mutans. These results were shown that eating those foods during the meal may have the potential to minimize teeth decay. Therefore, it could be used to develop new health foods in the future.

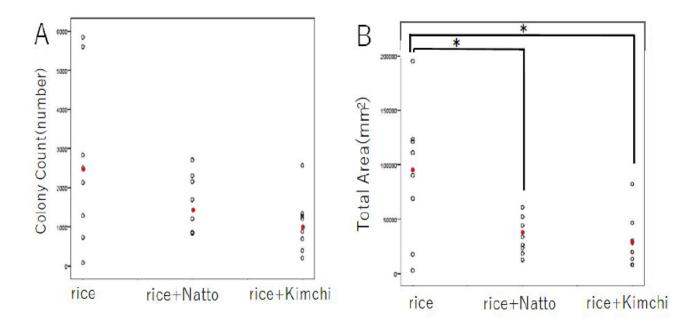


Figure 1. Six hours after eating Rice with/without Natto or Kimuch, oral bacteria were harvested by using dental floss. Growing colonies numbers (A) and growth areas (B) were examined by NIH ImageJ and IBM SPSS.

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EFFECTIVENESS OF SAMBILOTO (*Andrographis paniculata*) LEAF EXTRACT WITH CHICKEN EMBRYO MODEL AS AN IMMUNOSTIMULANT IN THE ERA OF COVID-19

Aretha Putri¹, Masterino Wisam Wannawijaya¹

1. SMAN 3 Yogyakarta

Purpose and Background

Coronavirus Disease 2019 (COVID-19), that is caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a disease that aims for the human respiratory system (Murthy, et al. 2020). Weak immune response will cause viral replication in host cells (Zhu et al., 2020). Sambiloto is one of the plants that can be used as an immunostimulant. The ethanol extract of Sambiloto (Andrographis paniculata) contains alkaloids, carbohydrates, saponins, proteins, phytosterols, phenolics, flavonoids and glycosides in phytochemical screening (Rajalakshmi 2016). Sambiloto leaf contains andrographolide, and Cathrine, extract while 14-deoxy-11,12-didehydroandrographolide is immunostimulatory (Chao and Lin, 2010). Therefore, researchers innovated to investigate the effect of sambiloto extract (A. paniculata) as an immunostimulant using chicken embryo model that is induced by Infectious Bronchitis (IB) vaccine.

Materials and Methods

This research is a quantitative and qualitative research conducted through experiments in the laboratory. The materials that are used are sambiloto leaf (*Andrographis paniculata L*), embryo chicken eggs, aquadest; 70% alcohol, Pen-strep antibiotics, 96% ethanol; dimethyl sulfoxide (DMSO); Phosphate Saline Buffer (PBS), Infectious Bronchitis (IB) vaccine; 10% neutral buffer formalin (NBF); paraffin; Hematoxyline-Eosin dye; methanol-eosin dye giemsa.

Independent variables: 1. PBS solvent control + Pen-strep antibiotics 1% (100 Units/mL Penicillin and 100 g/mL Streptomycin); 2. PBS control + Infectious Bronchitis (IB) vaccine + 1% Pen-strep antibiotic; 3. PBS control + Infectious Bronchitis (IB) vaccine + 1% Pen-strep antibiotic + 50 g/mL lamivudine; 4. IB vaccine + Pen-strep 1% antibiotic + a variety of sambiloto extract (25 g/mL, 50 g/mL, 100 g/mL) dissolved in PBS.

How it works: 1. Ethanol extraction by drying, counting, soaking, and extracting; 2. Preparation of test solution; 3. Immunological test of embryonated eggs by chicken eggs adaption, induction of the immune system, inoculation of viruses and samples, determination of blood and organ profiles.

Expected Results and Discussion

The expected results are that sambiloto extract (*Andrographis paniculata*) will affect the blood profile and histology of the immune system organs of chicken embryos induced by the IB vaccine.

No	Observed	Result
1	RBC (Red Blood Count) blood profile, hematocrit, PCV (Packed Cell Volume), plasma protein, WBC (White Blood Count)	The blood profile is not damaged and the number of white blood cells and macrophages is increased
2	Immune system organs (bursa, thymus, spleen, liver, kidneys)	Organs are in good condition and functioning

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REVEAL THE SECRETS HIDDEN IN FORAMINIFERA TESTS USING MICRO CT-SCANNING TECHNIQUE: GLOBIGERINOIDES FISTULOSUS-TRILOBATUS SACCULIFER EVOLUTION SUCCESSIONS

Lu Chen Han¹, Li Lo², Katsunori Kimoto³

Taichung Girls' Senior High School, Taiwan Department of Geosciences, National Taiwan University, Taiwan Research Institute for Global Change, JAMSTEC, Japan

Purpose and Background:

Foraminifera is a phylum of Protozoa organisms, and most of them living in the ocean including the seafloor and surface layer. Their main habitat is tropical seas. Because they have lived for several hundred million years and their shells are mostly made in calcium carbonate which would not easily dissolve in the sea, foraminifera is used as an archive that makes many contributions to the research of biostratigraphy. There is a kind of foraminifera called *Globigerinoides fistulosus*, its last-appearance datum is around 1.77 million years ago (Ma). However, Chen (2006) mentioned that there are uncertainties of identifying the two species due to the morphological similarities that *G. fistulosus* and *Trilobatus sacculifer* share. All of them bring up questions when identifying *G. fistulosus*. Nowadays, *T. sacculifer* still can be found in modern ocean, so many studies are using it. But there are only a few studies about *G. fistulosus*. To deal with this issue, we would like to understand *G. fistulosus* by testing their morphological differences.

Materials and Methods:

The samples of foraminifera were collected from Ocean Drilling Program Core ODP 1115B (9°11'S, 151°34'E; water depth: 1148.8m). The sediment samples were washed and hand-picked under binocular microscopes. The foraminiferal tests Micro-CT scanning is performed by Research Institue for Global Change, JAMSTEC, Japan (Iwasaki et al., 2015). Here we use Molcer Plus, a 3D image visualization and processing software (WhiteRbbit Corporation), to reconstruct the 3D model of the samples. With the 3D model derived by Micro-CT scanning, we can observe the structure of the samples clearly and measure their characteristic more accurately. Furthermore, the samples are not damaged and can perform other analyses.

Results and Discussion:

We have initially reconstructed the samples of 4 different morphotypes across the last occurrence datum of *G. fistulosus*. Currently, we are working on pretreatment of 3D models. We use different CT-number to test and get rid of impurities such as clay and other microfossils. Through their appearance, we found that these three forms of *T. sacculifer* and *G. fistulosus* are apparently different (please see figures below). The last or second last chamber of *G. fistulosus* has an irregular protrusion, but *T. sacculifer* doesn't have the protrusion. To explain the result, we have two working hypotheses. The first is that they are two different species. The second is that they may be part of the growth process, and *G. fistulosus* is the last form. Because the last chamber of Kumar form has a protrusion that is just not as much as *G. fistulosus*. The goal of this research is to try to identify which hypothesis could better explain tour results. We will test the other morphological characteristic (growth rate and thickness of tests) to further address their evolutional relationships.







T. sacculifer normal form



T. sacculifer Kumar form



T. sacculifer sac-form

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	Gregory Hope Soegiantoro, Dhestina Syarifiah Berliani	SMA 3 Yogyakarta	Indonesia		
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	Thitinun Chantrasorn	Kasetsart University Laboratory School, Center for Educational	Thailand		
	PDF A Study on the Effects and Prevention of Computer Worms				
	Pelangi Savana Puspa Romadoni, Andi Kavi Satyagir	SMA Negeri 1 Bandung	Indonesia		
	PDF Fighting the Infodemic: Hig	h School Students vs Adults			

SciBEAM: Scientific – Based Education about Application of chemical elements and compounds as a Mobile game

Phongsaphak Nitikijoran¹, Supakit Sroynam¹, Mok Wattanasopon¹, and Laokhwan Ngamprasit¹

1. Mahidol Wittayanusorn School, Nakhon Pathom, Thailand

Purpose and Background

Game-Based Learning (GBL) has become one of the widely used methods of studying [1] because of its remarkable ability to motivate players into learning and taking interest in the knowledge [2]. With the fascinating properties of GBL and the importance of elements and compound topic in chemistry, SciBEAM has been developed as a mobile game on the purpose of promoting education and thought process in the topic of 'application of elements and compounds in everyday life', with the concept of using the Match 3 game to induce the understanding of chemical formula.

Materials and Methods

We developed SciBEAM using Unity game engine. The process includes researching chemical elements and compounds to apply in each level of the game, developing the game using C# language, and creating assets for the game. For performance testing, we conducted a study with students from grade 4 to grade 9 (n = 21) including pre-testing the students with 25 multiple-choice problems in the game's topic, letting the students play SciBEAM independently for 2 days, doing a post-test with the same condition as the pre-test, and also letting the players assess their satisfaction using a survey. Then, we analyzed the data: the pre-test and post-test scores and the satisfaction survey. Finally, we concluded the results.

Results and Discussion

The results conclude that students' post-test scores are higher than their pre-test scores at a significant level of 0.01, proving that the students significantly gained knowledge in the topic of 'application of elements and compounds in everyday life' from playing SciBEAM. In the part of the satisfaction survey, the satisfaction of the students from playing this game is in the range between high and highest. Therefore, this indicates that the students were satisfied with the concept, system and graphics of the game.

	\overline{x}	S.D.	t	р
Pre-test	-1.43	3.93	-	-
Post-test	3.50	6.99	-	-
Difference between Post-test and Pre-test (d_i)	4.92	5.62	4.01	0.00034

Table 1: Comparison of pre-test and post-test score of all players from answering 25 multiple-choice problems (with the scoring system of 1 point for a correct answer, -0.5 point for a wrong answer, and 0 point for an unanswered problem) (p < 0.01)

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iTRASH: Electronic Trash Management

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Purpose and Background

Only 10 percent of trash is recycled in Indonesia, causing overload in landfills and various health and environmental problem, including trash pileup in rivers and sea. Society involvement in reducing, reusing, and recycling waste often limited by accessibility and easiness of waste management. People often don't consider recycling because too much effort spent for little revenue. Waste banks in several cities in Indonesia hasn't be effective because less people recycle their waste through waste banks. Therefore, this preliminary research is to create an app that can encourage society in recycling daily wastes easily through waste banks.

Materials and Methods

This prototype was made using Microsoft Visual Studio, Xamarin Studio, and Apache Cordova. The app was designed using Unified Modelling Language. Then the system design was implemented by database making, application making, and debugging. The software that has been made then has it function tested.

Results and Discussion

In this preliminary design, the prototype of iTrash has been made. iTrash is an app to connect within people and waste banks. People can sell their daily waste for recyclement in waste banks, meanwhile waste banks can sell their recycled products to the users.

The features of this app are trash pickup service, trash selling service, recycled products online shop, help/customer service, and educational contents about waste management. In this app, user doesn't have minimum trash value to be picked up and only need to sort within organic, non-organic, and mixed waste. By simplifying this trash sorting by the user, it is expected that more people will recycle their waste through waste banks. Hence, waste banks input expected to increase. Meanwhile, the trash educational contents are expected to increase trash awareness in society, that also can increase waste banks input.

Waste banks can sell their recycled products through the app and can be bought by users. By selling waste products through the app, waste banks can expand their marketing and it is expected that waste banks output will increase.

The increase of waste banks input and output can increase the waste banks capacity and also expand job opportunities to people around the waste banks. By increasing the waste banks capacity, it is expected that wasted waste will lessen and problem caused by trash. However, empirical study still needed to determine how much this app can affect the society.



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A Study on the Effects and Prevention of Computer Worms

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Purpose and Background:

The increasing popularity of computers corresponds to the growing number of computer worm infections and attacks. On account of this, a research on worm type malwares is needed. The purpose of this study is to gain an understanding of the behavior and effects of computer worms through the process of basic static and dynamic malware analysis in order to find an effective method of computer worm prevention.

Materials and Methods:

In this study, six computer worm samples including Win32.expiro, Michelangelo, Win.32.Kido, W.32.CodeRed.Worm, W.32.Hybris.Worm, and Win32.Serab were analyzed. For each sample, the obtained hash values calculated by HashMyFiles software were entered into VirusTotal website to find any connection between the malware and IP addresses or website domains. Next, the sample was allowed to run and Process Explorer software was used to find the number of Dynamic-Link Library files that had been interfered by the malware. After the malware process had been terminated, the changes in the system's registry values were displayed by Regshot software. The entire process was conducted in a virtual computer system made with VirtualBox software.

Results and Discussion

Table 1 shows the number of security vendors that detected the malware as a threat, the number of connections made between the malware and IP addresses, the number of Dynamic-Link Library files interfered by the malware, and the number of registry values added, deleted and modified by the malware process.

Sample name	Flagged by security vendors as malicious	IP traffic	Number of .DLL files interfered	Registry values deleted	Registry values added	Registry values modified
Win32.expiro	2/72	1	6	2	2	28
Michelangelo	5/72	0	9	1	1	5
Win32.Kido	65/72	0	4	0	0	21
W.32.CodeRed.Worm	38/72	0	2	2	2	26
W.32.Hybris.Worm	60/72	0	1	0	6	29
Win32.Serab	15/72	0	9	0	9	4

Table 1. The analyzed results of six computer worm samples.

It can be concluded that computer worms are able to damage computer systems by interfering with Dynamic Link Library files and by modifying the registry values in the system. For preventive measures, the hash values of a suspicious file can be calculated and entered into virustotal.com to check if the file is infected. If a computer is suspected to be infected by worms, Regshot and Process Explorer can be used to detect the process caused by the computer worm.

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Fighting the Infodemic: High School Students vs Adults

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Purpose and Background:

Around 6000 people have been hospitalized due to misinformation about COVID-19 in the first 3 months of 2020. Hoaxes can trap people into believing something that can ultimately cost someone's life. Based on stereotypes of adults (45+), they tend to trust and share more misleading information than younger generations. The purpose of the research is to compare the digital literacy skills of the older generations and younger generations.

Materials and Methods:

The method used for this research is a quantitative research method. Google Forms survey is created and completed by 280 participants (adults, highschool students) with 2 sets of questions:

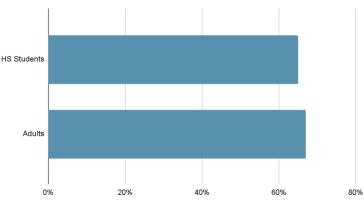
- 1. 1st SET OF QUESTIONS, SELF-ASSESSMENT:
 - "Do you know the steps to differentiate between fake news and real news?"
 - "In your opinion, has the Indonesian government done enough to stop the spread of fake news as well as correct them?"
- 2. 2nd SET OF QUESTIONS, DIGITAL LITERACY ASSESSMENT:
 - 7 questions that included screenshots of news from various media.

Results and Discussion

Students and adults achieved similar accuracy percentages. Additionally, the majority of both groups know the steps to differentiate fake and real news. (57% students, 64% of adults) and the majority of both groups thought that the Indonesian government hasn't done enough to stop the spread of fake news as well as correcting them. (70% of students and 65% of adults).

Figure 1. Comparison of digital literacy assessment results.

Correct Answers on 2nd Set of Questions



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	Group F		ZOOM			
Chairperson	Ph.D., Chen, Yu Lim	National Taiwan Normal University	Taiwan			
Assistants	Chen, Po Chun	National Taiwan Normal University	Taiwan			
Assistants	CHEAH, WEN-PING	National Taiwan Normal University	Taiwan			
	TANAKA Yuri	Ichikawa High School(ASCENT Program)	Japan			
	PDF Survey of the existence of Informal Green Spaces (IGS) in urban areas and awareness of IGS					
	Phurinut Kuntayo School		Thailand			
	PDF Temperature and Rainfall Change in Chiang Mai City					
Presenter	Putu Diandra Sahwahita Perdana	SMA N 4 Denpasar	Indonesia			
	Good Health and Well-Bei	ng: The case of improving Health in the	world			
		Kasetsart University Laboratory				
	Nat Wongsirimaetheekul	School, Center for Educational	Thailand			
	Research and Development					
	PDF degradable Nursery Pot from Used Tea Grounds					

Survey of the existence of Informal Green Spaces (IGS) in urban areas and awareness of IGS

Yuri Tanaka¹ 1. Ichikawa High school, Japan

Purpose and Background

In a previous study, informal green spaces were surveyed in Ichikawa City, Chiba Prefecture, Japan. Informal Green Spaces (IGS) is the Green Space other than official green spaces such as parks and forests. The previous study showed that citizens, mainly elderly people, were aware of IGS and viewed them as potential auxiliary green spaces. From these facts, the purpose in this study is to investigate whether IGS exist universally in the urban cities and younger generation see IGS as a potential supplementary green spaces. The purpose in this study is to investigate whether IGS exist universally in the urban cities and younger generation see IGS as a potential supplementary green spaces.

Materials and Methods

The existence of IGS and their types have been investigated near Chiba University, in the urban area. Then based on the obtained data, a questionnaire was created, and the responses were collected from Ichikawa Gakuen's students (junior high school to senior high school) and faculty members. Obtained answers were analysed using spreadsheet software. How we can utilize the IGS are also considered.

Results and Discussions

IGS are found in the areas near Chiba University. All the nine types of IGS shown in the previous studies were found (Fig.1). From a survey with Ichikawa junior-high and high school students and faculty members, who are living in urban areas, I have concluded that IGS are found universally in several cities throughout urban area. Through the analysis of the questionnaire, I have reached the conclusion that IGS play a complementary role to formal green spaces and enrich the lives of people in younger generations (Fig.2). From one of the results, "perspective of whether IGS make us peaceful" and "the degree of recognition of IGS, in short, number of IGS" are likely to related.



Fig 1. Existence of informal green spaces near Chiba University (in Chiba city). From left to right: water verges, railroad verges, street verges, brown fields, vacant lots, overgrown structure, unimproved lands, parking lot vages and gaps.

I think IGS makes us feel peaceful						
15 57 <u>53</u> 96 91						
	Strongly disagree Disagree Neither disagree Agree Strongly agree nor agree					

Fig 2. Recognition of IGS. The response to "I think IGS mekes us peaceful" are shown. More than half responders agreed.

Reference

Minseo K, Christoph DDR & Katsunori F. (2018). Residents' Perception of Informal Green Space - A Case Study of Ichikawa City, Japan. *Land, MDPI, Open Access Journal, vol.* 7(3), 1-20.

Temperature and Rainfall Change in Chiang Mai City

Phurinut Kuntayo¹, Tatiya Wongrat¹, Busayamalee Theerattanondha¹, Jannapha Soonjan², Pakdeekul Ratana² and Yalib Supjindakorn²

1. Chiang Mai University Demonstration School, Chiang Mai 2. Chiang Mai University, Chiang Mai

Purpose and Background:

Climate change is now considered to be a significant problem in the world including in Chiang Mai, the northern part of Thailand, especially agriculture. When the farmers cannot forecast the weather, their plants end up dying due to lack of water or flood caused by an enormous amount of rainfall. Consequently, this research's purpose is to find the trend of both temperature and rainfall change between 2019-2021 and find the correlation between them and other factors.

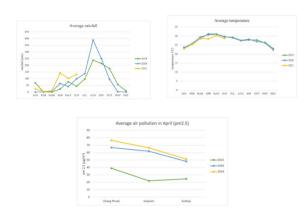
Materials

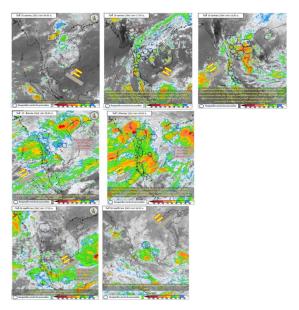
The data was collected from the Thai Meteorological Department, Northern Meteorological Center, Thai Pollution Control Department

Methods

- 1. Determination of study site: Chiang Mai
- 2. Collect the temperature and rainfall changes from Northern Meteorological Center
- 3. Collect picture from satellites from Thai Meteorological Department
- 4. Collect air pollution statistics from Thai Pollution Control Department
- 5. Analyse and compare between data from 2. and picture from 3., data from 4.
- 6. Present the conclusion

Results and Discussion





- 1. In April, the amount of rainfall increases every year because the rain cloud has increased.
- 2. The rainy season has been shortened throughout the year due to the rain clouds gone quicker.
- 3. Despite the short of the rainy season in 2021, the overall rain amounts increased especially in August. This is also caused by the greater number of rain clouds.
- 4. Over the period, the temperature stayed the same level. However, in April (2021), the temperature decreased. This is due to the increasing of rainfall and the drop of air pollution (PM2.5)

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GOOD HEALTH AND WELL-BEING : THE CASE OF IMPROVING HEALTH IN THE WORLD

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- 1. SMA N 4 Denpasar, Bali, Indonesia
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Background and Purpose

A number of people died due to lack of concern about health in their own area. Whether it's from physical health, mental, or social welfare. Many lives are in danger of leaving because of bodily injuries and mental disorders. This topic is a problem that is often found in society. And very supportive if things like this are rarely noticed by people. But are you aware that this will greatly affect your future life? If it stays like this, human life might not be good for the next few years.

Therefore, I bring up the topic about "Good Health and Well-being" so that all of you can pay more attention to one of these important things. Starting from the beginning of the problem to the end how the result. Another goal is that you can better understand health (physical and mental) and also social welfare so that human life on this earth becomes better.

Materials and Methods

This main problem looks trivial but has a huge impact on the birth rate and death rate in the world. If physical illness increases, it will require more medical personnel. If many people have mental disorders, many people will commit suicide. If there is a welfare problem, it also results in neglected society and the economy.

One of the methods that might be used is to prepare more medical personnel for the sick people, the existence of public health programs, provide more health services in remote areas, and free medical check-ups. The second method for mental disorders are socialization about the importance of mental health, and free treatment And lastly, we can do assistance for abandoned children, legal action for violent treatment, and donate some funds for the welfare of the people who can or cannot afford it.

Result and Discussion

The result is after being advised and monitored continuously by World Health Report (WHR), countries around the world are experiencing improvements in their health and well-being. World Health Organization act in a case like this, and also they have succeeded in urging the countries of the world to care more about their citizens. However, in conditions of unequal access to services and the need for changes in people's behavior, the state is still monitoring behavior in the community

In the beginning, people suffer from indifference to themselves. Stress due to social life, physical abuse, and mental problems. And after being observed by the World Health Organization (WHO), many people began to realize how important it is to live a healthy and prosperous life. So in conclusion, care about your health and that of others. That way we can make the world to be a better place.

REFERENCE

World Health Organization website : (https://www.who.int/)

Biodegradable Nursery Pot from Used Tea Grounds

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Purpose and Background

Thailand is an agricultural country. When farmers grow crops from seeds, they often use nursery pots or nursery bags that are single-use plastics for a short time. When the seedlings grow at an appropriate point, farmers transfer them from nursery pots or bags into the soil. These plastic bags are torn and often causes damages to the roots of the seedlings, which might later affect their growth. At the same time, more and more used tea grounds are discarded from tea shops and researcher's home as waste. According to K.C. Willson (1975), tea grounds contain essential nutrients for plants (Nitrogen) and are easily degradable.

Therefore, the researcher would like to use the tea grounds to make nursery pots to cut back the amount of waste, reuse used tea grounds and reduce the plastic problems. This research was to study the procedure and proper ratio of used tea grounds and binder for making biodegradable nursery pots. Also, the growth of the selected plant, basil, that is planted in the nursery pots was observed.

Materials and Methods

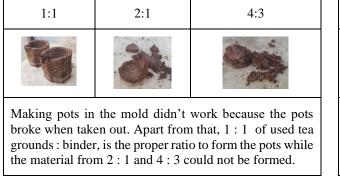
The materials used in this research were used tea grounds, tapioca starch, water, octagon shape pot mold, universal indicator, and basil seeds. First, relevant research from various sources was studied. To make pots from used tea grounds, the researcher tried different ratios of tea grounds to binder to form the pots. The pH of the pots made from the best ratio was then tested. After that, the effectiveness of the nursery pots was tested by growing basil seeds in them. Finally, the growth of basil seedlings was recorded and reported.

Results and Discussion

<u>Table 1</u> shows pot molding with different ratios of tea grounds and binder

<u>Table 2</u> shows the growth of basil in nursery pots from tea grounds (Start planting in different period of time)

(Start planting in different period of time)



	Test 1	Test 2	Test 3
Day 1	R.		
Moving Day			

The proper ratio to form the biodegradable nursery pots is 1:1 of tea grounds and binder when the binder is made from tapioca starch and water with the ratio 1:10. The pH of the pots was 7 which is a good fit to most plants. In every test, the selected plant, basil, could grow in the nursery pots from tea grounds and the nursery pots can form and keep their shape until the seedlings were transferred.

REFERENCES

K.C. Willson, Studies on the mineral nutrition of tea II — Nitrogen. (1975). https://link.springer.com/article/10.1007/BF00009939

	Group G		ZOOM		
Chairperson	Associate Professor, Ph.D. Pakdeekul Ratana	Chiang Mai University	Thailand		
	Jannapha Soonjan	Chiang Mai University	Thailand		
Assistants	Yalib Supjindakorn	Chiang Mai University	Thailand		
	Chayanis Opassereepadung	Chulalongkorn University	Thailand		
	Shahira Budi Nurfitriani	SMA Negeri 1 Lembang	Indonesia		
	PDF Biogas as a Solution of Indiscriminate Disposal of Cow dung and Agricultural Waste				
	Tadtada Tanchaisawat	Chiang Mai University Demonstration School	Thailand		
Presenter	PDF Soil Use and Management in Chiang Mai City				
Tiesentei	KAWAGUCHI Yuta	Ichikawa High School(ASCENT Program)	Japan		
	PDF Possibility of using informal green space to supplement urban green space				
	Made Anindita Prehasti Dhamma	SMA N 7 Denpasar	Indonesia		
	PDF Partnership for the goals: O DURING COVID-19 PANDEMIC	CASE OF INDONESIA EDUCATIONAL S	ECTOR		

Biogas as a Solution of Indiscriminate Disposal of Cow dung and Agricultural Waste

Shahira Budi Nurfitriani¹, Qolbunnisa Fatimah Azzahra Hidayat¹ Juaningsih¹, Adinda Siwi Utami² and Ida Kaniawati²

> 1. SMA Negeri 1 Lembang, Indonesia 2. Universitas Pendidikan Indonesia, Indonesia

Purpose and Background:

The purposes of this research are making a simple biogas reactor that is affordable, and analyzing the difference different rate of biogas production from the two reactors.

This research conducted because Lembang is one of the agricultural and livestock areas in Indonesia. The agricultural and livestock industries carelessly dump most of their waste into the Citarum River, making it one of the dirtiest rivers in the world. The waste is also dumped into the surrounding environment causing many problems, one of which is causing unpleasant odors and dirty water absorption. The solution of this problem is to utilizing the waste into biogas by making a simple biogas reactor. Based from previous research, biogas from cow dung can be used as alternative fuel in Prabumulih (Oktavia & Firmansyah, 2017).

Materials and Methods:

Several materials that used to create a simple biogas are drum, sok drat out and in, fitting drat, stop faucet, pressure gauge, iron faucet, car tires, funner, hose clamp, different size pipes, various kind of glue, hose tap water tape.

The methods for making this simple biogas reactor are (1) sketch a biogas reactor; (2) create a stool inlet, gas inlet, and place a pressure gauge on the drum cap; (3) make a faecal drain next to the drum; (4) glue all the joints with glue then wait for it to dry, and then the biogas reactor is ready to use.

Results and Discussion

The observations were analyzing the comparison of biogas produced from 2 reactors. Where as reactor 1 contains 45 kg of cow dung waste and reactor 2 contains 15 kg of cow dung and 30 kg of agricultural waste. Here by the table of pressure observations on tires connected to hoses from each reactor for 9 days.

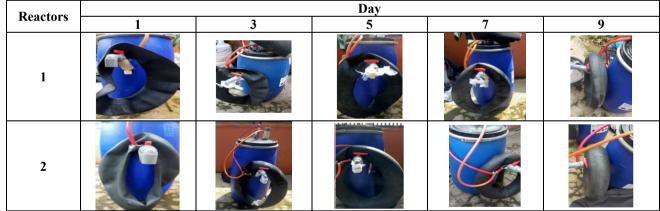


 Table 1. Rate of biogas production from 2 reactors.

Based on 9-day observation, reactor 2 produce biogas faster than reactor 1, marked by the higher change of volume of tires. It means the tires get more pressure from the gas inside the reactor. In conclusion, making biogas by mixing cow dung waste with agricultural waste is better than just by cow dung waste.

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Soil Use and Management in Chiang Mai City

Tadtada Tanchaisawat¹, Tatiya Wongrat¹, Busayamalee Theerattanondha¹, Jannapha Soonjan², Pakdeekul Ratana² and Yalib Supjindakorn²

Chiang Mai University Demonstration School, Chiang Mai
 Chiang Mai University, Chiang Mai

Purpose and Background

Soil is one of the renewable natural resources. It is the basis of our nation's agroecosystems. Healthy soil provides essential nutrients to forests and crops, filters water and helps to regulate the earth's climate. Moreover, it is vital for human needs, so we can't deny that humans gain benefits from soil as a foundation for cites, a holding facility and other needs. Nevertheless, there are considerable soil problems in Chiang Mai which are caused by many factors, such as shifting cultivation, soil degradation and retrogression, and a rapid city development in the past few years. Therefore, this study aims to find out if Chiang Mai people use soil proportion appropriately and how effective the soil has been used.

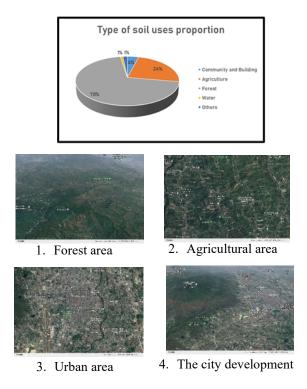
Materials

- 1. Chiang Mai's soil uses proportion statistic from Land Development Department
- 2. Satellite image from Google Earth

Methods

- 1. Determination of study site : Chiang Mai province
- 2. Collect the soil uses proportion statistic from Land Development Department
- 3. Present the proportion in form of pie chart.
- 4. Collect the physical features of the environment in the community of some areas in Chiang Mai from Google Earth.
- 5. Describe the physical features and compare with the soil uses proportion.

Results and Discussion



1. From the study, most areas in Chiang Mai are covered by fertile forests (around 70% of the total areas). However, the potential of having buildings and communities in urban site are gradually inclining which might invade the natural resources in the future according to satellite image.

2. On the other hand, there are massive of agricultural lands in rural area (around 24% of the total areas). Thus, we can conclude that local people living still rely on agriculture and cultivation. To keep this culture and tradition persist, we need to pay attention at sustainable development in soil resources.

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Possibility of using informal green space to supplement urban green space

Yuta Kawaguchi 1, Ichikawa senior high school 11th grade, 2. ASCENT program, Chiba University

Background Today, many new cities are being planned and developed around the world as a result of industrialization. In addition, the world's urban population is expected to grow from about 30% in 1950 to 68% by 2050 (United Nations (2018). 2018 Revision of World Urbanization Prospects). Unregulated urbanization will lead to the loss of more greenery (vegetation) and nature. Urban green space is considered essential in urban planning. However, it costs a lot of money to create, maintain and manage these urban green spaces. On the other hand, there are green spaces around us that are not managed by the public. Furthermore, due to the spread of coronaviruses, people are increasingly working and living in their homes and neighborhoods, and the greenery around them has become essential.

Purpose. We will target the greenery that exists around us (informal green space), what is not usually paid much attention to, and clarify the awareness that people have of these green spaces, so that local people can reaffirm the value of green spaces

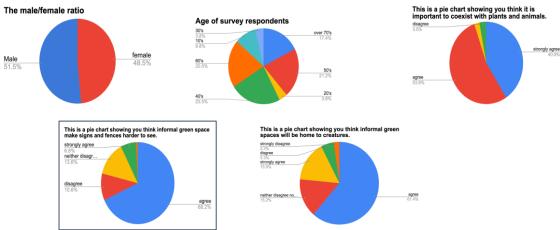
Materials and methods

Informal green spaces are defined as naturally occurring vegetation that has not been intentionally planned or managed.1). For example, road greenery, land, gaps, railroads, brownfields, riparian areas, structures, microsites, and power lines. In the questionnaire, we used photographs of informal green spaces that actually exist in the target area. After obtaining the approval of the head of the community association in the Takanodai area, the questionnaire information was distributed to each dwelling unit, and the format was to be answered online.

We conducted a field survey (including photography) to confirm the existence of unofficial green spaces in the Takanodai area of Yotsukaido City (area of about 30 ha). Next, we surveyed the citizens residing in the target area about their awareness of informal green spaces. The figure shows the classification method of informal green spaces in the field survey.

Results

530 copies of the questionnaire were sent to the Takanodai area of Yotsukaido City, and 133 responses were obtained. This questionnaire was distributed randomly from 1 to 4 block. In terms of the attributes of the respondents, the ratio of males to females was equal, and the ages of the respondents were surveyed from their teens to over 70s. In Graph 1, 77.3% of the respondents felt that informal green space is a good place for living things to live. In Graph 2, 36.3% of the respondents felt that informal green space were dirty, and 26.5% felt that they were not dirty. In Graph 3, when asked if they thought it was important to coexist with plants and animals, 94.7% of the respondents thought it was important.



Discussion

We limited the scope of the survey to the Takanodai area of Yotsukaido City, and obtained responses from a variety of age groups using photographs of informal green space in the target area. As a result, we clarified the attitudes people have toward informal green spaces.

In the Takanodai area of Yotsukaido City, it was found that the majority of people wanted to coexist with plants and animals and felt that the informal green space was a home for living things. In other words, informal green space can be an important place to protect ecosystems, and we believe that informal green space has the potential to contribute to the creation of a healthy and comfortable city to live in, as stated in Goal 11 of the SDGs. Our future task is to make the results of this survey known to the citizens of the Takanodai area of Yotsukaido City, so that they will be aware of the existence of informal green space around them.

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PARTNERSHIP FOR ACHIEVING GOALS: CASE OF INDONESIA EDUCATIONAL SECTOR DURING COVID-19 PANDEMIC

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2. Udayana University, Bali, Indonesia

Purpose and Background

This article has been an academic contribution to conduct partnership within public participation in achieving sustainable development goals. In this context, the partnership would be implemented in solving disruptive conditions caused by Covid-19 pandemic, especially in the educational sector. Indonesia as the developing countries still committed to implement Sustainable Development Goals (abbreviated as SDGs). The seventeenth SDGs agenda is partnership to achieve SDGs based on a cooperation framework in all spheres development agenda.

Indonesia is facing a similar problem due to Covid-19 outbreak. It has taken a toll on the quality of Indonesia education caused by the paradigm shift and attitude change as the result of migration from the offline learning approach to the online learning approach. In fact, the online learning approach is not enough to fulfill essential study results than the offline learning approach. There are critiques and debates over implementation of the online learning approach, from the teachers ability, students ability to understand the lessons, and additional cost that is taken for internet access, especially for remote or outer parts of Indonesia. This article was focused on how partnership within public participation could become adequate, effective, and ideal ways to tackle Covid-19 impact in the Indonesia educational process.

Materials and Methods

This article was conducted with application of empirical legal research, focusing on the gap between law in written and law in action/practice of education, it is commonly referred to qualitative research. This article uses primary legal sources, and secondary legal sources that are supported with statutory law approach, legal conceptual approach, and socio-legal facts approach.

Results and Discussion

Education is one of the important international issues, it is related with the placement of the right to education in the UDHR and ICESCR. This recognition reflects the UN members obligation to fulfill and to ensure good and adequate quality of education. In recent years, many education problems have been faced, especially after Covid-19 outbreak. The learning paradigm has been changed drastically from offline to online approach, despite any pros and cons that raises, this article was proposed to ensure that Covid-19 will not spread at school, with the obligations of everyone wearing their mask, keeping the social distance and also getting their vaccine. It would be achieved with all participation in dealing with these obligations. In this context, there is a need to distribute masks to those who don't have it, remind or socialize people about the danger of Covid-19 and to never make people around them forget to keep their distance and lastly, everyone getting vaccinated.

Those ways could be implemented with partnership as the part of public participation, by working together with people and by contributing in solving these problems, it could drive SDGs achievement, with knowledge sharing and cooperation, promotion of sustainable technologies to strengthen and empowering national capacity, enhance SDGs capacity, enhance policy coherence for sustainable development, respect national leadership to implement policies, enhance global partnership, encourage effective partnership and further develop measurements of progress.

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	PDF The Inequality of Water Distribution of Households in Bogor City				
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Fresenter	PDF "Kindra Filter" to Support F	People Daily Problem on Water Waste N	lanagement		
	Sita Norasetthada	Chiang Mai University Demonstration School	Thailand		
	PDF Quality of Water in the Ping	g River around Chiang Mai City			

Summer Institute of Asia & ASEAN Center for Educational Research Sustainable Development Goals (SDGs) no. 6 "Clean Water And Sanitation" Proceeding Paper

Akhda Al-Kautsar Hardiza, Raul Sumaryada

The Inequality of Water Distribution Households in Bogor City

INTRODUCTION

Bogor City has a population over than one million with 82.9% of them never having difficulties with securing clean water (according to the government survey in 2014). This research has done a survey to illustrate the current situation clearly. According to our survey for Bogor citizen, there are two main things that are used for clean water sources, 70,4% uses PDAM, 21,5% wells, 10,3% both, the rest is the others. ^[1] PDAM (Perusahaan Daerah Air Minum) is the main governmental organization that runs clean water distributing sector dedicated for all of Indonesia's citizen. ^[2] The recent Indonesia COVID-19 lockdown named PPKM (July - September) hampered the PDAM productivity of work resulting the poor responds from PDAM. A city with 118.5 km² has exceeded the population density ideal which is 8,985 people/km². This causes various problems. Firstly, the quality of water. Septic tanks become inseparable between water pipes. More than 77% pipes are < 15 m length than their household septic tanks. This obviously reduces the quality of water, explains why clients often complain about their water color and an unpleasant smell. That will create long-term effects not only Bogor's environment, but other places that confront the same issues. The unreliability was made more apparent by the customer who use both wells and PDAM. 23% of customers also encounter problems once a month or more. Furthermore, there are several areas where PDAM water pipes haven't reached, durability of pipes aren't great, extreme seasons. Lastly, the cost of PDAM isn't worth it. Most people see it as money wasted.

SOLUTIONS

• Solutions that have been done:

1) Continuously expanding and improving distribution system. 2) Providing free water from PDAM in emergency. 3) Implementation of several programs that emphasize on the importance of clean water and sanitation. 4) Socialization about clean water and sanitation to the general public.

• Solution that could be done further:

1) Establish a Public-Private Partnership (PPP) in improving and expanding water pipes structure; 2) Clearing and protecting the environment better from pollution to make wells a viable alternatives for many people. minimize the risk of natural disaster that could damage the pipes; including increase the amount of places/facilities to dispose garbage, widespread cleaner communal toilets, etc.; 3) Increasing incentives on reducing pollution, protecting the environment, conserving water, improving regional sanitation, etc.

^[1] https://forms.gle/AKmXVtoNfbkfu4eTA

^[2] https://id.m.wikipedia.org/wiki/Perusahaan Daerah Air Minum

"Kindra Filter" to Support People Daily Problem on Water Waste Management

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Purpose and Background:

The purpose of this research is designing a prototype to filter the water so that the water can be reused, and made as simple as possible to filter both water waste and well water that is problematic so that it can be made to meet household needs. The background of this research is water problems which are one of the problems that are widely experienced in various regions, the difficulty of clean water due to polluted water sources. The cause of dirty water in the river is the disposal of industrial waste slaughter animals, factories, and household waste that is not processed first, so it is polluting the river. If waste is not treated first it will lead to reduced availability of water, so it is necessary to solve the problem for water waste treatment.

Materials and Methods:

The materials used to make Kindra filter are (1) Pipe 3 inch 70cm; (2) Water tank nut ½ inch; (3) External drat tight ½ inch; (4) Hubcap drat 3 inch; (5) Plain hubcap 3 inch; (6) Glue pipe; (7) Large pebbles; (8) Small pebbles; (9) Sand; (10) Silica sands; (11) Black sands; (12) Palm fiber; (13) Foam; (14) Used bottle water 1 liter.

The methods for making this Kindra filter are; first make a sketch of the water filter's design, and make a hypothesis about the most effective filter, filter A arrangement will be more efficient and maximal because the filter arrangement is more systematic. After that create 2 filter tests with the bottle with different filter arrangements, filter 'A' (large pebbles, silica sand, black sand, sand, small pebbles, and each layer is lined with palm fiber 1 cm), filter 'B' (large pebbles, small pebbles, black sand, sand each layer coated with palm fiber 1 cm). The next step is to choose the type of filter to be created, filter to be selected filter 'A' because the result is better than filter B. Then, make a hole on the pipe about 10 cm from under the pipe, then attach it to the tank. Arrange the media filter; large pebbles 10 cm, foam, small pebbles 5 cm, silica sand 5 cm, sand 7.5 cm, black sand 7.5 cm, gravel 3 cm, each layer is coated by 3 cm palm fiber. After that the filtered water is ready to be accommodated and reused.

	Table 1. Filtered water comparison.						
Aspect	Be	fore	After				
	Filter A Filter B		Filter A	Filter B			
pН	6,8	6,8	7,3	7,3			
Colour	The color of the water is very murky, a lot of dirt.	The color of the water is very murky, a lot of dirt.	Clear water color, and no dirt.	The color of water is a little murky, and no dirt.			

Results and Discussion

Result of this research Kindra filter successfully filters the water to be clearer and raises the pH, so that the water waste can be reused. The filter arrangement used is the filter arrangement 'A', because in previous experiments filters 'A' and 'B' both increased the pH of water waste from 6.8 to 7.3. But when viewed from the clarity of the water filter 'A' is clearer than filter 'B'.

Significant pH differences occur due to the accumulation of impurities both from organic substances and nonorganic filter media will form layer biological. With the formation of this layer, in addition to the screening process physics can also remove (impurities) bio-chemically. Filtration capability and efficiency can also work effectively in the process of improving the physical quality of water and the chemical quality of water. When the surface temperature of the water rises, the solubility of carbon dioxide will decrease so that the pH will rise and the water is alkaline (Astari, et al., 2013).

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Quality of Water in the Ping River around Chiang Mai City

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 Chiang Mai University, Chiang Mai

Purpose and Background

The Ping River is one of the headstreams of the Chao Phraya River and the main river of Chiang Mai province. It was a trade route and has been of great importance to residents and the surrounding ecosystem. The faster the city grows; the more polluted water is. Water monitoring should be done regularly because when water quality is poor, it affects all of us. The purposes of this study are to evaluate the physical, biological, and chemical quality of water from the Ping River and to compare the water in the Ping River with the standard quality.

Materials and Methods

- 1. Investigate the study site
- 2. Collect the sample and measured the physical quality of the Ping River's water via temperature, transparency, and the chemical quality of water through dissolved oxygen and pH by using GLOBE protocols.
- 3. Observe living things around the river.
- 4. Analyze and compare the measurements with the standards set by the Department of Environmental Quality Control.
- 5. Conclude the research.
- 6. Discuss the results.

Results and Discussion

Location	рН	Dissolved Oxygen (mg/L)	Temper ature (C°)	Turbidit y (cm)	Living Things
Standard value	6.5-9.0	≥5	28-32	30-60	-
Doi Saket District	7.69	5	20.63	98	Fish, Gerridae
San Kamphaeng District	7.57	4	20.8	15	Fish, Parasite
Hang Dong District	7.62	3.5	29.8	36	Fish, Parasite
Mueang Chiang Mai District	7.33	2.6	28.3	24.6	Small fish, Insect, Parasite

- 1. Water quality in Ping River is below the water standard.
- 2. Water quality is related to the catchment site.
 - The upstream spot (Doi Saket District) has the best quality, while the district closer to the city has the more inferior quality
 - Chiang Mai city (Muang District) has the worst water quality.
- 3. Our finding is correlated to the previous studies showing the poorer quality of water near the city.
- 4. Raise the campaign
 - Avoid dumping garbage into the water system.
 - Reduce using herbicides and fertilizers.
- 5. Treat the polluted water by filling the oxygen into the river

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	PDF The difference of short-term memory between using pencil or mechanical pencil.					
	Maghfira Arsyi Callysta Putri	SMA Negeri 1 Lembang	Indonesia			
Presenter	PDF "ASHCAN" Towards People Awareness About Trash Management					
	Pariyakorn Chuensuwonkul	Chiang Mai University Demonstration School	Thailand			
	PDF Concentration of PM2.5 and Physical Characteristics in Chiang Mai City					
	Daffa Kresna Alfaro, Faried Hidayat	Kornita Senior High School	Indonesia			
	PDF HOW COVID-19 PANDEMI	C AFFECTS STUDENT'S DAILY LIFE				

The difference of short-term memory between using pencil or mechanical pencil

Kaito Hiki

Shibaura Institute of technology Kashiwa high school

Background

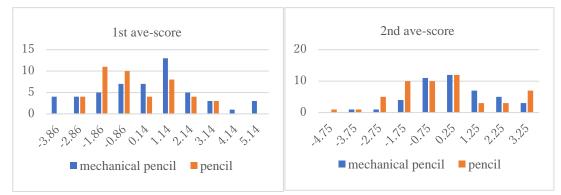
When I am a 1st grade of high school student, the Japanese teacher taught me using pencil is suitable for reading comprehension, and mechanical pencil is suitable for calculation. So that, I thought there is some differences between using pencil or mechanical pencil. I prove there is difference between using pencil or using mechanical pencil in short-term memory. Procedures

- 1. Separate the participants in half
- 2. Hand out the paper which is written 10 meaningless words in Hiragana, and a pencil.
- 3. Give 1.5 minutes to remember the words in the paper by writing with each tool.
- 4. Turn over the paper and take 30 seconds break.
- 5. Enter the answer as much as possible into Google Form in Hiragana in 1.5 minutes.
- 6. Repeat 1 to 5 once with changing the tool and the word list

Materials

- Pencils(HB Mitsubishi pencil)
- Mechanical pencil(each one)
- A4 Paper(which is written 10 meaningless words)

Results



From above tables, people who use mechanical pencil have better score than the other group. In addition, p-value is 0.003348. It means there is significan difference. Reference

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"ASHCAN" Towards People Awareness About Trash Management

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Purpose and Background:

The purposes of this research are analyzing students' knowledge about trash management and designing trash can that could fulfill people need.

The background of this research is low people awareness about trash management directed to the limited number of trashes can in public places. People find it hard to disguise each trash can for different type of trash since there is not any clear instructions, while people have learned about trash management in school. As a part of curriculum, Environmental Education or PLH help student to learn about environment which trash management also part of its topic. Based from the previous research which conducted by Istiqomah, Suwondo & Firdaus (2020), it shows that Environmental Education could forming student awareness about environment, especially with monolithic PLH learning.

Materials and Methods:

Several materials that used to create ASHCAN are (1) used paint bucket; (2) paint; (3) paintbrush; (4) sandpaper; (5) spray guns. Questionnaire are used to collect data about students' knowledge about trash management.

The methods for making ASHCAN are (1) design sketch for the trash can; (2) prepare a used bucket and rub sandpaper on the outside of the bucket so that it does not arise when painted; (3) use a spray gun to paint the base color of the bucket using a spray gun to speed up the process; (4) after the paint is dry, immediately sketch the trash icons outside the bucket; (5) paint on the trash icons that have been drawn.

Results and Discussion

The research has surveyed in the form of questionnaires to 147 school students regarding trash management. For the First question about students' knowledge about trash management, it revealed that 100% of correspondents responds that they know how to dump trash properly. For the second question, about 95.9% responds that they know how to separate trash correctly, and most students answer "*Take the strewn trash and throw it in the trash can according to the type of trash*".

On the question number 3 about the act whenever they see trash strewn around, about 135 students answered that they can distinguish between organic and inorganic trash correctly. When student asked to give their opinion how to create clean environment, most of them give an opinion "do not throw garbage carelessly, and separate type of garbage to be disposed of in its place".

Based on the observation, it has been proven that people prefer to throw garbage on "ASHCAN". Moreover, people who do not know the type of garbage, they dispose the trash while looking at the icons of trash which are drawn on the surface of "ASHCAN". In conclusion, people know which type of garbage they need to dump into different trash bin, since there are trash icons on ASHCAN. The figure below showed the observation result by placing regular trash bin and ASHCAN in public places for 15 minutes.

Figure 1. Comparison of trash on regular trash bin and ASHCAN.



a) The regular trash bin design; b) Uncategorized trash on regular trash bin;c) ASHCAN trash design; d) Categorized trash that people dump on ASHCAN

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Concentration of PM2.5 and Physical Characteristics in Chiang Mai City

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Purpose and Background:

For more than a decade, air pollution (haze) has been a phenomenal issue in the North which appears from January through April, although it peaks in March when the severity of forest fires increases due to the intense dry weather (Bangkok Post Public Company Limited, 2021). The problem of smoke haze in upper Northern Thailand is caused by a basin surrounded by mountain ranges, meteorological conditions, and mainly from open burning. The research aims to study the concentrations and differences of PM 2.5 at each study site, and to explore the physical characteristics of each study site and describe PM 2.5 of the area according to physical characteristics.

Materials

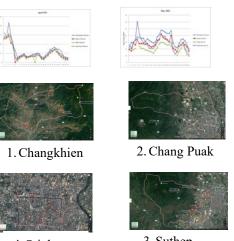
The Smog situation in the northern region data as collected from the Thailand's Pollution Control Department and Google maps.

Methods

- 1. Determination of study site: Chang Puak, Sriphum, Suthep, and Changkhien Subdistricts.
- 2. Collecting the Smog situation in northern region data from Thailand's Pollution Control Department from Jan.-Dec. 2021.
- 3. Present the data of PM 2.5 dust values in the form of graphs.
- 4. Collected the physical characteristics of the environment in the community of sub districts from Google maps.
- 5. Describe the physical characteristics of each study site that affect the PM 2.5 dust values.

Results and Discussion





4. Sriphum

3. Suthep

1. PM 2.5 concentrations of all 4 study sites were different but had different trends in the same direction at the same time and at different times. Overall, Changkhien has the worst pollution followed by Chang Puak, Sriphum, and Suthep Subdistricts.

2. Physical characteristics of each study site affected the amount of PM 2.5 concentration. Although, the high concentration of P.M 2.5 in Changkhien is from foreign tribes living in highland areas burning forests to dispose of waste from field crops and expand the area for cultivation. The district has the highest value of Hotspot or abnormal heat points 88.8% of all heat points in the National Forest reserve area.

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HOW COVID-19 PANDEMIC AFFECTS STUDENT'S DAILY LIFE

Faried Hidayat and Daffa Kresna Alfaro

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2. IPB University. Bogor, Indonesia

Purpose and Background:

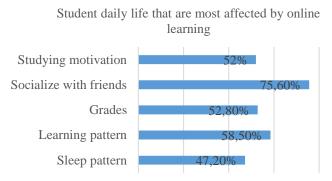
The shift of the learning model from face-to-face between teachers and students to online learning due to the pandemic through various learning media platforms is not something that can be directly accepted, both by students and teachers as educators themselves. There are many changes in student behavior that occur in the online learning process. Initially learning began in school and has now moved into each student's home. Therefore, this research was conducted to find out if online learning affects student behavior and what impact online learning will have on student behavior.

Material and Methods:

The method used in this study is a quantitative method. Data were collected through a direct survey using a questionnaire. There are several questions asked in the questionnaire. Questions in the questionnaire include extracting data and information on the impact of online schools on students' daily lives. The question asked in the questionnaire is how online learning affects students' daily lives as students, starting from sleep patterns, study patterns, grades, student socialization with friends, and student motivation. Research respondents consisted of 123 people who were students of SMA Kornita Class X, XI, and XII.

Results and Discussion:

The survey results show that 89.4% of the 123 students feel that online learning affects their daily lives as students and about 10.6% of students feel that online learning does not affect their daily lives as students. More complete data on what students' daily activities are affected by online learning shows that socialization with friends is the most felt by students (75.6%) when learning online, followed by learning patterns as being quite influential (58.5%). Furthermore, there is the achievement of scores



^{0,00% 20,00% 40,00% 60,00% 80,00%}

as a variable that changes in changes in student behavior (52.8%). Furthermore, students' learning motivation (52%). Sleep pattern variable is the sector that is least affected by this online learning (47.2%). The next data shows how the impact of changes in students' daily lives due to online learning so far. Around 66.7% of the 123 students felt the negative impact of online learning, 21.1% felt that online learning had a positive impact, and the remaining 12.2% felt that online learning did not have any impact on them.

The impact felt by students Positive impact Negative impact

No impact

The conclusion that can be drawn from the data above is that online learning has a negative impact on most students. but there are some students who feel that learning has a positive impact. Many factors cause students to feel negative and positive impacts. The most important factor is the process of sudden change so that students find it difficult to adapt to change. For this reason, several existing solutions must be immediately implemented by teachers and students in order to continue to adapt to current conditions.

	Group J		ZOOM		
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	ABE Kento	Kugenuma High School(ASCENT Program)	Japan		
	PDF Feeding behavior and amount of mantis infected with hairworm				
Presenter	Nattana Chokboonjarern, Fahsai Totanarungroj, Passanan Bawornkrailerd	Mahidol Wittayanusorn School	Thailand		
	PDF Identification of toxic plant Thailand using DNA Barcode	s from morphologically similar edible pl	ants in		
	Vu Khanh Linh	HES High School	Vietnam		
	PDF Adsorptive removal of pharmaceutical products using novel adsorbent based on core-shell CeO2@SiO2 nanoparticles synthesized from rice husk.				

Be Creative in the Pandemic Era : Detect Types of Snake Bites with Augmented Reality

Siti Ramadina Goethe K., Muchammad Zakky A., Sari Narulita,

1. SMA Negeri 1 Bandung, Indonesia

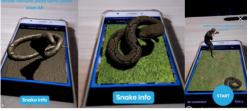
Purpose and Background : During this pandemic, there are many things that we are able to do to fill our spare time. Utilizing free time to be creative in making augmented reality-(AR)-based applications is one issue that may change the way we see our world. In addition to having the ability to develop creativity and skill, the AR technology may also be beneficial to the surrounding people, such as in this case to avoid unwanted things regarding venomous snakes. The application of AR in detection of venomous and non-venomous snakes and in guiding first aids after being bitten by a snake is very important, considering the number of snakebites in Indonesia up to one hundred thirty thousand per year with an unknown number of deaths.¹ Improper handling resulted in the loss of lives that should have been avoided. Therefore, a required associate application which will share information regarding venomous and non-venomous snakes as well as education first aid for snake bites, can use an application named *ARORAY* which is based on augmented reality technology.

Materials and Methods: Teamwork and general software are needed to support the activities of making this application. Among these software are:

- 1. 3D designer, using Blender v2.76.
- 2. 2D designer, using Adobe Illustrator CC 2018.
- 3. Software engine : version unity 2019.2
- 4. Social media app, for communication between group members.

We utilized the method of linear sequential model (in software development).² Application design can be made in the form of a storyboard which is entirely the development of collaborative ideas. Then programming is done to translate the design into programming languages (Java and JavaScript), that can be interpreted by the machine. Once the application has been built, the next steps are testing and debugging processes to examine for errors that may exist and to affirm that the desired results are achieved. Within the end, software maintenance is still carried out before and after the software is launched.²

Results and Discussion



3D Animation

To use the application, users need to select an AR snake marker card. Then the selected snake will be visualized. The first snake is a king cobra, which is a venomous snake. The second one is a reticulated python (non-venomous snake). While the coconut forest picture AR marker card will display a 3D animation of the person bitten by a snake and a 'start' menu that contains first aid steps that must be carried out.

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² Despa, M. L. (2014). Comparative Study on SoftwareDevelopment Methodologies. Database Systems Journalvol.V, no.3

IDENTIFICATION OF TOXIC PLANTS FROM MORPHOLOGICALLY SIMILAR EDIBLE PLANTS IN THAILAND USING DNA BARCODE

Passanan Bawornkrailerd¹, Nattana Chokboonjarern¹, Fahsai Totanarungroj¹, Kanokporn Triwittayakorn², Supajit Sraphet², Nattaya Srisawad², Supanan Sucharit¹

Mahidol Wittayanusorn School, Thailand
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Purpose and Background

As there are reported cases about patients with poisoning from consumption of; *Alocasia macrorrhizos Schott*, *Phytolacca americana*, and *Datura metel L*., due to their confusion with the similar morphological features of those of its edible counterparts which are *Colocasia gigantea Hook.f.*, *Talinum paniculatum* and *Brugmansia suaveolens* subsequently. This study sets out to use DNA Barcode to help distinguish these three pairs of toxic plants from edible plants having similar morphology features, determine the most suitable DNA marker, and to contribute as a reference for further research of these plants.

Materials and Methods

The DNA of sample plants were extracted by C-tab protocol and replicated for specific regions: *rbcL*, *matK472*, and *ITS2*, by PCR. The qualification control of DNA was examined by gel electrophoresis technique and NanoDrop Spectrophotometer, then all DNA samples were sent to a gene sequencing company to determine the nucleic acid sequences. Finally, DNA sequences were analyzed and constructed into phylogenetic trees by using Chromas and MEGA-X program.

Results and Discussion

All phylogenetic trees show the evolutionary relationship between toxic plants and morphologically similar edible plants, and verify that these toxic plants and edible plants can be distinguished by using DNA Barcode from *rbcL*, *matK472*, and *ITS2* regions. Moreover, the result shows that *matK472* region is the most suitable DNA marker for the identification of these plants.

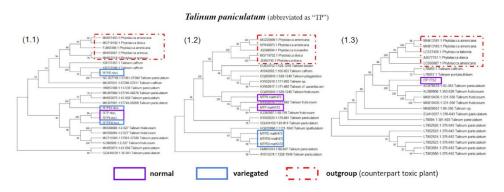


Figure 1 Phylogenetic tree of *Talinum paniculatum* using (1.1) *rbcL*, (1.2) *matK472*, and (1.3) *ITS2*

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Adsorptive removal of pharmaceutical products using novel adsorbent based on core-shell CeO2@SiO2 nanoparticles synthesized from rice husk.

Khanh Linh Vu and Viet Huy Dang

High School of Education Sciences - VNU

- Purpose and Background :

The pharmaceutical resistance that is a serious problem. One of the reasons for pharmaceutical resistance is the pharmaceutical residual in the water in the environment. Therefore, the removal of pharmaceutical residual from aqueous solution is very important.

- Materials and Methods :

There are different methods can be used for the removal of pharmaceutical residual. Among them adsorption is one of the most effective methods and suitable for developing countries such as Viet nam using agricultural sub- product like rice husk. CeO2 can be used to coat the nanosilica rice husk to produce the new materials is called as core shell CeO2@SiO2 materials with high performance for pollutant removal. Amoxicillin

(AMX) and Diclofenac (DCF) are widely used pharmaceutical products and high demand resistance. Therefore, I focus on removal of AMX and DCF by using core shell CeO2@SiO2 nanoparticle. This project has 4 objectives : firstly is synthesis and characterization of core-shell CeO2@SiO₂ nanoparticles based on rice husk, second is adsorptive removal of AMX and DCF using CeO₂@SiO₂ nanoparticles, third is adsorption mechanisms of AMX and DCF using CeO₂@SiO₂ nanoparticles and finally is application potential of CeO₂@SiO₂ nanoparticles for water real sample.

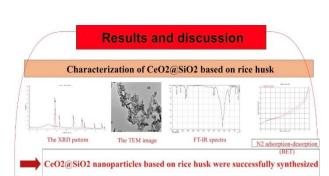
- Results and Discussion :

In order to complete the objectives, the first experiment is the synthesis of nano CeO2@SiO2 from rice husk. The CeO2@SiO2 nanoparticles are characterized by the X-Ray diffraction, FTIR infrared spectrum, TEM image capture and BET specific surface area. Based on XRD, TEM, FTIR, and BET methods, I confirm that CeO2@SiO2 nano successful synthesis in laboratory. The effective conditions for Amoxicillin (AMX) and Diclofenac (DCF) removal using CeO₂@SiO₂ were studied. Optimum adsorption time is 120 minute for AMX and 60 minutes for DCF.

The pH 3 was selected for AMX and pH 5 was the best for DCF removal. The best adsorbent dosages were 5 mg/ml and 20 mg/ml for AMX and DCF respectively. The removal of AMX and DCF using CeO₂@SiO₂ reached greater than 90 % under optimum conditions. This results indicate that the core-shell CeO2@SiO₂ nanoparticles synthesized from rice husk is a new and novel adsorbent for removal of pharmaceutical residues in water environment.

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Introduction

	Group K		ZOOM		
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	CHUNG, WEI-HSUAN	Taichung Girls' Senior High School	Taiwan		
	PDF The Motion of Meteors in the Atmosphere				

ALGAE, BIOFUEL, AND BIOMASS AS ENERGY REVOLUTION IN THE FUTURE

Aphrodity Nirmala Putri¹ and Agisya Tafaila Abyani²

1. Pradita Dirgantara Senior High School, Indonesia

2. Pradita Dirgantara Senior High School, Indonesia

Purpose and Background

The existence of fossil fuels are hazardous to our environment, burning fossil fuels emits a number of air pollutants that are harmful to the environment and also public health, and as times go by, it will be decreased. From there we want to make an environmentally friendly and renewable fuel, we have studied many journals and found that microalgae convert solar radiation energy into chemical energy via photosynthesis. It represent alternative and competitive source of biomass. And from there we can make the purpose of this project which are, produce a biomass from algae oil and decrease air pollution and dependence of fossil energy.

Materials and Method

Materials that we use in our project are:

Phytoplankton starter then the F / 2 XWARP Fertilizer that is given once a week to the algae cultivation, and there is an aquarium as a place for cultivation, actually you can also use a pond or used mineral water bottles, aerators and 10-20 watt lamps which are components that support cultivation, and the last but not least is salt used to make water for cultivation and also methanol, alcohol, and sodium hydroxide.

Method that we use in our project is:

Transesterification Reaction

Biodiesel is made through a chemical process called transesterification in which glycerine is separated from vegetable oils. This process produces two products, namely methyl esters (biodiesel) and glycerine which is a by-product.

Step 1, mixing alcohol for reaction with a catalyst, a strong base such as NaOH

The catalyst is made by mixing methanol(CH3OH) and a strong base such as sodium hydroxide(NaOH). During preparation, NaOH breaks down into Na+ and OH- ions. OH- abstracts hydrogen from methanol to form water and leaves CH3O- available for reaction. When the OH- ion reacts with the H+ ion, it reacts to form water. Water will increase the chance of side reactions with free fatty acids (not triglycerides) to form soap, an undesirable reaction.

Step 2, React with fatty acids so that a transesterification reaction occurs.

After the catalyst is prepared, the triglyceride will react with 3 moles of methanol, so excess methanol must be used in the reaction to ensure a complete reaction. Three carbons bonded to hydrogen react with OH- ions to form glycerine, while the CH3 group reacts with free fatty acids to form fatty acid methyl esters.

Results and Discussion

Top layer : hexane + FAME, triglyceride residue, FFA

Bottom layer : mixture of methanol, water, triglyceride residue, FFA and glycerol.

Microalgae are single-cell organisms that convert solar radiation energy into chemical energy via photosynthesis. Algae possess very high photosynthetic efficiency, can fast build biomass.

With transesterification method the dry green algae can change into biomass. it just need 3 material, which are methanol, Sodium hydroxide, and hexane



The Impact of Inadequate Tuned Mass Damper Design

CHOU, YUN-WEI / CHANG, CHEN-YU Jingmei Girls High School, Taiwan, Taipei

Purpose and Background

A TMD is a damping device that can reduce the vibration of the structure. The inertial force of the TMD mass abates the resonant vibration of the structure by dissipating its energy. While technology nowadays still cannot help forecast earthquakes and issue alerts long before it happens, so further research is necessary to be conducted by adjusting the damping parameters in hope of finding a better design to reduce the risks and damage brought about by earthquakes.

Materials and Methods

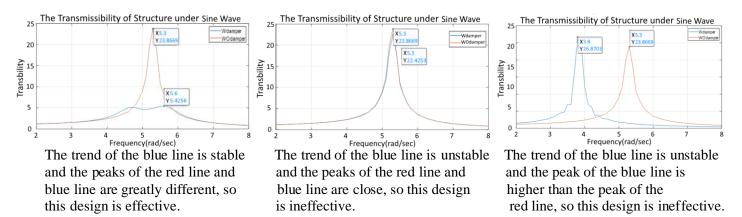
In the purpose of devising parameters of TMD and observing which works more efficiently, the experiment was divided into three parts: in the light of the professor, according to the essay, and randomly input data to investigate the damper design with structure $mass(N-s^2/m)$, structure stiffness(N/m), damper $mass(N-s^2/m)$, damper stiffness(N/s), damper coefficient(N-s/m) to simulate and make graphs.

Results and Discussion

In these graphs, the x-axis refers to the frequency(rad/sec) and the y-axis refers to the transmissibility. The red line is the original effect after the architecture suffered a sine wave. It shows the maximum vibration of the architecture at the frequency of 5.3rad/sec. On the contrary, the blue line means the effect with the damper, the vibration of the architecture is obviously descending. The peak means the max reaction of the structure. The more difference in the peak between the red line and the blue line, the more effective it is. The figures show that if the data was randomly inputted, the damper design may be ineffective.

The conclusion is as follows:

- 1. When the frequency of earthquakes is similar to that of the architecture, the damper will be more effective.
- 2. If the mass of the damper is heavier than the architecture, it may be ineffective even cause a backfire.
- 3. Many factors would cause the architecture to vibrate so there is still some room for negotiation.



Figures

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Bio-Environmentally Friendly Battery with Chlorella sp Base Material and Liquid Waste Tofu

Tasya Mulia Hasan, Vitania Untari, Doni Nurdiansyah¹⁾ ¹SMA Taruna Bakti, Bandung Jl. L.L.R.E Martadinata No.52 Bandung

I. PURPOSE AND BACKGROUND

The electricity crisis is one of the major problems faced by the Indonesian state. The increase in electricity needs is not offset by the increase in generating capacity resulting in a deficit in electrical energy. This can be seen from the national electricity electrification ratio which currently only reaches 80% (Anonim, 2014) even though the electrification ratio of neighboring countries such as Malaysia and Vietnam is already above 90%. Singapore's electrification ratio has reached 100%. This *bio-battery* has the same components as a regular *Fuel Cell*, covering the cathodic and anodic bodies. Material is oxidized by microorganisms and produces electrons and protons (*Aulenta, 2007*). Electrons are transferred to the cathode body via external circuits and protons are transferred through membranes. Electrons and protons are combined with oxygen in the cathodic body to form water (Amos, 2008).

The objectives of this study are as follows (1) Utilizing algae (*Chlorella sp*) as an alternative source of electricity that is environmentally friendly and *sustainable* (can continue to be produced) as well as one solution to solve the problem of *blooming algae*. (2) Determine the voltage generated from the bio-battery created.

II. MATERIAL AND METHODS

Researchers will also conduct experiments on algae in the laboratory to know more about what materials are needed for this *Bio-Battery* to function perfectly and also what can be the cause of the failure factor in this experiment.

Data collection is done from the literature that researchers get online and notebooks, in the form of journals about *Chlorella sp* and galvanic cells. And if necessary, field observations will be made.

III. RESULT AND DISCUSSION

The resulting voltage value is different for each electrode usage. In the use of Zn//Cu electrodes, the resulting voltage is 0.937 volts. While the use of Zn//Carbon electrodes has a better voltage value of 1,083 volts.

When two conductors, such as Cu-Zn and C-Zn, are connected through a solution with an unbalanced concentration of positive and negative charge carriers, one type of charge carrier will be collected on one conductor and the other will be collected on the other conductor so that at both ends of the conductor there is a potential difference. This system is known as a *voltaic cell*.

LIBRARY LIST

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The Motion of Meteors in the Atmosphere

Chung, Wei-Hsuan

Taichung Girls' Senior High School, Taiwan

Purpose and Background

Discussing the motion of meteors in the atmosphere is not a new thing. However, I found that two studies using the same observation method but had different results: one of the studies is from Taitung Girls' Senior High School students Lin, Chen, and Fu (2011), the other is from Wang (2018). And this study is to compare their researches and investigate what makes their results different.

Materials and Methods

In this study, I sort the differences and the similarities in the methods of the two studies, analyzing how the differences affect their results and list some factors affecting the meteor motion that were pointed out in some studies.

Results and Discussion

The two studies used the same video observation stations and the software to analyze their pictures, but they used different ways to locate the meteors and adopted different amounts of meteors to analyze. In the study by Lin et al.(2011), the results showed that the velocity of meteor was constant. By contrast, in the other, the results showed that the horizontal velocity changed with time and the vertical velocity was constant.

I tried to fit the data used in the study by Lin et al.(2011) with quadratic regression analysis, and the result showed that the coefficient of determination (R^2) was much close to 1 (Figure 1). Due to the results, I thought that what kind of the regression they adopted was the main reason to make their results different and whether the horizontal velocity of meteor was constant or not could not be determined by the two studies.

148 147 146 azimuth angle 145 °) 144 0.5519x² + 7.5158x + 142.49 $R^2 = 0.9993$ 143 142 0.2 0.0 0.4 0.6 0.8 1.0 Time (s)

149

Figure 1.

Since investigating the meteors falling is complicated, it would let the result of the later research closer to the reality that

considering the phenomenon of meteor flash (Yang, 2019), the rotation of meteors (Turchak & Gritsevich, 2014), the fragmentation of meteors and upgrading the technique of video observation (Wang, 2018).

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ASSISIAIIIS	KATO Chiharu	Chiba University	Japan		
	Muhammad Alfaridzi Samallo	SMA Negeri 1 Lembang	Indonesia		
	PDF Triple Filter for School's Fishpond				
	Nguyen Phuong Thuy The Olympia Schools		Vietnam		
	PDF TITLE: CLAY-SAWDUST COMPOSITE WATER FILTER SYSTEM EXPLAINED				
Presenter	Chanidapa Luanglertpaiboon, Jinjuta Luanglertpaiboon	Chulalongkorn University Demonstration Secondary School	Thailand		
	PDF Oil and Grease precipitatio and transforming sludge into compost	n process from canteen's wastewater b	y Chitosan		
	SUZUKI Reo	Ichikawa High School(ASCENT Program)	Japan		
	PDF Effects of the ratio of carbo	on and iron powder to emit iron ions	•		

Triple Filter for School's Fishpond

Muhammad Alfaridzi Samallo¹, Ananda Keisya¹, Suhendi¹, Anna Nurul Alfyah² and Tuszie Widhiyanti²

> 1. SMA Negeri 1 Lembang, Indonesia 2. Universitas Pendidikan Indonesia, Indonesia

Purpose and Background:

The purpose of this research is to create a tool to maintain the cleanliness of the fishpond effectively in terms of time and water consumption and to increase the oxygen saturation of the fishpond's water. The background is that the vision as a National Adiwiyata School, leads the SMAN 1 Lembang to create the environment who embrace three element, earth, air, and water in a harmony. Water element represented in the form of fish pond which provide a fresh and relax environment as well as supporting the students in Biology learning. Preserving habitat needs clean and sustain environment. However, the maintenance of the fishpond is challenging since it needs lots of water, additional support staffs as well as time consuming. All of this problem leads us to filter the pond using the tool that we made.

Materials and Methods:

We have a few materials and tools for the research. And it will be divided in 3 groups: Tool, Filter box material, and Materials. For the materials or filters we have zeolite stone, palm fiber, foam filter, plastic ball, active carbon, black sand. For the tool we have pipe $\frac{1}{2}$ inch, pipe connector $\frac{1}{2}$ inch, water pump machine. For the Filter Box we have glass parts, glass glue, cutter, black marker, ruler.

To get the final result, we need to make a glass box for the fishpond. Glue the glass parts so it will become a glass box. Make a hole at the middle of the glass box so the water can flow back to its water source. Place all 6 of the water filters to the mini box that has been provided. Attach the pipe with the water pump machine.

Place the water pump machine in the water. Test the water pump machine, if it succeeded to pump the water then it only needs to evenly and nicely flows the water from the mini box to another mini box. There are 2 types of triple filters that will be tested. There is filter A (palm fiber, foam, and black sand) and filter B (plastic ball, zeolite stone, and active carbon). There are going to be 3 types of fish that will be researched (black fish, orange fish, and white fish). The oxygen saturation of the fishpond will be researched and investigated through the breathing rate of fish per minute. We are going to see the oxygen saturation from how many times the fish will take a breath. We are going to count how many times the fishes took a breath in a minute. The hypothesis is that type B is more likely to be the better Filter than type A. Because the material is more expensive and the materials almost fill the whole mini box

Results and Discussion

The result showed that filter type A is more effective on cleaning the water and increasing the oxygen saturation than type B. It is because the filters on type A contains better ingredients to increase the oxygen saturation on a fishpond. From the result turns out, there is a difference on the amount of breath the fishes took in a minute. According to Putra, Lisdiana & Pribadi (2014), a fish breath 50-150 per minute, based on the temperature of the habitat. The higher the temperature, the higher as well the fish will take a breath. On this research, the light intensity improves because the water is clearer, that's why the temperature is increasing. Based on the table below, it's proven that type A is more effective on increasing the oxygen saturation. The table below will feature how many times the fish will take a breath per minute on day one to three at 2 types of filters.

Table 1. The amount of breath that the fishes takes per minute based on the filter's type and the day count

Aspects	Fish Filte		Filter Type A	ter Type A		Filter Type B		
	Туре	Day 1	Day 2	Day 3	Day 1	Day 2	Day 3	
Oxygen Saturation (fish breathing rate per minute)	Black	91	123	156	88	102	121	
	White	89	102	132	76	92	112	
	Orange	135	165	186	132	154	168	

Reference

Putra, D. A., Lisdiana, & Pribadi, T. A. (2014). Ram jet ventilation, perubahan struktur morfologi dan gambaran mikroanatomi insang ikan lele akibat paparan limbah cair pewarna batik. *Unnes Journal of Life Science*, *3* (1), 53-58. Retrieved from https://journal.unnes.ac.id/sju/index.php/UnnesJLifeSci/article/view/2983

TITLE: CLAY-SAWDUST COMPOSITE WATER FILTER SYSTEM EXPLAINED

Nguyen Phuong Thuy

The Olympia Schools, Vietnam

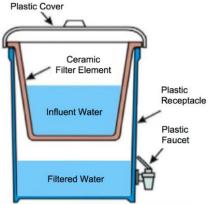
Purpose and Background: AFFORDABLE AND PORTABLE SOLUTION

"According to the latest available figures, an estimated 2.5 billion people lack improved sanitation facilities, and nearly one billion people do not have access to safe drinking water." (WHO 2009) Water related diseases, such as diarrhea, cholera, and malaria are the leading cause of death, especially with children, in many developing nations. In Central Vietnam, around August, September and October is the raining season. Heavy storms and long last rain destroy a lot of water facilities and cut off the residents to essential water access.

There is a huge demand for a water treatment system that is portable, affordable, and user-friendly to tackle this problem. Thus, clay-sawdust water filter system, composed by only cheap locally available materials and proven the ability to purify water, is one of the most suitable method.

Materials and Methods: HOW THE SYSTEM IS CREATED

The main raw materials used for the production of the filter are plastic bucket, water tap, clay, water, and various proportions of burnout materials (sawdust in this case was added to increase small pores in the ceramic material when fired, thus increase porosity). The sawdust and clay then mixed together with water to form a flexible compounds. The clay is molded then fired in a kiln for furnace.



Once the ceramic is done, arrange the parts as shown beside.

Results and Discussion: STATISTICS AND POTENTIAL IMPROVEMENTS

The result table is from a research made by Faculty of Engineering, University of Nigeria, Nsukka, in which they mix 5%, 10%, 20%, 30%, 40% of sawdust to a fixed amount of clay (6kg); designated as filter A, B, C, D, and E respectively.

Filtration results for storm water						Quality parameters of raw water used in the study				
Filter	SS (mg/l)	Filtration Efficiency (%)	BOD (mg/l)	Filtration Efficiency (%)	TC (100/ml)	Water	00	BOD	TC	
Α	No filtrate	-	No filtrate	-	No filtrate	Source	(mg/l)	(mg/l)	(/100ml)	pH
В	No filtrate	-	No filtrate	-	No filtrate	Rain	1.623	11.4	500	7.20
С	0.019	99.6	6.299	45.8	200	Stormwater	5.34	11.622	600	7.5
D	0.037	99.3	8.398	27.7	200	Well	2.032	12.01	700	7.1
E	0.045	99.2	8.698	25.2	200		2.032	12.01	700	7.1

Note: SS: Suspended solids concentration, BOD: Biochemical oxygen demand, TC: Total bacterial count

The technical advantage of clay filters is that they do not significantly change water taste nor temperature. Compares to other methods, they do reduce turbidity. They are also stable structures with only one moving part (the tap) and function without the need of any external energy source. Their durability is high: with proper care and maintenance, they can be used for years. Crucially, this clay composite system works well not only with sawdust, but also with other materials like coffe-grounds, depends on the local supply. This increase the practicality of the products for different areas, and therefore able to help more people.

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Oil and Grease precipitation process from canteen's wastewater by Chitosan and transforming sludge into compost.

Miss Jinjuta Luanglertpaiboon Miss Chanidapa Luanglertpaiboon

Chulalongkorn University Demonstration Secondary School

Purpose and Background

Nowadays, water pollution is still a problem getting a lot of attention because it affects us both directly and indirectly. Of course, consumption is one of the causes of polluted water, especially from cooking that has not been treated to the standard before being released into natural water and effluent from the washing equipment. This polluted water consist of organic substances, and chemicals Oils, and fats which are mainly discussed here. Oils and fats are organic substances that are less dense than water, so they float on top so it obstructs the distribution of oxygen into the water. Then, it causes a bad smell and low water quality. It's also a major problem in the polluted water treatment process as it can cause clogging of sewer pipes. Currently, chitosan is widely used to trap fat in polluted water. Yet the use of chitosan to filter the water is still has a vulnerability, that is, the sludge formed by the coagulation of chitosan and fats, which do not have a way to be 100% recycled back to nature. Therefore, this project found the problem and created this project by bringing chitosan to filter water to reduce pollution problems, and also bring sediment from the filtered water with chitosan for fermentation. The resulting fertilizer had a good effect on plants growth as well.

The purposes of this project are 1. To reduce the problem of seafood waste and water pollution 2.To study the efficiency and results of water purification with chitosan. 3. To bring the sediment from water filtration with chitosan to develop into fertilizer.

Materials and Methods

The project processis divided into two main parts: First process, Chitosan fat precipitation experiment. The materials are water, oil, chitosan, calcium carbonate powder, and dishwashing liquid. There were 3 experiments on factors affecting precipitation that is stirring speed, the amount of calcium carbonate powder, the difference between the polluted water with and without the dishwashing liquid. For the second process, bringing the sludge to make compost. The materials are crab claw leaves, n. animal manure, coconut pulp, and sediment obtained from fat trapping with chitosan.

The steps are: bring 250 g. of manure, natural scraps (crab Claw leaves and coconut pulp) 150 g. mixed with sediment obtained from filtered water 1, 1/2, 2 teaspoon, respectively, to compare the efficiency of the fertilizer by bringing to plant that is chilli and spring onions.

Results and Discussion

The results of the fat precipitation experiment from chitosan were obtained:

1. The speed of the rotation of the most efficient stirring in 100,200ml of water is 120 rpm. But in500ml 120,180 rpm both the best stirring speed, comparing the clear turbidity of the water and the amount of fat floating on the water.

2. The amount of calcium carbonate powder, that is, the best amount of powder that can accelerate sedimentation is 1/2 tablespoon per 100 ml, measured by clearness and sediment volume. after setting it for 5 minutes.

3. Lastly, the difference between precipitation of chitosan in polluted water with and without dishwashing liquid. The result of the experiment was that the polluted water with dishwashing liquid was clearer and slightly more precipitated.

The fertilization still in the process of operation and follow-up on the results of the experiment. According to reserch by KKU SCIENCE JOURNAL, Every quantity of Chitosan can increase efficiency of plant growth ,so we predict our fertilizer will beneficial to plants. **References**

Somporn P.,Hapis P.(2017). Effect of Chitosan on In Vitro Growth and Development of *Dendrobium formosum* Roxb. KKU SCIENCE JOURNAL. http://scijournal.kku.ac.th/files/Vol_42_No_2_P_127-134.pdf

Effects of the ratio of carbon and iron powder to emit iron ions

Reo Suzuki

Ichikawa High school, Japan

Purpose and Background

Reducing the amount of waste is essential for reducing environmental stress and achieve SDGs. The disposable hot pad is a popular portable heating material in Japan. The disposable hot pad produces heat from the oxidization of iron. The pad is used during the winter season and disposed after one use. Sasaki [1] reported the recycling of used pads as material for water purification. In the report, releasing iron ions from the purifier made from the used pad was essential for improving water. The report suggested ionization effect similar to the Voltaic battery mechanism is related. In this research, the effect of the ratio of iron and carbon powder on the ionization of iron was analyzed.

Materials and Methods

Material: Iron powder, carbon, micro-pipettor, 50 ml tube, 2.5 ml tube, paper towel, water, iron ion measuring instrument, electronic scale, beaker, rubber stopper, spatula, pelletizer, medicine wrapping paper.

Method: Mix iron powder with carbon with the following ratio. Iron concentration at 100 percent, 95percent, 90 percent, and 85 percent, respectively. Add approximately 400 micro little of water to 1.5 gram powder. Those powders were mixed well using a spatula. The mixture was applied inside the pelletizer and pressed to make a pellet. Those pellets were soaked into 50 ml of pure water. The iron ion concentration was measured at 10, 30, 60, and 120 minutes after soaking using phenanthroline absorption spectrophotometry (Hanna Instruments, Tokyo).

Results and Discussion

Iron concentration in the water increased after soaking pellets according to the duration after the soak. However, the increasing speeds of the iron concentrations differed among treatments. Pellets with 90 percent of iron powder emited the most iron ion(Fig.1).

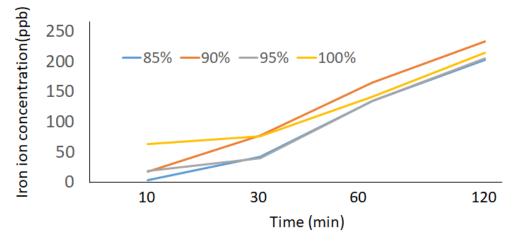


Figure 1. The iron and carbon mixed pellets with a different ratio, 85%, 90%, 95%, and 100% iron, were soaked into pure water. Ionized iron concentrations were determined with phenanthroline absorption spectrophotometry.

REFERENCES

[1] Tsuyoshi Sasaki, Mikio Sugimoto(2013) Elimination of volatile sulfur compounds in sludge by the addition of iron ion releases, Journal of nature restoration and conversation6(1)17-21, (http://www.jamee.info/file/H27researchsasaki-sugimoto.pdf)

Supplement

Research Meeting Image of semi-on-demand style presentation

- 1. Chairperson and presenters come into the ZOOM room Greeting each other
- 2. Chairperson introduce first presenter(s)
- 3. Presenter(s) will say Hello to audiences
- 4. Assistants will start the presentation movie (5 minutes)
- 6. Q&A (5 minutes)
- 7. Repeat 2 to 6

The PDF file will be uploaded to Google Drive and every participants watch those before the session

-Submissions -

Deadline date Aug. 15, 2021(Sun)

- <u>Proceedings article (1 page) Word file (template)</u>
- Proceedings article (1 page) PDF
- Presentation <5mins>-6 PowerPoint slides with recorded, narration and saved in a mp4 file <u>Sample</u>
- PDF file of the 6-slides PowerPoint file <u>Sample</u>

If you have any questions please contact: <u>edu-twincle@chiba-u.jp</u>

The personal information received from the participants will be used for educational activities, reporting of research results, and administrative and management tasks of the Chiba University, Summer Institute Asia and ASEAN Educational Research 2021 as well as public relations activities for this program.

Personal information to be collected Name, high school, grade, photo, activities, etc.

Use for PR activities The information will be used on the official website of this program and our university, in activity reports, and in the papers and websites of related organizations.

SDGs workshop for Asia & ASEAN High School Students

Purpose of the SDGs workshop

SDGs (Sustainable Development Goals) are important actions to improve and set up a sustainable world. All the seventeen goals raised in the SDGs are critical and urgent issues. We should collaborate to find a way to solve those issues. However, the causes of those issues are diverse even in the local areas, and there is a necessity for collaboration. Therefore, mutual understanding of the causes of the SDGs' matters is vital to reach a starting point for cooperation. This workshop is one way to establish comprehension of SDGs among people in Asia.

We hope you, the workshop participants, will discuss these issues with students from other countries, and deepen your friendship each other. Human networks are essential to solving global issues, and this is an opportunity to start building a network.

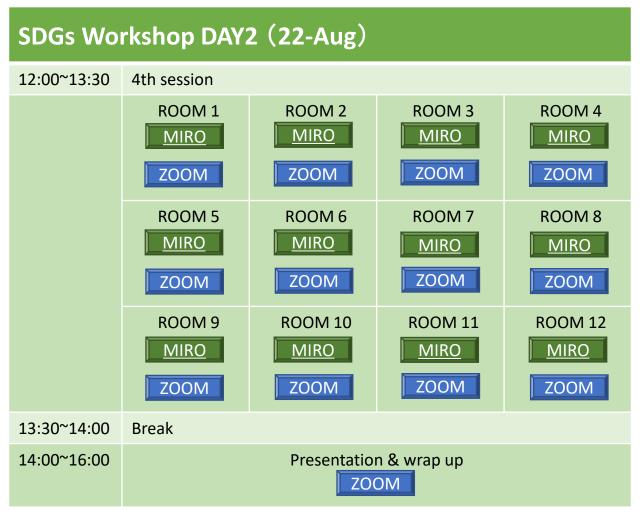
Schedule

The timetable is written in Japan time Please click the button to enter rooms.

SDGs Wo	SDGs Workshop DAY1 (8-Aug)				
11:00~11:15			ning OM		
11:15~11:45	1st session Activ	ity 1:Team makin	g and icebreaking		
	ROOM 1 MIRO	ROOM 2 <u>MIRO</u>	ROOM 3 MIRO	ROOM 4 <u>MIRO</u>	
	ROOM 5 MIRO	ROOM 6 <u>MIRO</u>	ROOM 7 <u>MIRO</u>	ROOM 8 <u>MIRO</u>	
	ROOM 9 MIRO	ROOM 10 MIRO	ROOM 11 MIRO	ROOM 12 MIRO	
	After the icebreaking is finished, leave Miro and log in to Zoom for the next activity				
11:45~12:15	1st session Activ	ity 2:Students wil	ll share the local is	ssues	
	ROOM 1	ROOM 2	ROOM 3	ROOM 4	
	ZOOM	ZOOM	ZOOM	ZOOM	
	ROOM 5 ZOOM	ROOM 6 ZOOM	ROOM 7 ZOOM	ROOM 8	
	ROOM 9 ZOOM	ROOM 10 ZOOM	ROOM 11 ZOOM	ROOM 12 ZOOM	
12:15~12:30	Break				
12:30~13:00	2nd session				
13:00~13:15	Break				
13:15~13:45	3rd session				
13:45~14:15	Voting				

Homework (<u>SDGs workshop sheet</u>) Please submit the sheet by Aug. 15, 2021(SUN) to <u>edu-twincle@chiba-u.jp</u>

The timetable is written in Japan time Please click the button to enter rooms.



SDGs Workshop Sheet

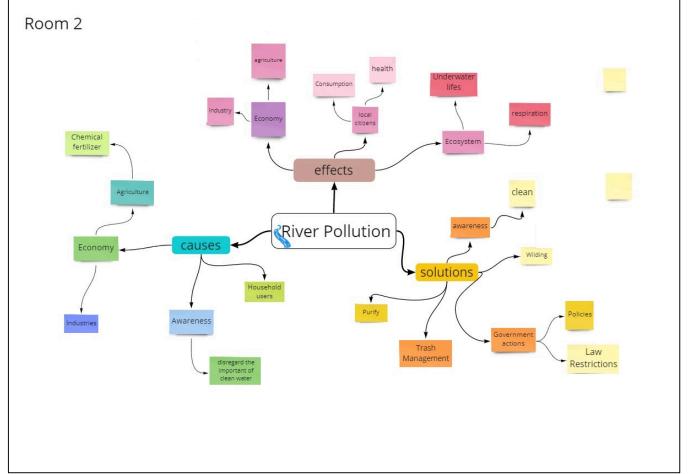
ROOM 1	ROOM 2	ROOM 3	ROOM 4
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ROOM 5	ROOM 6	ROOM 7	ROOM 8
<u>Sheet</u>	<u>Sheet</u>	<u>Sheet</u>	<u>Sheet</u>
ROOM 9	ROOM 10	ROOM 11	ROOM 12
<u>Sheet</u>	<u>Sheet</u>	<u>Sheet</u>	Sheet

URL Questionnaire for SDGs workshop participants

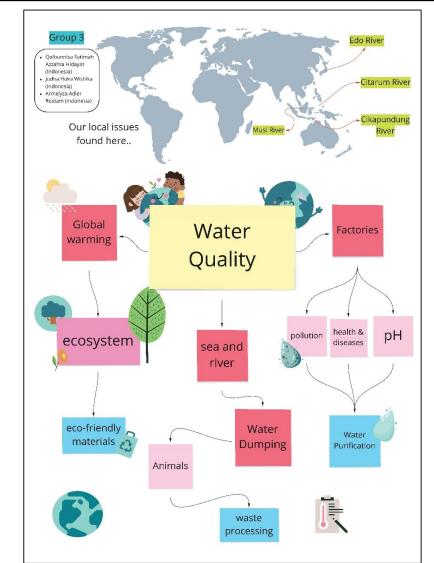
	ROOM 1	MIRO	DOM
Supervisor	Ph.D. (Head of International Office) Ni Nyoman Pujianiki	Udayana University	Indonesia
Supervisor	Lecture of Faculty of Humanities Putu Ayu Asty Senja Pratiwi	Udayana University	Indonesia
Facilitator	Bagus Hermanto	Udayana University	Indonesia
	Komang Gede Putra Airlangga	Udayana University	Indonesia
	Chisanupong Varagornvoravuti	Mahidol Wittayanusorn School	Thailand
	Chen, Pin-Jun	Taipei Jingmei Girls High School	Taiwan
	Aretha Putri	SMA 3 Yogyakarta	Indonesia
Learner	Nisrina Fadelia Ulhak	Kornita Senior High School	Indonesia
	Panpaphorn Sungsomboon	Kasetsart University Laboratory School, Center for Educational Research and Development	Thailand



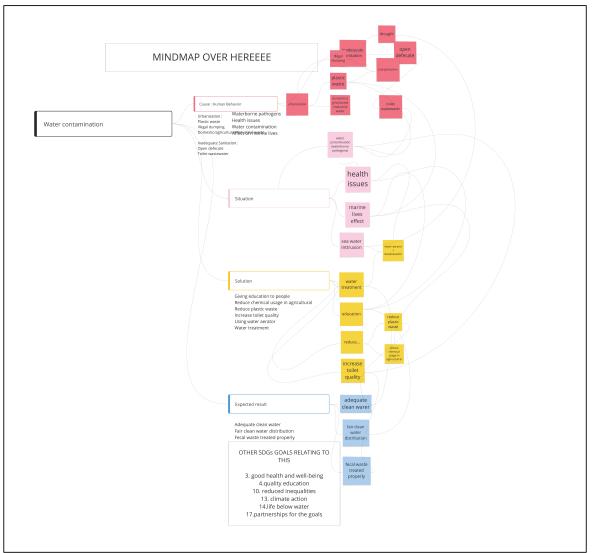
	ROOM 2	MIRO	DOM
Supervisor	Assistant Professor, Ph.D. Sara Samiphak	Chulalongkorn University	Thailand
	Supawee Jarus-u-raisin	Chulalongkorn University	Thailand
Facilitator	Suriwipa Chuachaina	Chulalongkorn University	Thailand
	Chayanis Opassereepadung	Chulalongkorn University	Thailand
	Napas Rattayabundit	Kasetsart University Laboratory School, Center for Educational Research and Development	Thailand
	Vu Khanh Linh	HES High School	Vietnam
Learner	Thanat Rongbundit	Mahidol Wittayanusorn School	Thailand
	Andi Kavi Satyagir	SMA Negeri 1 Bandung	Indonesia
	Pariyakul Chuensuwonkul	Chiang Mai University Demonstration School	Thailand



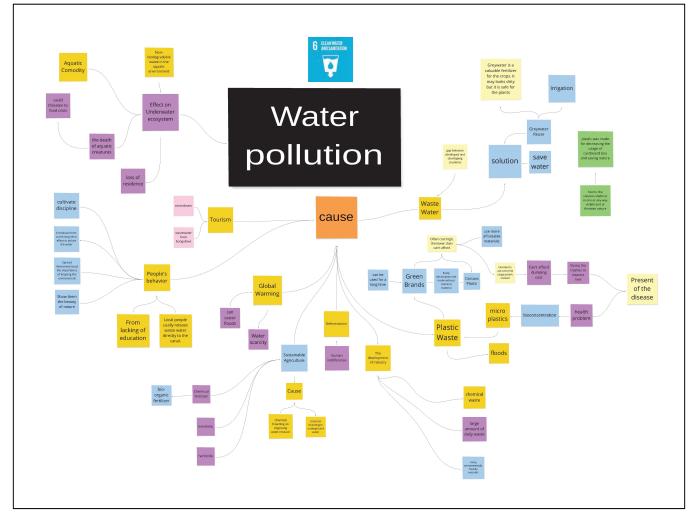
	ROOM 3	MIRO	DOM
Supervisor	Lecturer, Utia Suarma	Universitas Gadjah Mada	Indonesia
Facilitator	Rusma Prima Rokhmaningtyas	Universitas Gadjah Mada	Indonesia
I aciiitator	Rahma Aulia Zahra	Universitas Gadjah Mada	Indonesia
	HIKI Kaito	Shibaura Institute of Technology Kashiwa High School (ASCENT Program)	Japan
	Qolbunnisa Fatimah Azzahra Hidayat	Senior High School 1 Lembang	Indonesia
Learner	Rizki Haikal Pradana Judha Hoka WISHIKA	SMA Pradita Dirgantara	Indonesia
	Lin, Chun Kai	Dayuan International Senior High School	Taiwan
	Armelyza Adler Rustam	SMA Taruna Bakti	Indonesia



	ROOM 4	MIRO	OOM
Supervisor	Ph.D., Pakdeekul Ratana	Chiang Mai University	Thailand
Facilitator	Jannapha Soonjan	Chiang Mai University	Thailand
Facilitator	Yalib Supjindakorn	Chiang Mai University	Thailand
	Rujrawee Tanachindawong	Chulalongkorn Univeristy Demonstration Secondary School	Thailand
	Chiang, Yun-Hsuan	Taipei Jingmei Girls High School	Taiwan
Learner	Nur Ismah Khairani Muhdin	Kornita Senior High School	Indonesia
	Dhestina Syarifiah Berliani	SMA 3 Yogyakarta	Indonesia
	Thapakorn Pipatpajong	Mahidol Wittayanusorn School	Thailand



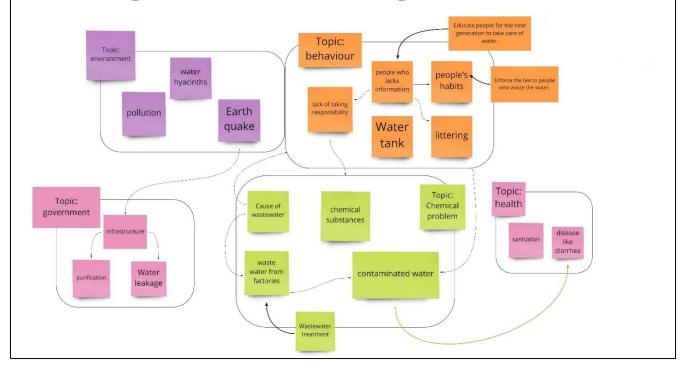
	ROOM 5	MIRO	.00M
Supervisor	Ph.D., Chusnul Arif	IPB University	Indonesia
Facilitator	Shally Wanda Hamzah	IPB University	Indonesia
	Roya Hayatina	IPB University	Indonesia
	Konrawi Padmasiri	Kasetsart University Laboratory School, Center for Educational Research and Development	Thailand
1	Luu Ngoc Phuong Linh	HES High School	Vietnam
Learner	Ananda Keisya	Senior High School 1 Lembang	Indonesia
	ABE Kento	Kugenuma High school(ASCENT Program)	Japan
	Hasna Nabila Azzahra	SMAN 5 Bogor	Indonesia



	ROOM 6	MIRO	OM
Supervisor	Ph.D., Ton Quang Cuong	Vietnam National University, The University of Education	Vietnam
Facilitator	Vu Trong Duc	Vietnam National University, The University of Education	Vietnam
	Nguyen Thi Ngoc Anh	Vietnam National University, The University of Education	Vietnam
	Warit Kanjanophas	Chulalongkorn Univeristy Demonstration Secondary School	Thailand
	KAWAGUCHI Yuta	Ichikawa Senior High School(ASCENT Program)	Japan
Learner	Su, Li-Yun	Taipei Municipal Xisong High School	Taiwan
	Klinka Fayruz Chalisa	SMA Taruna Bakti	Indonesia
	Sirinut Timun	Chiang Mai University Demonstration School	Thailand

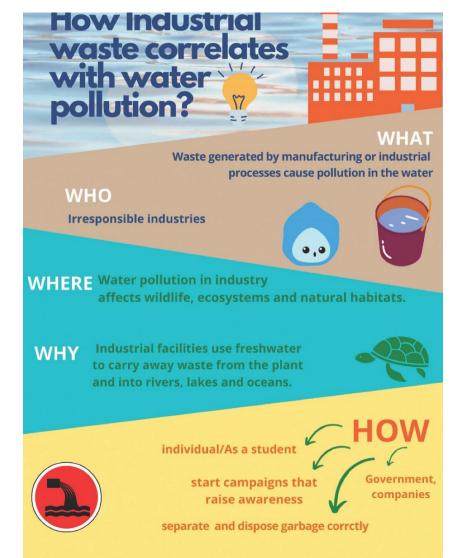
<Poster>

Change our behavior, change our water.

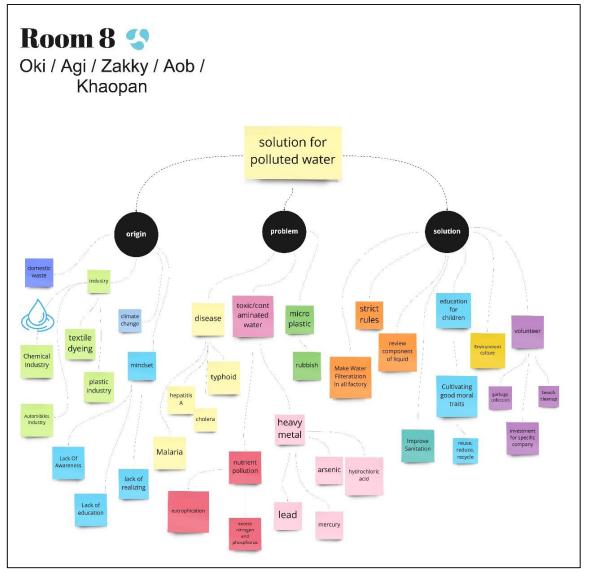


	ROOM 7	MIRO	OM
Supervisor	Associate Professor	Kasetsart University	Thailand
	Chatree Faikhamta		Thanana
Facilitator	Tharuesean Prasoplarb	Kasetsart University	Thailand
T actilitator	Waralee Sinthuwa	Kasetsart University	Thailand
	Nattavadee Kiatopas	Chulalongkorn Univeristy	Thailand
		Demonstration Secondary School	
	SHISHIDO Tomoka	Keio girls senior High	Japan
		School(ASCENT Program)	
Learner	Piyathida Auifujai	Chiang Mai University Demonstration	Thailand
		School	Thananu
	EZOE Narumi	Ichikawa High School (ASCENT	Japan
		Program)	Japan
	Muhammad Adnan Hisyam	SMAN 5 Bogor	Indonesia

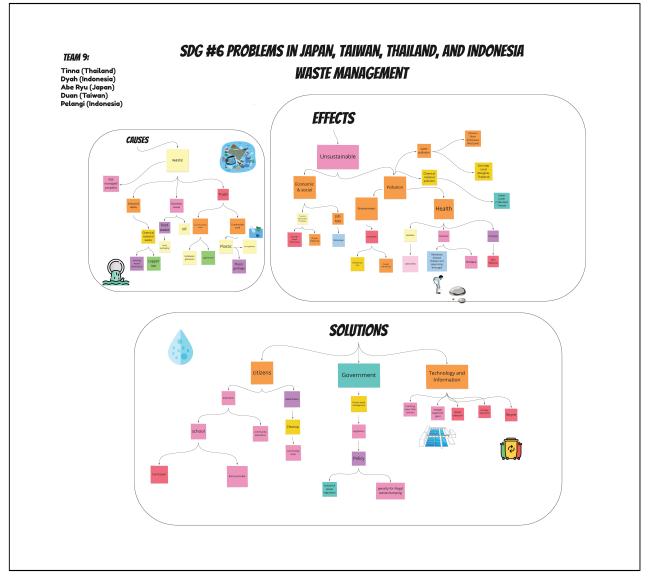




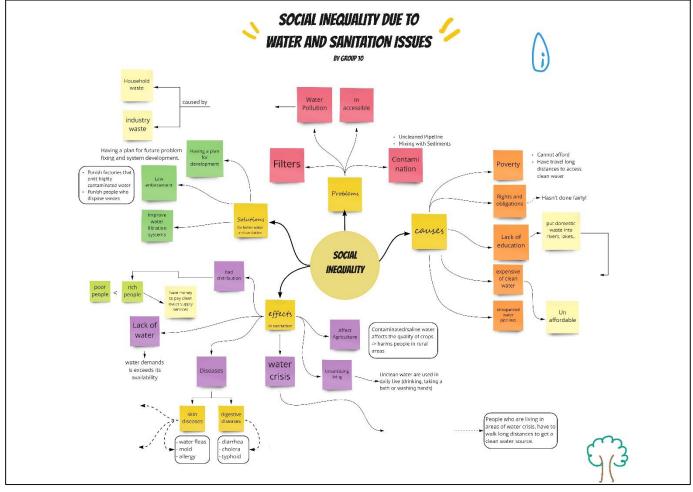
	ROOM 8	MIRO	DOM
Supervisor	Ph.D., YI-FEN YEH	National Taiwan Normal University	Taiwan
Facilitator	YUAN-JU CHANG	National Taiwan Normal University	Taiwan
	WEN-PING CHEAH	National Taiwan Normal University	Taiwan
	Muchammad Zakky Adilla	SMA Negeri 1 Bandung	Indonesia
	Punyanuch Niyomthai	Chulalongkorn Univeristy Demonstration Secondary School	Thailand
Learner	Agi Khoerul Diqri	Senior High School 1 Lembang	Indonesia
	SUGIYAMA Oki	Musashi High School(ASCENT Program)	Japan
	Theephop Wongkodsila	Mahidol Wittayanusorn School	Thailand



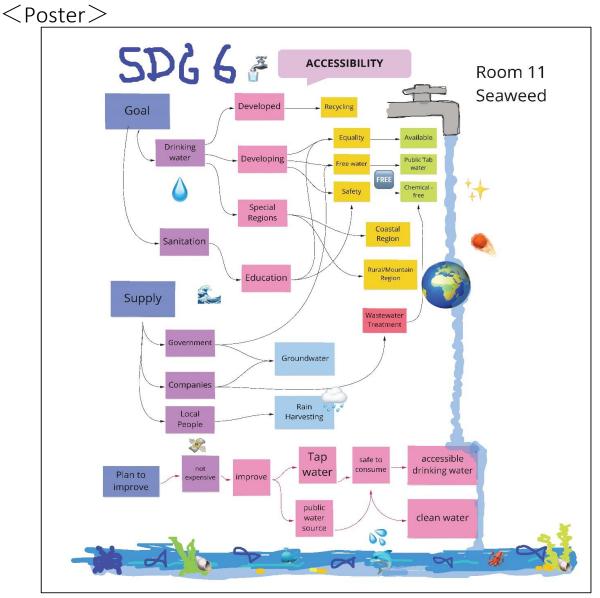
ROOM 9		MIROZOOM	
Supervisor	Dr., Ida Kaniawati	Universitas Pendidikan Indonesia	Indonesia
Facilitator	Adinda Siwi Utami	Universitas Pendidikan Indonesia	Indonesia
T acintator	Anna Nurul Alfyah	Universitas Pendidikan Indonesia	Indonesia
	Yanapith Teerachattrawat	Mahidol Wittayanusorn School	Thailand
	Paramahita Dyah Kemala Savitri Pucangan	SMA NEGERI 4 DENPASAR	Indonesia
Learner	ABE Ryuki	Miyagi Prefecuture Sendaidaini High School(ASCENT Program)	Japan
	Duan, Mao-Xuan	Taipei Municipal Xisong High School	Taiwan
	Pelangi Savana Puspa Romadoni.	SMA Negeri 1 Bandung	Indonesia



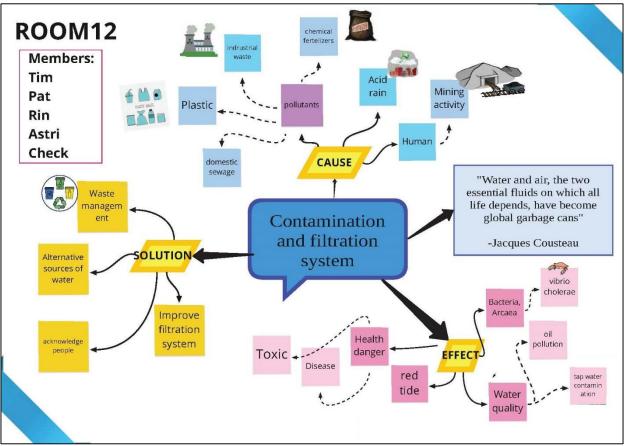
	ROOM 10	MIRO	DOM
Supervisor	Ph.D., Ivonne Milichristi Radjawane	Institut Teknologi Bandung	Indonesia
Facilitator	A.R. Khairun Nisa'	Institut Teknologi Bandung	Indonesia
	Khollilah Yudicia Isnaeni	Institut Teknologi Bandung	Indonesia
	Cao Phuong An	The Olympia Schools	Vietnam
	Warith Vatanaplachaigoon	Mahidol Wittayanusorn School	Thailand
	Siti Ramadina Goethe Kesumah	SMA Negeri 1 Bandung	Indonesia
Learner	SUGIYAMA Ruri	Shoei Girl's Senior High	Japan
		School(ASCENT Program)	Japan
	Tai, Rui Che	Dayuan International Senior High	Taiwan
	Tai, Rui Che	School	raiwan



	ROOM 11	MIROZO	ОМ
Supervisor	Ph.D., Lect.Dr., Panchit Longpradit	Mahidol University	Thailand
Facilitator	Milanka Marinkovic	Mahidol University	Thailand
	Juthamas Booranamanus	Mahidol University	Thailand
Learner	Sudaluck Suriyayot	Chiang Mai University Demonstration School	Thailand
	RI Shinne	Chiba Municipal Inage Senior High School(ASCENT Program)	Japan
	Bentang Setyawati	Senior High School 1 Lembang	Indonesia
	Romchalee Wattanavekin	Chulalongkorn Univeristy Demonstration Secondary School	Thailand
	Nguyen Phuong Thuy	The Olympia Schools	Vietnam



	ROOM 12	MIRO	ZOOM
Supervisor	Assitant Professor, Jose Gutierrez	Chiba University	Japan
Facilitator	MORISHIGE Hina	Chiba University	Japan
	KATO Chiharu	Chiba University	Japan
Learner	Timothy Louis Barus	SMA Pradita Dirgantara	Indonesia
	Napat Seresirikachorn	Chulalongkorn Univeristy	Thailand
		Demonstration Secondary School	
	HASHIGUCHI Rin	Makuhari Senior High	Japan
		School(ASCENT Program)	
	Ni Made Astri Padmayani	SMA NEGERI 2 DENPASAR	Indonesia
	Kanchanon Sirowate	Kasetsart University Laboratory	Thailand
		School, Center for Educational	
		Research and Development	



Supplement

Miro Manual Miro TEST template

Before starting

- Browser Google Chrome is recommended
- Use a PC with a microphone, speaker and camera
- Please Sign up Miro <u>https://miro.com/signup/</u>

On Aug 8(DAY1), we will practice how to operate Miro.

A handmade sample Picture(drawing)

Please join Workshop(DAY1) with your drawing.

SDGs workshop sheet

Please submit the sheet by Aug. 15, 2021(SUN) to <u>edu-twincle@chiba-u.jp</u>

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