Tokyo Tech-AYSEAS 2023

Tokyo Tech–Asia Young Scientist and Engineer

Advanced Study Program 2023

Final Report

-From Asia to the World

Tokyo Tech
AYSEAS

Acknowledgement

Tokyo Tech-AYSEAS (Tokyo Tech-Asia Young Scientist and Engineer Advanced Study Program) Administration Office and all Tokyo Tech-AYSEAS 2023 participants would like to sincerely thank the following cooperating organizations, companies and universities (listed here in the order we visited) for the precious opportunity to visit them and for discussions with students from Japan, Indonesia, the Philippines, and Thailand.

King Mongkut's Institute of Technology Ladkrabang (KMITL)
Geo-Informatics and Space Technology Development Agency (GISTDA)
Thai Polyethylene Co., Ltd.
Mitsubishi Electric Consumer Products (Thailand) Co., Ltd.
Thailand National Science and Technology Development Agency (NSTDA)
Thailand Institute of Scientific and Technological Research (TISTR)
Bridgestone Tire Manufacturing (Thailand) Co., Ltd.

List of Contents

1. About the Program

Tokyo Institute of Technology (Tokyo Tech) launched the Tokyo Tech-Asia Young Scientist and Engineer Advanced Study Program (Tokyo Tech–AYSEAS) in 2013. It is the successor to the highly successful Japan–Asia Young Scientist and Engineer Study Visit (JAYSES), which was launched in 2007 with the aim of establishing networks among promising young persons in Asia. With more than 500 alumni, the two programs have nurtured lifelong friendships among participants. Tokyo Tech–AYSEAS provides opportunities for participants to broaden their horizons through collaboration with students from different backgrounds and to experience the dynamism of rapidly growing Asian countries' industry, education and government.
This year, the program was held on site for the first time in four years after interruption by COVID-19. With the same spirit as previous iterations, the theme is "From Asia to the World." The program primarily consisted of the two parts outlined below:

Pre-study sessions
The Tokyo Tech participants had pre-program orientation sessions lectured by Tokyo Tech professors in Japan to prepare for discussions in English and to deepen understanding of South East Asia. Also, this year's participants had opportunities to exchange with the students from Nanyang Technological University who visited Tokyo Tech in June and to visit Haneda Chronogate in July with international students who then were studying at Tokyo Tech.

Activities with all participants from August 27 to September 5, 2023
- Visits to companies and organizations
- Group discussions and presentations
- Cultural Exchange Event
- Campus Tour at KMITL

The topics of the Group discussions and presentations are indicated below:
Group A: Solutions to Health Hazards Caused from PM2.5
Group B: Second Home
Group C: Abatement of plastic pollution through innovative recycling of post-consumer

plastic

Group D: Organization of Nations Enshrining the Seas for Environmental Action

Group E: Education and Digital Gap in Thailand, Indonesia, and Philippine

1.2 Objectives

- To experience collaboration with students from different nationalities, cultures, languages, viewpoints or fields of study.
- To brush up English as an international language.
- To develop friendship ties with students from different countries.
- To get motivated to be global leaders.

1.3 Participating Universities

Japan:	Tokyo Institute of Technology
Indonesia:	Institut Teknologi Bandung
	Universitas Gadjah Mada
Thailand:	King Mongkut's Institute of Technology Ladkrabang
	Kasetsart University
	Thammasat University
The Philippines:	De La Salle University
	University of the Philippines, Diliman

1.4 Benefits for the participants

- Participants can develop an international human network.
- Participants can learn about ASEAN area.
- Participants receive certificates signed by an Executive Vice President of Tokyo Tech.
- Participants can collect useful information about studying at Tokyo Tech.
- Participants can improve their English skills.

1.5 Expected Results

- More Japanese students will go to study abroad.
- More ASEAN students will come to study in Japan.
- A strong network will be established between top-ranking universities in ASEAN countries and Japan.

1.6 Schedule

	Date	Content
	8/16 (Wed)	Online Pre-event
Day 1	8/27 (Sun)	Arrival
		Icebreaking Session
Day 2	8/28 (Mon)	Opening Session at KMITL
		Campus Tour
Day 3	8/29 (Tue)	Visit to GISTDA
		Visit to Thai Polyethylene
Day 4	8/30 (Wed)	Group Discussion
		Visit to Mitsubishi Electric Consumer Products (Thailand) Co., Ltd.
Day 5	8/31 (Thu)	Cultural Exchange Event at KMITL
Day 6	9/1 (Fri)	Visit to NSTDA
		Visit to TISTR
Day 7	9/2 (Sat)	Sightseeing to Wat Pra Mahathat, Ayutthaya Elephant palace, and JJ Market
Day 8	9/3 (Sun)	Free Time
Day 9	9/4 (Mon)	Visit to Bridgestone Tire Manufacturing (Thailand) Co., Ltd.
Day 10	9/5 (Tue)	Final Presentation
		Farewell Party Leave Thailand
Day 11	9/6 (Wed)	Arrival in Japan

2. Participant List

Name	University	Year of Study	Nickname	Gender	Group
Jessica Belicia Cahyono	Tokyo Tech	B4	Jessica	F	A
Janesa Ouyang	DLSU	B4	Janesa	F	A
Hinako Yamashita	Tokyo Tech	B3	Hina	F	A
Fairuzzaky Ramadhan	UGM	B3	Zaky	M	A
Kritsanavis Chongsrid	Thammasat	B4	Delta	M	A
Reimi Takagi	Tokyo Tech	M1	Reimi	F	B
Shogen Fumikawa	Tokyo Tech	B1	Shogen	M	B
Woraseth Limwanich	Thammasat	B2	Win	M	B
Octaviano Hartanto	ITB	M1	Octa	M	B
Gioenne Tzeitl Q Nazal	UP Diliman	B3	Tzeitl	F	C
Phumsit Insakul	KU	B3	Phumsith	M	C
Gen Goto	Tokyo Tech	B4	GEN	M	C
Shunpei Akazawa	Tokyo Tech	M1	Shunpei	M	C
Chanikarn Vukthong	Thammasat	B2	Phet	F	C
Andre Magpantay	UP Diliman	B4	Andre	M	D
Kaede Teraoka	Tokyo Tech	B4	Kaede	M	D
Yuriko Hori	Tokyo Tech	B2	Riko	F	D
Natdhanai Paneenatthavee	KMITL	M1	Job	M	D
Jinhee Kim	DLSU	B4	Jinny	F	D
Sophia June C Ng	DLSU	B2	Pia	F	E
Genki Nakagawa	Tokyo Tech	B2	Genki	M	E
Koshiro Saito	Tokyo Tech	B3	Koshiro	M	E
Jordan Jae C. Mantuano	UP Diliman	B4	Jae	M	E
Thaninrath Thiraphotiwat	KMITL	M1	Mek	M	E

3. Study sessions in Japan

Editor: Kaede

Outline

We took 6 lectures before we went to Thailand. In those lectures, we first got some basic information about Asia and Thailand. Next, we practiced speaking English and practiced discussions and presentations. We learned these mainly from Professor Nakajima. In the final session, based on what we had learned in the previous sessions, we gave a presentation on our preliminary research on the facilities we were planning to visit in Thailand.

Schedule

I. Theme: Orientation and Introduction of Thailand (by Prof. Nakashima & student from Thailand)
   Date & Time: 17:30-19:10, June 20, 2023
   Summary of the lecture: Orientation of Tokyo Tech-AYSEAS program. We met each other for the first time. Introduction about Thailand and KMITL.
II. Theme: Discussion & Presentation Practice
   Date & Time: 17:30-19:10, June 27, 2023
   Summary of the lecture: Introduction of commonly used English expressions. Roles in the discussion. Presentation practice.
III. Theme: English Speaking Practice (by Prof. Koizumi)
   Date & Time: 17:30-19:10, July 4, 2023
   Summary of the lecture: How to practice speaking English fluently.
IV. Theme: Yamato Transport factory tour
   Date: July 12, 2023
   Summary of the lecture: The history of TA-Q-BIN and how our packages are transported. Interaction with Imperial College students.
V. Theme: Lecture on Understanding Asia (by Prof. Nakajima)
   Date & Time: 17:30-19:10, July 18, 2023
   Summary of the lecture: Lecture on Southeast Asia from a historical perspective.
VI. Theme: Preliminary Research Presentation
   Date & Time: 17:30-19:10, July 25, 2023
   Summary of the lecture: Presentation of the research in front of the Tokyo Tech participants and professors/teachers who lead us.

3-1. Overview of Thailand

Reporter: Reimi

3-1-1. Basic Information of Thailand [2]

Fig1. Location of Thailand and Japan [1]

・Country Name: Kingdom of Thailand (English name)

ประเทศไทย(Thai name)

・Population: 66.09 million (2022)

・Capital: Bangkok (official name: Krung Thep)

・Area: (1.4 times larger than Japan)

・Geography: See Fig. 1. Located in the center of Southeast Asia. Borders Myanmar, Laos, Cambodia, and Malaysia.

Fig2. Flag of Thailand [2]

・Ethnicity: Majority Thai, Chinese, Malay, ethnic minorities

・Flag: See Fig. 2. The dark blue in the center symbolizes the king, the white on either side symbolizes religion, and the red outside symbolizes the people.

・Religion: Buddhism 94%, Islam 5%.

・Currency: Baht[B] (1 Baht=approx. 4 yen)

・Supplementary Currency : satang[S](100 satang=1Baht)

・Language: Thai (English is not widely spoken)

・Climate: The temperature is high throughout the year due to the tropical monsoon climate, but the climate varies slightly between the Malay Peninsula in the south, the mountainous areas in the north, and the highlands in the northeast. The seasons are divided into hot season (March to May), rainy season (June to October), and dry season (November to February). The dry season is like midsummer in Japan, with little rainfall and a stable climate.

3-1-2. History[2][5]

Around 1240, the Sukhothai Dynasty (the first Thai dynasty) was established. In 1351, the Ayutthaya Dynasty moved its capital to Ayutthaya and destroyed the Sukhothai Dynasty. In 1767, after the Burmese defeat, the Thonburi Dynasty took back Ayutthaya and made Thonburi the new capital. However, in 1782, the Chakri Dynasty, which continues to this day, regained the throne and moved the capital to Bangkok. King Rama I also ascended to the throne. At first, like the Ayutthaya Dynasty, he emphasized trade with China and ruled the provinces with a feudal system. However, the influence of the European powers that came in and colonized neighboring countries one after another led to a change in policy. In the early 1800s, trade treaties were concluded with the United Kingdom, the United States, and France.

Modernization took place under a centrally-intensive absolute monarchy. As a result of these efforts and a skillful foreign policy, it was the only country in Southeast Asia to defend its independence. However, with the 1932 Constitutional Revolution, the country transitioned to a constitutional monarchy with the king as the symbolic figurehead. In 1939, changed its name from the Kingdom of Siam to the "Kingdom of Thailand" to this day.

3-1-3. Economy [2]

Agriculture accounts for approximately 30% of the workforce, but less than 10% of GDP. Manufacturing, on the other hand, accounts for 15% of the workforce, but the highest share of GDP at approximately 30%, and accounts for about 90% of the value of exports. Tourism is the mainstay of the Thai economy, and in 2019, before the COVID-19 expansion, tourism income from abroad was $60.5 billion (4th in the world), 12% of Thai GDP.

In Japan, natural rubber and rice are familiar as Thailand's major industries, but the Thai government is transforming the country into an industrialized nation by focusing on the automotive, electronics/computer, food processing, medical, and tourism sectors in an effort to move away from primary industries.

3-1-4. Politics [2][3]

Since 1932, the country has been a constitutional monarchy with the King as head of state and a parliamentary cabinet system. The King is King Rama X, who acceded to the throne in October 2016. The current prime minister, Srettha Thavisin, who was decided a little more than three months after the general elections that began in May, became the new prime minister on August 23. The government was officially inaugurated on September 5. *1

The military is also very powerful, and frequent coups have occurred, and the country is moving back and forth between military and civilian rule.

About local politics, there is a mixture of local administrative units supervised by the central government under the Ministry of the Interior: prefecture (Changwat), districts (Amphoe), towns (Tambol), and villages (Muban), and local governments under special laws: provincial administrative units, town administrative units, Bangkok Metropolitan Administration, and the Pattaya Special Municipality. The prefectural governors and district heads are appointed by the Ministry of Interior, while the heads of the Bangkok Metropolitan Administration and provincial administrative units are publicly elected.

*1: This information here current at the time of editing as of 8th September 2023.

3-1-5. Culture [5][6]

1.Buddhism

Fig3. Mendicant[4]

Buddhism is strongly rooted in people's lives, with approximately 90% of the Thai population adhering to it. Unlike Mahayana Buddhism, which is the mainstream in Japan, Buddhism in Thailand is called Theravada Buddhism. Men are ordained once in their lives to practice Buddhism, and women and other lay believers who are not allowed to be ordained donate things to the monks need, such as robes, food, and medicine, or money for temple restoration. These are considered to be acts of “Tamboon” (accumulating virtue), a fundamental idea in Theravada Buddhism. This is also the basis for the very common sight in Thailand of barefooted monks do mendicant in the early morning. In addition to those directly related to religion, it also includes everyday acts and attitudes such as the giving of alms by those who have to those who do not have, and not having hatred toward those who have made mistakes. The gentle smiles of the people of Thailand, the "Land of Smiles," can be attributed to these Buddhist teachings.

2.Courtesy

Fig4. Wai's Manners[6]

Respect for superiors is one of the most important aspects of communication among Thai people. When meeting with parents, grandparents, teachers, seniors, or other superiors, or when expressing gratitude or apology, people should lightly place their elbows on their bodies and clasp their hands together in a gesture called "Wai," with the tips of their fingers in front of their faces and chests. Lower your head lightly and place your hands together so that your thumbs touch the tip of your chin and your index fingers touch your nose. Generally, the person who is younger than you should do the Wai first, and the person who receives the Wai should return the Wai in the same manner. When speaking, there are also polite words to be added at the end of a word ("Kha" for women and "Khrap" for men).

3-1-6. Relationship between Japan [2]

1.Outline

Japan and Thailand have maintained friendly relations with a history of exchange spanning 600 years. In 2022, the two countries will celebrate the 135th anniversary of the establishment of diplomatic relations between Japan and Thailand. Furthermore, the year 2023 will mark the 50th anniversary of ASEAN-Japan friendship and cooperation, and commemorative cultural exchange events are scheduled to be held with Thailand and other ASEAN countries throughout

the year.

2. People-to-People Exchanges

The number of Japanese residents in Thailand is 78431 (October 2022). The number of Japanese travelers to Thailand dropped sharply to about 9,500 per year in 2021 due to COVID-19, but recovered to 290,000 in 2022. The number of Thai residents in Japan was 54618 (June 2022), and the number of Thai travelers to Japan was about 3,000 per year in 2021, but recovered to about 200,000 in 2022.

3. Economic Relations

Since the late 1980s, Japanese companies have actively expanded into Thailand against the backdrop of the strong yen, contributing to Thailand's economic growth. Japan provided financial and human resources assistance during the currency and economic crisis that emerged in 1997. 2007 saw the entry into force of the Japan-Thailand Economic Partnership Agreement, which has accelerated the closeness of economic relations between the two countries. Japan has also become an important partner in the development of the Mekong region.

References

[1]https://www.tsuruha.co.jp/service/Thailand/
[2]https://www.mofa.go.jp/mofaj/area/thailand/data.html#section1
[3]https://www.asahi.com/articles/ASR956CQGR95UHBI01N.html#:~:text=%E3%82%BF%E3%82%A4%E5%9B%BD%E4%BC%9A%E3%81%A7%E9%A6%96%E7%9B%B8%E3%81%AB,%E3%81%8C%E3%80%81%E6%AD%A3%E5%BC%8F%E3%81%AB%E5%A7%8B%E5%8B%95%E3%81%99%E3%82%8B%E3%80%82
[4]https://www.hankyu-trabel.com/guide/Thailand/country.php
[5]https://www.thailandtrabel.or.jp/
[6]https://thailand-navi.comthai-manners

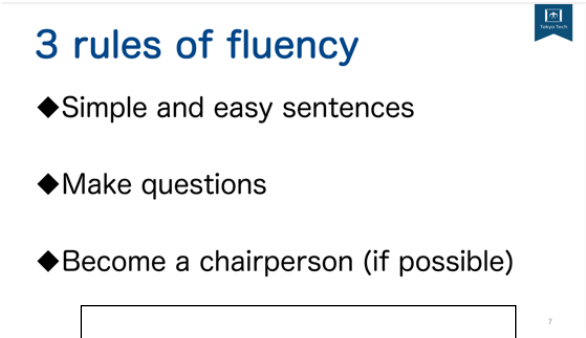
3-2. Lectures

Reporter: Gen

We had to prepare for the project.
The lectures in Japan before the departure made us experience the program more fluently and happier in Thailand.

Prof. Nakashima taught us that what we have to take care in Thai that has different culture from Japan and how to give a presentation in English. We learned about the way how to express something in English. When using English, we have to be more confident and use loud voice. Of course, we are the representation of the Tokyo-Tech from the perspective of the foreign students, we must take care of the ability of anything. Definitely, we couldn't be confident to this extent without these lectures.

Prof. Koizumi passionately taught us how to learn English until leaving Japan. His lecture started using only English and a lot of passion, so we also willingly and actively absorbed in the lecture. This experience inspired my eagerness of learning English!!



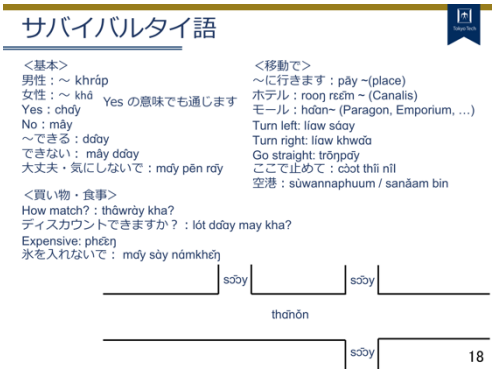
The slide of Prof. Koizumi

Prof. Takeshi Nakajima taught us basic knowledge about culture and religion and their background in detail. The extent was not only Asia, but also world. The more knowledge of background I got, the more curiosity to the country we would go I felt. This lecture promoted our desire of understanding other culture.

The slide of Prof. Takeshi Nakajima

Finally, we each made a presentation about the place we would visit in Thailand. Eventually, this session made the visit to academic fields more understandable and joyful. And at last, Ms.Kawata gave a presentation for us about Thailand from all aspects. Actually, she worked in Thailand, so we often relied on her in Thailand.

Ms.Kawata showed some easy word or sentence of Thai in the presentation. Then, I tried to use Thai when I went to Thai, and I could actually communicate with Thailand people. I am impressed. I remembered Thai words by asking Thailand students who joined this program. Also, I enjoyed remembering Thai words because Thai people are happy when I remembered and used Thai word to Thai people.



The slide of Ms.Kawata

3-3. Exchange with NTU students

Reporter: Reimi

Outline: On June 14th, students of the CN Yang Scholars Program organized an exchange meeting with NTU students in Singapore at Tokyo Tech. 3 AYSEAS members, Jessica, Kaede, and Reimi, participated in the meeting and enjoyed a brief exchange. We had a great time!

3-3-1. Schedule

June 14th

10:00-10:10 Opening session in the West 8 building

10:10-10:30 Visit to Collaboration center for Design and Manufacturing.

10:30-12:00 Students' exchange activities at Taki Plaza

1. Introduction of Japanese culture
2. Japanese traditional games

12:00-13:15 Lunch time

3-3-2. Visit to Collaboration center for Design and Manufacturing

We first went to the Collaboration center for Design and Manufacturing in O-okayama campus. This facility is open to all Tokyo Tech students and offers mechanical and electrical engineering. We saw the aircraft for the Bird Man Contest and robots competing in the Robot Contest on display and observed the actual machine tools in action. Furthermore, we were able to see detailed explanations of the robots used in last year's Robot-contest and see them in action. We learned that what is necessary for manufacturing is not only technical skills, but also the ingenuity of designers to create something new, valuable, and profitable. I hope that they will make wonderful robots at the next Robot Contest as well!

Fig1. Tour of Collaboration center for Design and Manufacturing

3-3-3. Exchange event at Taki Plaza

1.Presentation about Japan

We first attended a presentation about Japan with international students. This was also made by a Tokyo Tech student and dealt with why the Japanese language is so difficult, useful Japanese phrases such as "Sumimasen,"(meaning like "Excuse me") and "Nihongo-ga-

hanasemasen,"(meaning of “I cannot speak Japanese”) and the unique Japanese idea of "忖度 (sontaku*1)”. It dealt with the uniquely Japanese idea of "discovery. For example, the word "excuse me," not only to apologize, but in some cases to express gratitude, or to address a stranger. The lecturer picked up on these things that are commonplace in Japan but difficult or peculiar in other countries and conveyed them in an easy-to-understand and interesting way, which the international students and I enjoyed together.

*1 sontaku: The word means to infer the feelings and thoughts of others, to guess or infer. There is no corresponding word in foreign languages, and it symbolizes communication unique to the Japanese.

2. Intercultural Exchange Program＆Lunch time

NTU and Tokyo Tech students were divided into 4 groups and had an exchange session including traditional games. We enjoyed games such as Bozu-mekuri game, Kendama, Origami. All NTU students were very fond of Japan, and Tokyo Tech students were surprised that they knew how to fold crane and kabuto helmet. They also gave us a chance to relearn about Japan by asking us what tanka poems were written on the cards of the Bozu-mekuri.

After that, we had lunch time with professors. Over makunouchi bento, we enjoyed talking about our own research and the university. They listened to us with great interest about Japanese language and Japan until the end, and the fun time went by very quickly.

Fig2. Intercultural Exchange Programe

Fig3. Lunch time

It was a great opportunity for me to learn how little I know about my own country, and I was more than happy that NTU's enthusiastic students were eager to learn more about Japan.

Finally, I would like to thank all the people in the Study Abroad Department, the professors, the students of the CN Yang Scholars Program, and the NTU students for providing such an enjoyable event for us, AYSEAS students.

3-4. Visit to Yamato Transport, Haneda Chronogate

Reporter: Gen

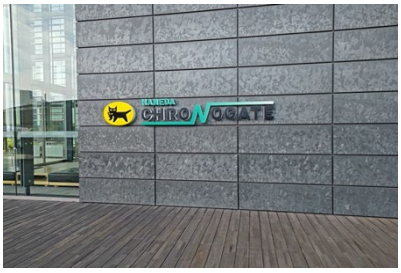
On July 12nd, we visited Yamato Transport, Haneda Chronogate with Imperial College students. The building was so large that I can't stop raising my voice loud. When approaching the entrance of the building, we passed through a small green hill. I felt like I was in a little different world. It was very hot outside at that day, but in the Chronogate, the thermal environment was completely adjusted, and we were able to spend a very comfortable time. We had a lecture in English about outline of Haneda Chronogate and principle of logistics system.

*Exterior of the Chronogate

*The small green hill

<u>Outline of Yamato Transport, Haneda Chronogate</u>

Yamato Transport was established as a small company in 1919. And they gradually spread the extent of the service in the long history, and now, they supply their service to all over Japan and some parts of abroad. The remarkable fact is that it is Bangkok that is one of the centers of this service in Southeast Asia. The transportation is flowing from Bangkok to several countries of Southern Asia.

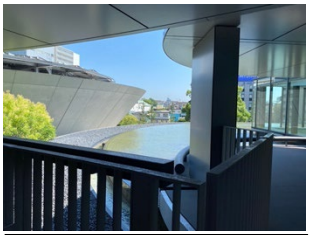


*Entrance of the factory

Next, I'll talk about Haneda Chronogate. The building was completed in 2013, and the building is very clean and new. In the entrance lobby, a big stuffed black cat welcomed us. The outside structure on the site was arranged with greenery, and there was a place with a basin in the building, so it was very comfortable.

*The black cat

*Greenery site



*The basin

Transportation work process

We were allowed to see a belt conveyor at the 2nd floor. Taking photos is not permitted at the place. We could see the process of distributing luggage by speedy machine up close. And in the floor, we could also learn what is in other floors. According to the explanation, it is not only transportation, but also some repair and maintenance that they do in the Chronogate. The contraption incredibly contributes to shortening time of transportation that embodies the attitude of the company that they want to come through the needs of customers.

Souvenirs from Yamato

At the last, Yamato gave us some souvenirs. They gave it by a special way as if we work in the factory. The way of giving was so special that everyone could enjoyed. In addition, in the area, we could follow each interest and slide many drawers and experience a part of the logistics and so on that let our curiosity release.

*The area

*The content of a drawer

*a group photo with the Imperial College students

Reference

・羽田クロノゲート（https://www.yamato-hd.co.jp/hnd-chronogate/#feature）
・宅急便のあゆみ（https://www.kuronekoyamato.co.jp/ytc/corporate/ad/40th/）

3-5. Pre-Event

Date: August 16, 2023

Reporter: Shunpei

We had an online (Zoom) pre-event to get more familiar with each other. It took place from 6:00 pm (Japan) / 5:00 pm (the Philippines) / 4:00 pm (Thailand, Indonesia), for about 1 hour. The participants came from 4 countries: Japan, the Philippines, Thailand, and Indonesia. The total number of participants was about 15.

- Contents

We had the following 3 contents in the event.

Firstly, every participant did a self-introduction for about 1-2 minutes per person. The self-introduction took 20 minutes.

Next, we played a telephone game as a recreational game by using “Gartic Phone” for 40 minutes. In this game, we conveyed the theme by using letters and pictures alternately. We divided ourselves into several groups to play it using the breakout room function on Zoom.

Finally, we took a group photo using a screenshot function.

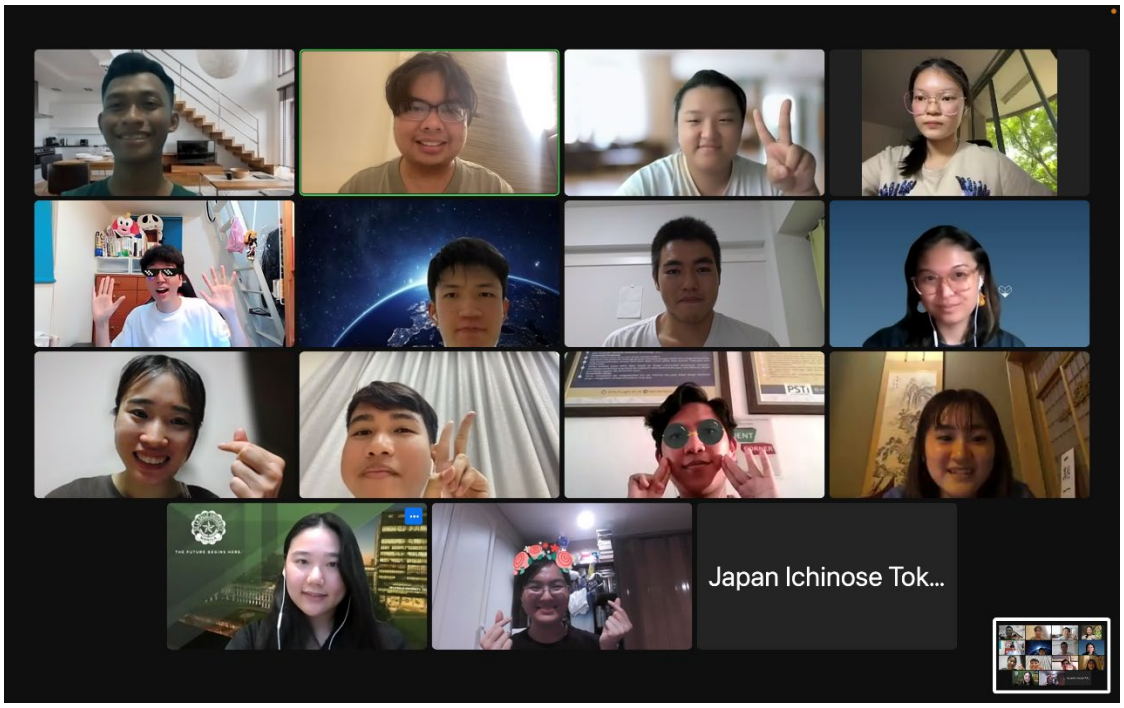


Figure:Group photo

4. Technical Visits in Thailand

Editor: Hina

Outline

We visited Thailand on August 27th ~ September 5th and spent much of our time on technical visits. We visited a total of seven institutions and organized a cultural exchange event at a university.

Visit places were related to various fields, such as chemistry, mechanics, energy, and chemical engineering. Basically, we had a presentation about the organization, a facility tour, and a Q&A session in each technical visit.

This technical visit changed our thinking about my future career and broadened our horizons. We could learn about the situation in Thailand from various perspectives and gained useful information for our discussions. During the Q&A session, participants were able to hear more detailed explanations by actively asking questions.

Schedule

Day	Visit Place
Aug 28th	King Mongkut's Institute of Technology Ladkrabang (KMITL)
Aug 29th	Geo-Informatics and Space Technology Development Agency (GISTDA)
	Thai Polyethylene
	Mitsubishi Electric Consumer Products (Thailand)
Aug 31st	Cultural Exchange Event (@KMITL)
Sep 1st	Thailand National Science and Technology Development Agency (NSTDA)
	Thailand Institute of Scientific and Technological Research (TISTR)
Sep 4th	Bridgestone Tire Manufacturing (Thailand)

The following sections give more details about each of the visit place.

4-1. King Mongkut’s Institute of Technology Ladkrabang

Reporter: Genki

Introduction about this university

KMITL was established as the Nondhaburi Telecommunication Training Center on August 24, 1960 with academic cooperation from the Government of Japan marked the origination of KMITL. The training center became the Nodhaburi Institute of Telecommunications under the Columbo Plan, later in 1964.

As specified by the 1971 King Mongkut's Institute of Technology Act, KMITL was originated by an amalgamation of three technical colleges: Nondhaburi Institute of Telecommunications, North Bangkok Technical College and Thonburi Technical College. In the same year, the Nondhaburi Institute of Telecommunications, or known as King Mongkut's Institute of Technology at Nondhaburi Campus, was relocated to the district of Ladkrabang in Bangkok. The new campus was called "Chao Khun Taharn Ladkrabang Campus". The Nondhaburi Institute of Telecommunications became the Faculty of Engineering in 1972. In the same year, the College of Design and Construction located at the Bangplad district was transformed into the Faculty of Architecture affiliated with KMITL.

KMITL consists of 11 faculties and schools, 5 colleges and 2 campuses. The faculties are School of Engineering, School of Architecture, Art and Design, School of Science, School of Agricultural Technology, School of Industrial Education and Technology, School of Food Industry, School of Information Technology, KMITL Business School, School of Liberal Arts, Faculty of Medicine and School of Dentistry. The colleges are College of Materials Innovation and Technology, College of Advanced Manufacturing Innovation, College of Innovation and Industrial Management, International Academy of Aviation Industry and College of Music Science and Engineering, The campuses is KMITL main campus in Bangkok and Chumphon Campus in Chumphon Province.

There are about 26,000 students in total.

References:

https://www.kmitl.ac.th/history-kmitl
https://www.itrector.kmitl.ac.th/kmitl_eng/page10.html
https://photos.google.com/share/AF1QipPpl7kt8AYkHmHWaZVtpmIqfXkxkoTPtCEMc8GDI_3tUv3JwPcaa7P4voQIPvMyVg

Visting KMITL

While we were in Bangkok, we visited KMITL many times for group discussion. On the August 28th, 2023, we visited KMITL. There were many ponds and lakes in the campus, and I saw ducks. Students and professors of KMITL welcomed us and did a presentation. Then we had lunch. There were many shops in the street inside the campus on that day and we bought lunch there and had lunch in the cafeteria. It was very crowded on that day. After that, we participated the campus tour. We went to the media center. There were devices to experience virtual reality in that place. After that, we went to CMKL's section. CMKL is a program held by Carnegie Mellon University in the US and KMITL. It was established in 2017. It provides intensive study in M.S. and Ph.D. in Electrical & Computer Engineering with the opportunity to specialize in robotics, artificial intelligence, cybersecurity, smart devices and software systems. We saw supercomputer in CMKL, which costs 6900 million Thai Baht (about 280 million Japanese yen) per one.

(https://www.cmkl.ac.th/)

On other days, we discussed for the final presentation at the campus. In this discussion, we learned that southeast Asian countries have many kinds of problems.

4-2. GISTDA（Gio-informatics and Space Technology Development Agency）

Reporter: Shogen

Date & Time: August 29th, 2023

Outline: Presentation about GISTDA and THEOS2, Detailed explanation of THEOS2 and THEOS2A, Museum tour

Contents of Visiting and Reporter's Comment

1. Presentation

GISTDA is an institution that develops Space technology for example remote sensing. It has satellites.

THEOS2 and THEOS2A are the representatives of them. THEOS-2 is Thailand's second-generation Earth observation satellite system, aiming to enhance geospatial capabilities. THEOS-2A is a low-resolution satellite within THEOS-2, assembled and tested in Thailand, promoting technology transfer.

2. Detailed Explanation of THEOS2 and THEOS2A

We could learn how they were prepared. To check whether the satellite can stand the strict space environment, GISTDA uses many equipment.

Various testing equipment is mentioned, including a Thermal Cycling Chamber for dramatic temperature change testing, a Thermal Vacuum Chamber for testing thermal exchange via irradiation and conduction, Vibration Testing Equipment for vibration testing, and Mass Properties Testing Equipment for measuring mass, centroid, and moment of inertia.
And also we could learn the detailed information of the satellites.

	THEOS2	**THEOS2A**
Launch date	October 9, 2023	Q1-2024
(Main) Payload	Very high-resolution imager (KORSCH Type with 3 SiC mirrors) 0.5m (PAN), 2m (MS)	High-resolution imager with CMOS; 1.18m (RGB)
Mass	~425 kg	~100 kg
Dimensions	1.4m x 1.2m x 1.8m	0.62m x 0.72m x 0.95m
Orbit	~621 km	~500 km
Sun Synchronous	Low Earth Orbit	Low Earth Orbit

3. Museum Visiting

We went to the museum in GISTDA. We could see what kind of technology is used in space development, the history of science, and the atmosphere of Space Development.

4-3. Thai Polyethylene

Reporter: Hina

Date & Time: 14:00-16:30, August 29th, 2023

Outline: Presentation of general information about Thai Polyethylene, Factory Tour, and Q&A session

Contents of visiting and Reporter's comment:

First, they explained the company profile and history of Thai Polyethylene. Thai Polyethylene is under the umbrella of the SCGC team, but the first company is Thai Polyethylene. Thai Polyethylene was founded in 1983. In upstream olefin products, the company produces 2,100,000 tons of ethylene and 1,300,000 tons of propylene per year. In downstream polyolefins products, the company produces 980,000 tons of HDPE, 140,000 tons of MD/LLDPE, 150,000 tons of LDPE and 860,000 tons of PP per year. The total area of Thai Polyethylene is 446,20 m^2. I was amazed at the very large scale of the plant.

Next, they explained the manufacturing process of LLDPE.

1. Catalyst Production
2. Repolymerization
3. Solvent Recovery
4. Polymerization
5. Palletization

After that, LLDPE is turned into a film product and MDPE is rotational molded. I didn't know much about the manufacturing process, so it was easy to understand the series of processes in a diagram.

Then, they explained the QAQC. He explained that they are doing the following.

1. Raw material inspection
2. Reactor inspection
3. Additive inspection
4. Pellet in-process inspection
5. Lot inspection

I was amazed that they not only manufacture the products, but also control the quality properly.

Finally, they explained about logistics. Thai Polyethylene delivers its products not only domestically but also internationally. The company exports 51% of its products outside of Thailand. I was surprised to learn that more than half of products are exported out of the country.

Plant and laboratory tours:

For safety reasons, we wore helmets and eye protection glasses during the tour of the factory.

We also wore long sleeves and long pants.

First, we toured the warehouse. A single pallet would yield 60 plastic bags, which were automatically cut out in this warehouse. Wrapping could also be done automatically at the same time.

Next, we drove to a large plant for a tour. The area was large enough to tour by car, and there were many very large plants.

Finally, we took a tour of the laboratory. Various facilities were in place for measuring density and classifying products.

4.4. Bridgestone Tire Manufacturing (Thailand), Co. Ltd.

Reporter: Jessica

Date & Time: September 4th, 2023

On Monday, 4 September 2023, we visited Bridgestone Tire Manufacturing (Thailand), Co., Ltd. Bridgestone Tire Manufacturing Thailand, or usually abbreviated as BTMT, locates at Chonburi Province, about 80 km away from the heart of Bangkok, Thailand. It took approximately an hour to reach BTMT from our hotel by bus.

Our visit was warmly welcomed by the BTMT's officials. We started the session with a brief explanation about Bridgestone company overview, history, vision and mission and goals towards sustainability. Bridgestone was founded in 1931 by Shojiro Ishibashi. The name of "Bridgestone" comes from the founder's name himself: "Ishi" in Japanese means "stone" and 'bashi" means "bridge". Along with their newest tagline "Solutions for our journey", Bridgestone has a noble mission of "Serving society with superior quality". Now they are in Bridgestone 3.0, the third foundation, with a vision: 2050 Bridgestone Continue to provide social value and customer value as a sustainable solution company.

The most unforgettable thing for me personally that I got from BTMT was when they illustrated Bridgestone's perspective about creativity in a unique way at the opening remarks by the managing director of BTMT. He made his personal analogy from the classic Japanese anime Doraemon and Nobita while quoting from dialogue experienced in Silicon Valley, US. Even though it seems like Doraemon is a "creative guy", always coming with any solution Nobita needs, the actual "creative guy" is Nobita himself. Story of Doraemon and Nobita tells us that if there is no request or need form the client (Nobita), then there will be no innovation of solution (Doraemon). Thus, the solution requester is actually more creative than the solution creator. This point of view really opens my mind.

After the meaningful session of company overview, we also been introduced to Bridgestone's products: tires, diversified products including sports goods and bicycles. As for 2022, Bridgestone has global market share of 14.2%, rank no. 2 in the world after Michelin.

As a part of global sustainability, Bridgestone launched "Bridgestone E8 Commitment", which is a corporate commitment in 8 Bridgestone-like values: Energy, Ecology, Efficiency, Emotion, Empowerment, Ease, Economy, and Extension. This commitment is a part of Bridgestone contribution to achieve SDGs goals, with a target to achieve 13 out of 17 goals provided.

Figure 4.1: Bridgestone E8 Commitment

Move on to BTMT, we had a very clear explanation about the BTMT company in general. For BTMT, they are focusing on truck and bus radial tire (TBR) production. Living on the company slogan “Unity, superior quality, excellent BTMT”, everybody works together in order to achieve company’s big goals through their expertise.

Figure 4.2: Group photo with one of BTMT product (bus radial tire)

Alongside the main production of TBR, BTMT also supporting clean environment by its

product “BTMT for electric bus”, which means BTMT will support the usage of electric vehicle by manufacturing its tires. Other than that, BTMT also involves in Bridgestone E8 Commitment with several activities:
- Solar Rooftop Panels Installation
- EV Shuttle bus
- Eco Forest
- RFID usage for production process
- Face scan access control
- Expansion - Mobile applications
- CSR activities.

After we got the explanation about the company’s overview, finally we managed to look at the production site. For truck and bus radial tire production, BTMT always control the quality of production by following their signature step-by-step production. We were very lucky to have the opportunity to visit the production site directly and got a very brief explanation for each step of tire production.

Lastly, we had an exclusive Q&A session with BTMT staff and managers. They kindly answer our questions and explain things clearly. It was a very insightful Q&A session. Here are several questions and answers happened on the site:

Q1: How does the company deal with the health issue regarding the smell of the materials and the hot temperature on the site?
A1: We’ve operated controlled standards about the material and the side effects for the workers working on the site so that we can ensure workers’ health and safety fully aligned with public OHS regulations while creating suitable work environments.
Q2: I saw the scene of tire’s appearance check at final inspection, Bridgestone still uses 100% manpower for products appearance check process. Do you plan to decrease the manpower and change it into AI generated robot?
A2: As for now, robot still does not have suitable sensing performances to perfectly assure the qualities of tire appearances (sense of touch, sense of sight, etc) that human has, so we still need human senses to do final quality check of Bridgestone’s product. However, it does not rule out the possibility of using AI and robots in the near future.
Q3: What was the strategy Bridgestone using for reaching no. 2 world’s global market share in tire industry, and is there any plan to become no. 1 in the near future?
A3: As a leading company in our industry, we are placing sustainability at the core of our business, and continuously delivering both societal and customer value. Our focus lies in expanding our premium category in business and product strategies. While Global Market

Share is an evaluation conducted by third-party organizations, it would be a cause for celebration if our company, which is dedicated to such strategies, can be positioned at the top as a result.

Figure 4.3: Group photo at BTMT

We are very thankful to Bridgestone Tire Manufacturing (Thailand), Co. Ltd. for the great opportunity.

4-5. Mitsubishi Electric Consumer Products (Thailand)

Reporter: Kaede

Date & Time: 14:00 – 16:30, August 30th, 2023

Outline: Presentation of general information, factory tour, and Q&A session

Mitsubishi Electric Consumer Products (Thailand) Co., Ltd. (MCP for short) was established to manufacture air-conditioners. The visit began with a video introduction of the company, followed by a brief explanation by a company representative, and finally a tour of the air conditioner production line.

History of MCP:

The video introduction began with a brief history of MCP. On November 27, 1989, Melco Consumer Products (Thailand) Co., Ltd. was established as a joint venture between Mitsubishi Electric Corporation, Siam Cement Plc., and Kang Yong Electric Plc. In June 1996, the company decided to set up a new factory at Amata Nakhon Industrial Estate, Chonburi Province in order to boost its production capacity. The company was officially renamed Mitsubishi Electric Consumer Products (Thailand) Co., Ltd. (MCP) on September 1, 1997. On the same day, the new factory began production. Since November 2006, MCP's second factory has been established next to the first factory. This expansion makes MCP the biggest air-conditioner production base of Mitsubishi Electric with over 1,000 high-quality employees. Today, MCP has grown to become the world's leading factory, manufacturing 5 million units of air conditioners for delivery to 140 countries.

MCP Policies:

Next, MCP's policies were explained. MCP aims to produce unrivalled, first-class products in accordance with MCP's Quality Policy:

Best quality in process

Zero defect in market

Enhance customer satisfaction

Comply Legal and Standard

These policies can be realized through computer-designed systems.

Factory Tour:

During the factory tour, we first saw the assembly line of air conditioners and were explained about their processes. The chimes used to announce the time were the same as those used at Japanese schools, and I felt comfortable. The most impressive part of the factory tour was

entering the anechoic room. It was in a separate building from the assembly line building and was separated from the outside by a thick door. An anechoic room has its walls highly sound absorbing so that echoes do not occur in the room. As we entered the room, the low echo and cool room temperature gave us a unique floating sensation! In that room, they are measuring the noise generated by the air conditioner by placing a microphone near the manufactured air conditioner. Finally, we moved to a model room for product introductions. There, various types of air conditioners produced at MCP were displayed. As for residential air conditioners, MCP manufactures two main types: premium and standard models. It was interesting to me why the premium model is available in three colors, but the standard model is only available in one color!

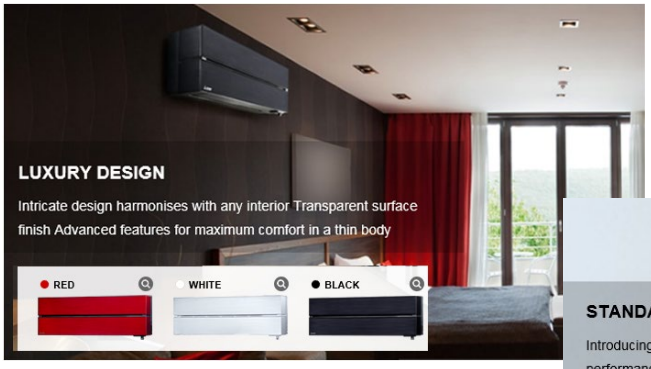


Fig. 1 Premium Model (in three colors)

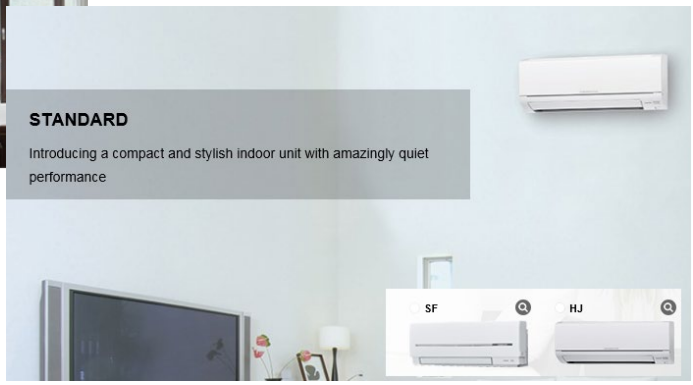


Fig. 2 Standard Model (in one color)

Fig. 3 Group photo taken in the MCP.

Reference:

Mitsubishi Electric Consumer Products (Thailand) Co., Ltd. (MCP) website:

http://www.mitsubishi-mcp.co.th

4-6. National Science and Technology Development Agency (NSTDA)

Reporter: Riko

Date & Time: 9:00-13:00, September 1st, 2023

Outline: Presentation of general information, Q&A session, and laboratory tour

Overview

National Science and Technology Development Agency (NSTDA) was established in 1991 to accelerate science, and technology in Thailand. NSTDA is affiliated with the Ministry of Higher Education, Science, Research and Innovation. NSTDA has been making considerable contributions to national economic and social development.

There are several research centers and educational institutions, including

National Center for Genetic Engineering and Biotechnology (BIOTEC)

National Metal and Materials Technology Center (MTEC)

National Nanotechnology Center (NANOTEC)

National Electronics and Computer Technology Center (NECTEC)

National Energy Technology Center (ENTEC)

Thailand Advanced Institute of Science and Technology (TAIST). [1]

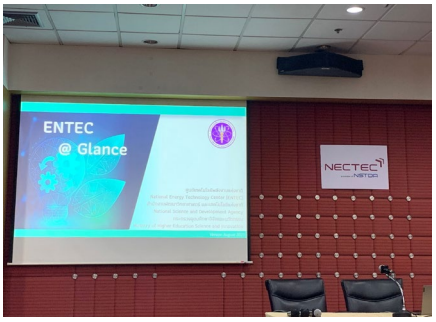
Tokyo Tech is the first foreign partner of Thailand Advanced Institute of Science and Technology (TAIST). In TAIST's postgraduate courses, the students are taught mainly by professors from Tokyo Tech. [2] TAIST also cooperates with universities such as King Mongkut's University of Technology Thonburi and King Mongkut's Institute of Technology Ladkrabang. NSTDA plays an important role in connecting Tokyo Tech with Thai universities through TAIST.[3]

ENTEC is associated with NSTDA. Their current focus is on Thailand's energy plans and they have set a goal to achieve a net-zero strategy by 2065. ENTEC aims to create economic impact and competitiveness while also being socially responsible. What sets them apart from other organizations is their emphasis on making Thailand a hub in addition to focusing on sustainable energy. They collaborate with research partners from industrial areas and concentrate on how bioresources can be utilized for energy, as well as how to address air pollution and incorporate

sustainable nuclear power.

Reference

[1]National Science and Technology Development Agency
https://www.nstda.or.th/en/about-us.html
[2]TAIST-Tokyo Tech https://www.titech.ac.jp/english/public-relations/global/featured/taist
[3]NSTDA TAIST-Tokyo Tech https://www.nstda.or.th/



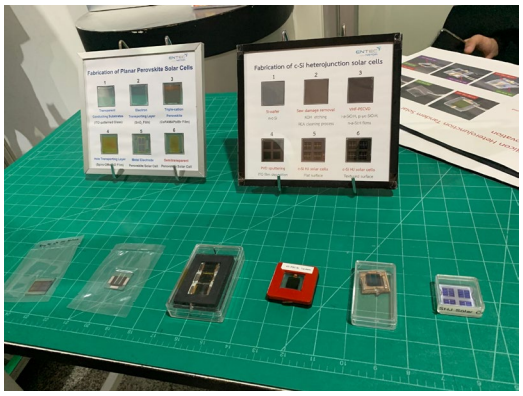
Q&A

Q1: At ENTEC, you are conducting research on energy, but do you support nuclear power?

A1: There are various controversial debates about the merits of nuclear power generation. We will provide more information about nuclear power during the laboratory tour later.

Laboratory tour

We received general information from NSTDA and then had the opportunity to visit three laboratories from ENTEC. The first laboratory was researching nuclear energy using biomaterials, the second was focused on developing new batteries. Finally, we visited a third laboratory that showed more sustainable equipment that used less oil and had been modified for better efficiency.

4-7. Thailand Institute of Scientific and Technological Research

Reporter: Koshiro

Date & Time: 14:00 – 16:00, September 1st, 2023

Outline: Two presentations about TISTR and Lab tour at TISTR's Railway Transportation System Testing Centre (RTTC)

Contents of visiting and Reporter's comment:

TISTR is the institute of applied science and technology in Thailand, which celebrates its 60th anniversary this year. The visit started with welcome speeches, followed by two presentations on the TISTR's activities, and ended with a lab tour.

Presentation on the works of TISTR on engineering and robotic automations to support the Micro/SMEs in Thailand:

In the first presentation, he presented examples of two main topics. The first topic was "Works for industry." They aim to improve both production and quality. The examples introduced there are like:

- Gentry Robot: Automatic sampling machine (corn, tapioca, rice, bran for animal food)
- Semi-auto machine to make gel stretch for noodle (20 tons/day)
- Works for municipal waste management
- Cloud seeding machines on aircraft for royal rainmaking operation
- Treatment system of rubber processing wastewater for water reuse
- Charcoal kiln
- Coffee cherries sorting machine
- Size separating machine coffee bean

- Coffee bean roasting machine
- Size separating machine for cashew nut

The second topic was "Work for SMEs and communities." More than 11 examples, including prototypes, were presented. The following is a partial list.

- (Prototype) Vending machine for liquid products
- (Prototype) Machine for paper straw production
- Meat fumigation cabinet
- Herbs boiling pot
- Low pressure steaming technique for germinated rice
- String machine for herbs toothpaste mixing
- Prototype of machine for making a bar of shrimp paste
- Spawn Injector in Mushroom Cube
- Application of internet of things for community water supply production in shortage area
- Empowering communities to manage water supply
- Tap water from rainwater for empowering communities to manage water supply

What I strongly felt through the examples of these two topics is that all of them are community-oriented technologies. For example, the Gentry Robot and various sorting and processing machines are intended to assist and promote Thai agricultural industries such as corn, tapioca, rice, coffee, nuts, and herb. Technologies to manage the waste and water supply are designed to solve community problems. Thus, through TISTR's presentations on engineering and robotics, I realized the fact that TISTR develops different technologies with respect to the local community.

Railway Transportation System Testing Centre (RTTC):
The second presentation featured RTTC. First, he told us about five working areas of RTTC. They are as follows:

- Develop national key lab
- Enhance local content manufacturing
- Develop national railway standards
- Research and develop of railway technology
- Technology transfer

He also explained to us one of the RTTC's key concepts, "Comprehensive solution for promoting local content manufacturing in Thailand and ASEAN". This includes the following five points:

- DAS+V (Design, Analysis, Sim, Val.)
- Re-Design
- Production
- Test
- Certification

Afterwards, he told us about RTTC's testing facilities. For example, RTTC conducts the following tests:

- Tests on vibration durability of heavy truck spare tire
- Full scale vibration, fatigue, and durability simulation
- Safety tests for transport components

In addition, the following things are being done with regard to railroads.

- Tests on vibration, fatigue, and durability simulation
- Research and simulation
- Inspection and monitoring technologies
- RTI-RTTC corporation for modern railway inspection

Besides testing, he mentioned RTTC's two other key activities. The first one is to aid where funds are not abundant, and the second one is to transfer technology. For the former, they conduct "Shared test facilities for research application" and "UP-skilled training program." For the latter, they went to Malaysia and taught them how to do the test.

Through the second presentation, I learned that RTTC not only possesses advanced testing technology and a noble philosophy, but also works hard for traffic safety in cooperation with various people and organizations.

Lab tour at TISTR's Railway Transportation:
The lab tour included a visit to some of the actual facilities. There, we saw a demonstration of a wheel brake test and viewed a variety of used materials and laboratory equipment. We also

heard about the mechanisms of motion of cars and trains, examples of measures to reduce damage caused by traffic accidents, and actual stories on testing and transportation networks. The following two points were particularly interesting for me.

First, the significance and cost of testing: I saw that computer simulations widespread not only at TISTR but also at other places we visited. Then, why, nevertheless, do they have to test in the real world? He told us that it is because simulation is not perfect. He also told us that testing requires long period of time for its preparation, and that some of the tests themselves are conducted continuously over a period of two months.

Second is the idea of things free of charge. Toward the end of the tour, the guide mentioned that idea in a whisper, which stuck with me. He said that free of charge means that someone is quietly footing the bill behind the scenes. Looking back on our program, we were allowed to visit various places and listen to many experts for free. This is not an exception. Many people behind it cooperated for us. I am grateful to those people and other people who support safe traffic conditions daily.

Fig1: Lab Tour at one of the inspection sites

Summary:
TISTR is a premier national research institute in Thailand in a wide range of fields other than engineering and robotics, which we visited this time. I felt that TISTR is a leading research institute in Asia, not only for its high technological capabilities, but also for its pursuit of safety, productivity, and high quality, with respect to the local community and users.

Fig2: Railway Transportation system testing center (RTTC)

4-8. Cultural Exchange Event

Reporter: shunpei

Date: August 31st, 2023

We had a cultural exchange event to understand each other's culture. Participants were grouped by country and introduced their cultures for about 30 minutes per each country. The total number of participants was about 23. In the morning, we had 3 hours preparation time before the event started at 13:00.

- Contents

Each group showed their cultures in various ways. For example, showing their traditional foods, words, and music with slides, giving some quiz about their cultures, and enjoying their traditional games.

- Japan part

In Japan part, we introduced two games Tousenkyo(投扇興) and Kompira fune-fune(金毘羅船船) from Ozashiki-asobi(お座敷遊び), which is a Japanese traditional banquet culture. Winners of the games could eat a piece of durian as a winning prize.

Figure: Cultural exchange (Japan part)

- Indonesia

The Indonesian team introduced food and games from their country. They gave the presentation while dressed in beautiful Indonesian traditional costumes.

In the food introduction, they showed foods commonly eaten in Indonesia and dishes eaten on special occasions.

For the game introduction, participants were invited to join in and enjoy the game in which you guess who was the last person to touch your back.

Figure: Cultural exchange (Indonesia part)

- Philippines

The Philippine team introduced their country's words, food, famous snacks, traditional games, and music of their country.

During the introduction of their country's words, they showed some interesting and useful

words, for example, "Cheers!" and "I'm just kidding."
During the introduction of foods and snacks, some of the Philippine team handed out the snacks to the participants, which we enjoyed while they showed pictures.
During the introduction of traditional games, participants were invited to join in and enjoy the game in which you take turns to say the correct words without making mistakes.
For the introduction of their country's music, they actually performed songs and danced with all the participants while playing music from a sound source. Moreover, all participants also received a traditional instrument called “kubing”, which is held in the mouth and flicked with the fingers to make a sound.


Figure: Cultural exchange (Philippines part)

- Thailand

The Thai team introduced a quiz and a game.
The Thai team used a web service called "kahoot" to conduct quizzes about Thailand as introduction of their country. Participants were awarded points for each correct answer, and the three participants with the highest scores in the end were awarded “yadom” (nasal inhaler made

using locally harvested herbs) as a prize.
Afterwards, all participants enjoyed a traditional Thai game that is like “Duck Duck Goose” game using a handkerchief.

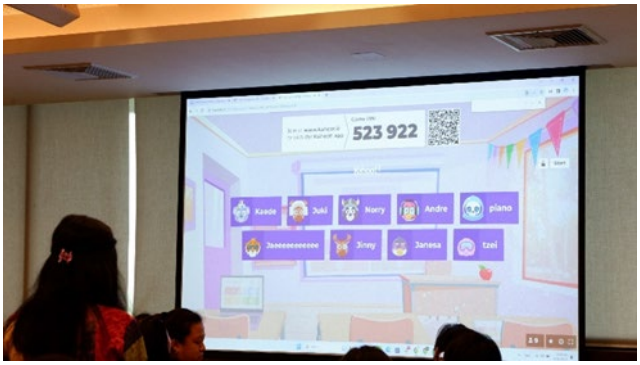


Figure: Cultural exchange (Thailand part)

- Preparation (Japan part)
  - Tousenkyo

    Items: sensu, craft paper, chiyogami(千代紙 for decoration) ,small bell and string, ferrite magnet (as a weight of target), score chart paper

    We had made cut here lines on the craft paper in advance. During the preparation time, we cut and assembled the paper to make stands and targets, and decorated them with chiyogami.

Figure: Crafts for Tousenkyo

  - Kompira-fune-fune

Items: cigarette case (as small object), lyrics instruction paper

We wrap the cigarette cases with chiyogami used in Tousenkyo (as decoration)

Figure: Crafts for Kompira-fune-fune

- For both games
  Items: instruction manuals, score sheet, a whole durian (for winning prize)

  We had cut the whole durian into small pieces and had prepared cocktail sticks by KMITL staffs. We also actually play these games and understand the rules.

5. Discussion and Presentation

Editor: Hina

Outline

In this program, students from Thailand, Indonesia, the Philippines, and Japan participated, and they were divided into five groups. At the opening ceremony, Prof. Nakashima explained about the discussion. All teams engaged in active discussions and gave excellent presentations. The group was made up of students from many different countries and majors, so we were able to think about things from various perspectives. The technical visits sometimes gave us useful information for discussion. The final presentation time is 25 minutes including Q&A (15-minute presentation and 10-minute Q&A) After the final presentation, Group A was selected as the best group.

Topic

Make plans to launch a company or an NGO (or create a product/service) and make a presentation on it. You can use the existing AYSEAS presentation themes below for reference, or make your own theme inspired by the program.

1. Cultural differences and understanding on different cultures (understand others/let others understand us)
2. Precise forecast of natural disasters and developing cost of forecasting methods
3. Technology transfer between countries and the effect on business growth in each country
4. Improvement of health conditions and excessive population increase
5. Economic growth and the gap between the rich and the poor
6. Education and industrial management
7. Innovation and regional/global competition 8. Smart city and privacy

5-1. Group A

Members: Janesa, Delta, Hina, Jessica, Zaky

Contents:

1. Introduction

Particulate Matter 2.5 (PM2.5), refers to tiny particles in the atmosphere with a diameter of 2.5 micrometers or smaller. Often considered one of the most concerning air pollutants due to their potential health and environmental impacts. The main causes are agriculture, transportation, factories using fossil fuels, and solid waste incineration. In addition, PM2.5 increases the risk of Blood Stream, Lung Cancer, Respiratory, Cardiovascular. Although solutions are being considered in many countries, the problem has not yet been solved in many countries, and people are still suffering from it every day.

2. Our company

So, we decided to establish Clean Air Solution Corp. The company's vision is to address the five issues of the SDGs (3,4,11,12,13) and mission is “Clean air for everyone”.

We innovate a product called “Nano Pure” as a machine to remove PM2.5 from the air. It

draws in polluted air and filters it with Ion Technology. Moreover, we plan to repurpose and transform PM2.5 particles into various creative, unique, and environmentally friendly products. In addition, we will implement a system to collect and analyze the data of PM2.5 that will be used for our AI-based forecasting system.

3. Our team

We also decided on the job titles to make our corporate image realistic. Chief Executive Officer is Janesa, Chief Technology Officer is Delta, Chief Data Officer is Hina, Chief Marketing Officer is Jessica, and Chief Financial Officer is Zaky.

4. Our Product

Based on the issues and company goals mentioned before, we are launching Nano Pure: a giant smog vacuum for large-scale air purification for everyone. It is our innovative product designed to remove PM2.5 from the atmosphere. Nano Pure employs our SOTA technology. Here are the key features and information about our product.

Figure 4.1: Nano Pure model

1.Air Purification

Smog vacuum has a function as a large-scale air purifier to draw in polluted air and filters it with “Ion Technology”. The tower will send negative ions into the air and attract and sucks in PM2.5 particles. Then we prepare a positively charged surface, which called a counter electrode. PM 2.5 particles will attach themselves to a counter electrode once inside the tower. So, we can collect them and use them to create many products.

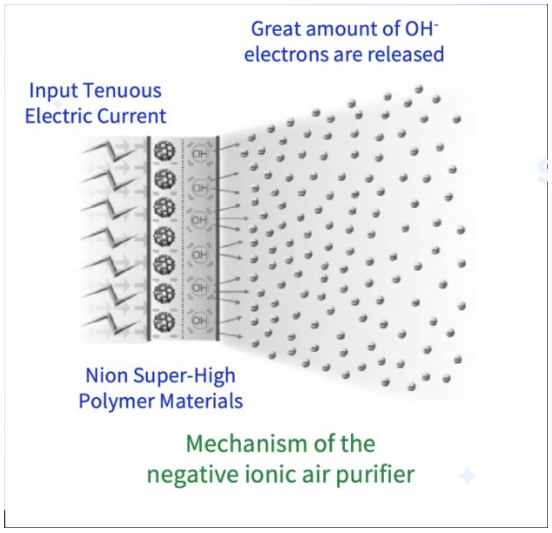


Figure 4.2: The mechanism of ion technology

2. Products from PM2.5

We are planning to repurpose and transform PM2.5 particles into various creative, unique, and environmentally friendly products. Here are several products we are planning to produce using the captured PM2.5 particles.

-Artistic ink

Captured PM2.5 particles can be converted and developed into ink or pigment. It can be used by the artists to use in creating artwork of pollution-awareness, as well as for exterior surface use, such as building facades.

-Eco-friendly building blocks

PM2.5 particles can be developed into eco-friendly building materials and construction products, including outdoor wall tiles, sculptures, and building blocks. This will serve a dual purpose of reducing air pollution and enhancing urban aesthetics while promoting sustainability in construction.

-Environmental jewelry
Create unique jewelry pieces using compressed PM2.5 particles as a core element.

-Sustainable fashion
Allows fashion designers to create clothing items or accessories from PM2.5.

-Purified souvenirs
Develop souvenirs or mementos infused with the captured particles, such as keychains or decorative items.

3. Comprehensive Data Ecosystem
On top of environmental and sustainability goals, we will also implement a comprehensive data ecosystem that includes following:
1. Real-time sensor data collection on monitoring current air quality
2. Historical data storage
3. Integration of AI-based forecasting models, such as SGD and XGBoost.

5. Target Market and Business Model
5.1. Company Value
Our company upholds values in every product innovation we create. Here are our company values:
1. Advanced Air Purification
Nano Pure offers state-of-the-art air purification technology capable of cleaning and purifying the air in outdoor spaces.
2. Cleaner and healthier environment
Nano Pure provides a healthier and more comfortable environment by removing pollutants, allergens, and harmful particles from the air.
3. Sustainability
Nano Pure emphasizes sustainability with energy-efficient operation and recyclable components, appealing to environmentally conscious consumers.

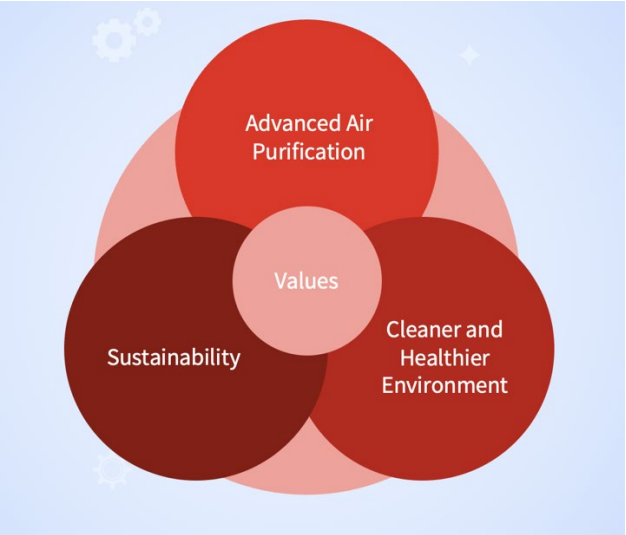


Figure 5.1: Clean Air Solutions Corp. company values

5.2. Target Market

Our company has two main category of target market:

1. B2B Target Market

a. Government

The government establishing in partnership with our company to provide these products in public facilities such as parks.

b. Real Estate Company

Real estate companies play a crucial role in connecting buyers and our company.

c. Emission Material Recycle Company

A company that recycles emissions captured in air purifiers and then repurposes them into valuable materials for other products (sustainable fashion, eco-block, ink, etc.).

2. B2C Target Market

a. Residential Homeowner

This group includes individuals and families who own or rent homes. They are concerned about the air quality in their living spaces and seek air purification solutions.

b. Environmentalist

Consumers who are environmentally conscious may appreciate the sustainability features of our product, such as its energy efficiency and recyclability.

c. Urban Dwellers

Residents in densely populated urban areas may experience higher levels of air pollution.

6. Marketing Strategy, Partners, and Sponsor

6.1. Marketing Strategy

In order to reach our customer better, Clean Air Solutions Corp. has three main marketing strategies:

1. Market Research

Every company needs market research in order to know market better. In our case, market research is needed to determine the area which having the serious PM2.5 the most, and also it is important to know our potential customer exact needs.

2. Partnership

Partnership will be our main core of marketing strategy because we realized that we need to partner with everybody: our B2B and B2C target market; in order to realize our company values and goals. The main strategy is to pitch the idea to local government as our potential customers to spread the word about our product. Furthermore, as business partners, we are also planning to partnership with suppliers who supporting the production of the smog vacuum and partner with business who can process the captured PM2.5 particles into something useful: ink companies, bricks, jewelry, souvenirs, etc.

3. CSR

Along with our vision to support SDGs, we will also conduct CSR program as one of our marketing strategies. Our company will provide campaign and education to school children, speaking out about the danger of air pollution and what is PM2.5 so people can be more aware to current situation of air pollution.

6.2. Partners and Sponsor

As we have partnership as our main marketing strategy, here are several potential partners and sponsors:

1. Local Government

Pitch the idea to local government as our potential customers

2. Suppliers

Partner with suppliers who support the production of the smog vacuum and partner with business who can process the captured PM2.5 particles.

3. NGO

Collaboration with NGO working on the environmental issue, spreading about the issue and campaign the solution.

4. Research Institution

Other than doing R&D to improve our smog vacuum design and functionality, we can also collaborate with research institutions (in data science), providing PM2.5 data for future forecasts.

5-2. Group B

Member: Shogen, Win, Octa, Reimi

Contents:

1. Introduction

Education has shown a very important role in giving all people the ability to be healthier and more sustainable, and to sustain technology and the environment into the future. Therefore, there is an inevitable need for better education, and good education depends on a variety of factors, including the government of each country, finances, quality of teachers, cultural background, and curriculum. For this reason, the quality of education varies greatly from country to country. The difference in scores in actual achievement surveys such as PISA(Program for International Student Assessment) shows that there are differences in the quality of education in each country, and it is necessary to learn about the situation from countries with well-established systems.

[Table1] PISA Scores for the 4 Participating Countries *1

	Reading		Mathematics		Science	
	score	rank	score	rank	score	rank
Indonesia	371	74	379	73	396	71
Phillippine	340	79	353	78	357	78
Thailand	393	68	419	58	426	54
Japan	504	15	527	6	529	5

2. Discussion

We conclude there are 6 main problems about education;

1. Student Pressure

There are examples of burnout due to a combination of multiple factors, such as pressure from others, too many assignments and exams, etc.

2. Student Examination

In examinations that assess final achievement, such as final exams, students' study methods are limited to memorization and cramming, which is less effective. It also causes a lot of pressure factors, and teachers have a very heavy burden of understanding the students' situation and adjusting their teaching methods.

3. The lack of information

[Table2] internet users rate *2

The population with access to the Internet varies greatly from country to country. In addition, problems arise when schools have consultants, but they are of poor quality or do not

function optimally.

	world rank	Internet usage rate[%]
Indonesia	101	**53.27**
Philippines	105	**49.8**
Thailand	64	77.84
Japan	27	90.22

4. Teacher Qualification

The quality of teachers varies from country to country due to the lack of a "teacher training" process, teacher shortages, high teacher turnover, and other problems.

5. Teaching Duration

Teachers not only have to give lessons to students, but also have a variety of other tasks such as evaluation, committee activities, and club activities. Too much work prevents teachers from concentrating 100% on the content of their classes. As a result, the educational system becomes inadequate.

6. Teacher Salary

Teachers work many overtime hours and are paid less for the hours they work.

3. Our suggestion

We establish NGO "2nd Home" for these problems. Dealing with these problems, we suggest solutions shown as below, for each problems.

1. All of these can reduce the pressure on the student directly, and it could improve the interest of the students.
   1.1. Promoting a balanced approach
   1.2 Providing support
   1.3 Reducing standardized testing
   1.4 Encouraging open communication
   1.5 Teaching stress management
   1.6 Setting realistic expectation

2. We will offer free online mock test This is a solution to one of the major sources of pressure for students mentioned earlier, about the exam. Here we offer free practice exams online. The test uses the Rasch measurement model, with two parameters: the ability of the test taker and the questions on the test, allowing for a more accurate assessment.

3. In order to access quality information, we will provide internet facilities and our NGO consultants in schools. We will also provide information magazines. In addition, we will provide free study spaces as well as internet access in community settings to allow students to share questions and create new

opportunities for interaction.

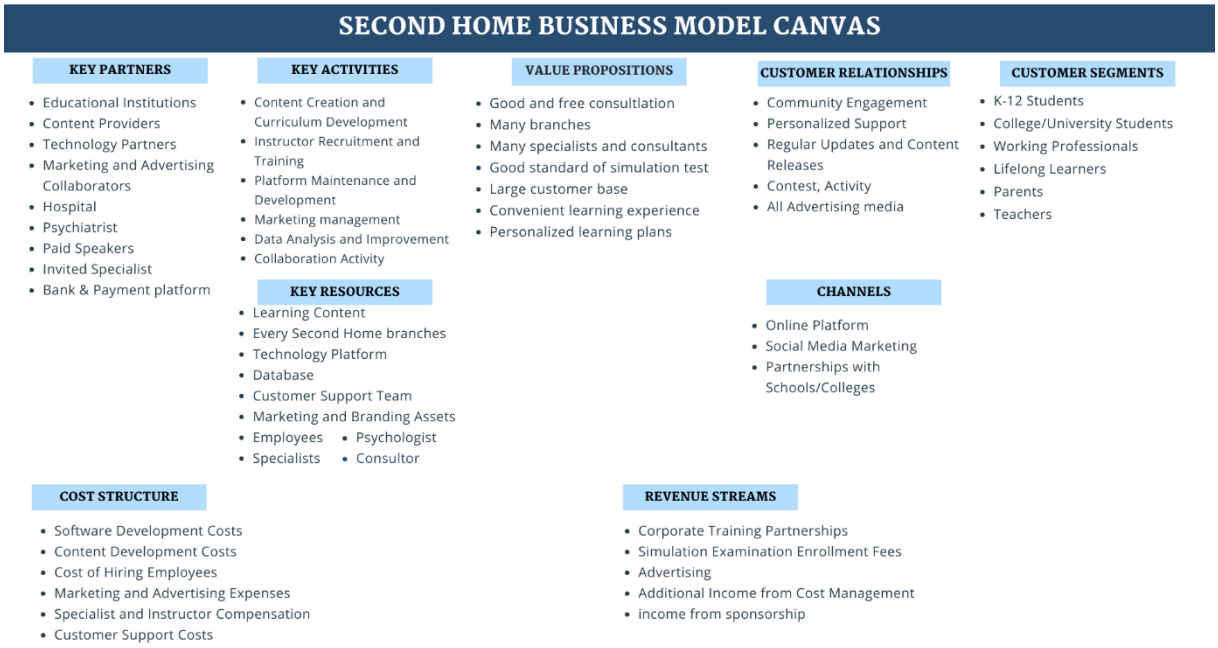
4. We also deal with teacher qualification problem not only students' problem by applying these following solutions.
   4.1. Improving teacher training and professional development
   4.2. Recruiting highly qualified teachers
   4.3. Raising teacher qualification standards
   4.4. Revising the English curriculum
   4.5. Promoting the use of technology in education
   4.6 Enhancing teacher evaluation

5. The following solutions are suggested so that teachers can spend more time preparing for classes and dealing with students. For example, we propose solutions to reduce administrative burdens, provide professional development, and encourage collaboration.
   5.1. Reducing administrative burden
   5.2. Offering professional development
   5.3. Encouraging collaboration
   5.4 Managing class size
   5.5 Providing Resources

6. [Figure1] is our prototype of the 2nd Home application. In this app, we provide many functions that can make a benefit to our customer. Such as the function " My consultor "in which students or parents can consult with our professionals from various subjects. The students can also gain the important information from this application too.

[Figure1] prototype of the 2nd Home application

7. To run this NGO, We made The Business Model Canvas. The Business Model Canvas is a visual representation of a business model, a framework that covers the elements that should be particularly pressed in a business. Using this canvas, you can gain insight into what customers you serve, what value proposition you offer, through what channels, and how you generate revenue.



[Figure2] SECOND HOME BUSINESS MODEL CANVAS

4. Conclusion

At "2nd Home", our mission is to be every student's second home, providing a supportive and consultative environment that empowers them to excel in their educational journey.

And our vision is to transform education into a welcoming and inclusive place, where students freely seek support, plan their paths and achieve their full potential.

Reference

*1: PISA 2018 Insights and Interpretations FINAL PDF.p https://www.oecd.org/pisa/PISA%202018%20Insights%20and%20Interpretations%20FINAL%20PDF.pdfdf (oecd.org)

*2: https://wisevoter.com/country-rankings/internet-users-by-country/

5-3. Group C

Topic: Abatement of plastic pollution through innovative recycling of post-consumer plastic
Members: Phet, Tzeitl, Phumsith, Gen, Shunpei

1. Plastic Pollution Background

Plastic is a very versatile material. There are many applications. Even in this program, when we buy souvenirs, there's always plastic. And we drink from so many plastic bottles everyday. Since it has low weight, enough durability and affordability, Plastic is a very convenient material.

However, plastics may take up to 500 years to decompose.Plastic that we produce continuously builds up. Many end up in the environment: forest and deep in the oceans. Plastic pollution is a very serious problem. There is research by organizations showing that only 9% of plastics worldwide have been recycled, while 22% are mismanaged. In Thailand, we produce 16 thousand tons of plastic waste per year, Japan produces around 4 million tons per year, and the Philippines produces approximately 2.7 million tons per year. The concerns are inadequate collection and improper disposal of plastic.

In order to solve this, we must look into international cooperation so we can, sharing technologies to have, and better innovation.

2. Plastics Solutions

With this, we would like to present our company Plastitech Solutions where we turn waste into wow. The foundation of our company lies in following three objectives.

[1] Mitigate: plastic pollution with creative solutions.
[2] Innovate: quality, accessible, and environmentally-friendly products.
[3] Inspire: sustainable change worldwide

With these objectives, we also aim to contribute to the sustainable development goals (shown in Figure 1) .

Figure 1 SDGs to which we contribute

Mission

Plastitech Solutions aspires to harness the potential of plastic waste to create ingenious, affordable products that serve both people and the planet. Our dedication extends beyond profit, driven by a profound sense of responsibility to drive sustainable change, reshape industry practices, and inspire a global movement towards a circular plastic economy.

Vision

Plastitech Solutions envisions a world where plastic waste is a catalyst for innovation. Our ambition is to transform discarded plastics into valuable, innovative products that redefine sustainability, promote affordability, and protect our planet's delicate ecosystems.

Activity (Figure 2)

Plastic waste shall be collected from universities and rivers. So we will partner with universities in the city and also our own technology will be applied in rivers and canals. And next, collected plastic shall proceed to our processing site. These plastics undergo the treatment (waste shall be collectively washed) and the segregation (waste shall be sorted into different types of plastic) and the production (once sorted, the plastic shall be transformed into our products such as building blocks & shoes). We will be further discussed later. Eventually, these products shall be marketed to the customers.

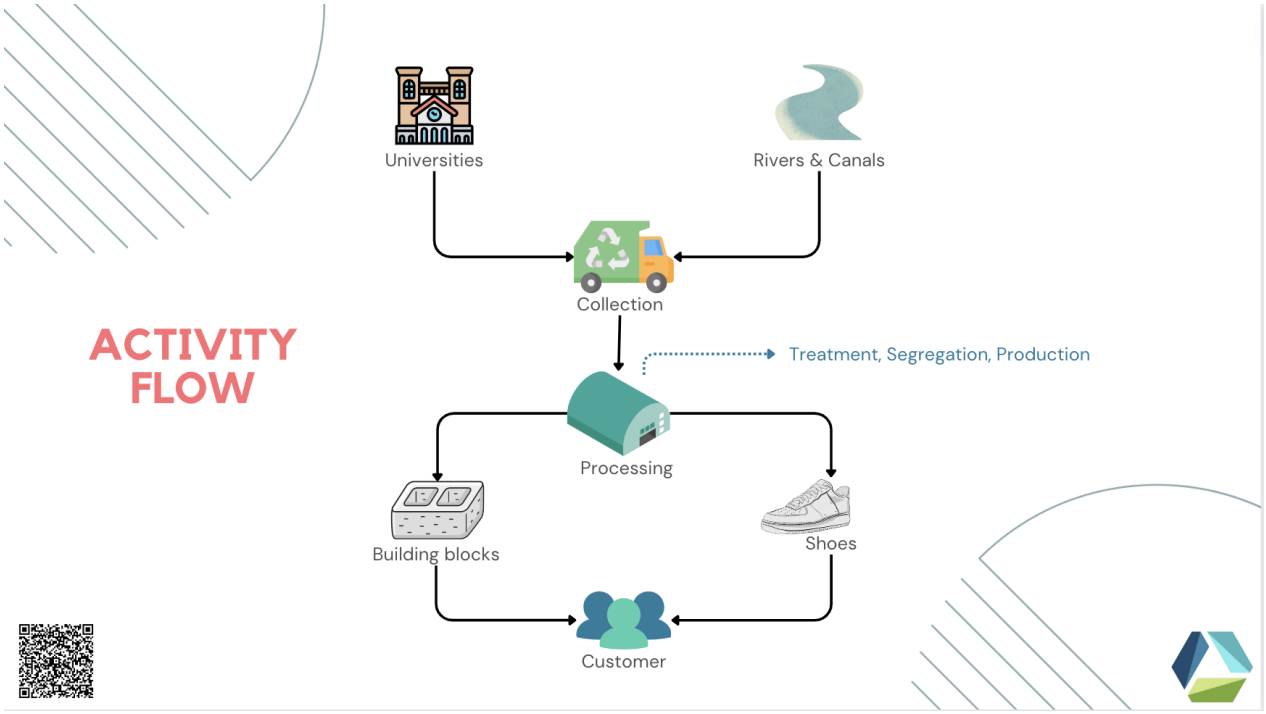


Figure 2 Activity flow of our company

3. Plastic Collection

Before processing plastics, we collect plastic wastes. We collect plastic waste not only from universities but also rivers. Here, we introduce how to collect plastic wastes from rivers or canals.

When talking about it, we have to think of two ways: how to collect light plastics (low-density plastics floating in water) and how to collect heavy plastics (high-density plastics sinking in water).

Firstly, we introduce how to collect light plastics. We try to set a large net behind a tourist boat (Figure 3). Using this net, we can collect floating plastics while a boat carries the tourists.

Next, we will introduce how to collect heavy plastics. We want to use electro-magnetic Archimedes' force. We will explain the mechanism. Let's assume the conductive fluid (downstream river water) that contains several non-conductive objects (heavy plastics). When you apply a magnetic field and make electric current on it in a way shown in Figure 4, the conductive fluid gets a force in the vertical direction. However, the fluid and the objects as a whole cannot move in the vertical direction since it gets reaction from the bottom of the river. So, only non-conductive objects in the liquid move upward.

Using this method on the riverbed (Figure 5), we could collect heavy plastics.

Figure 3 How to collect light plastics

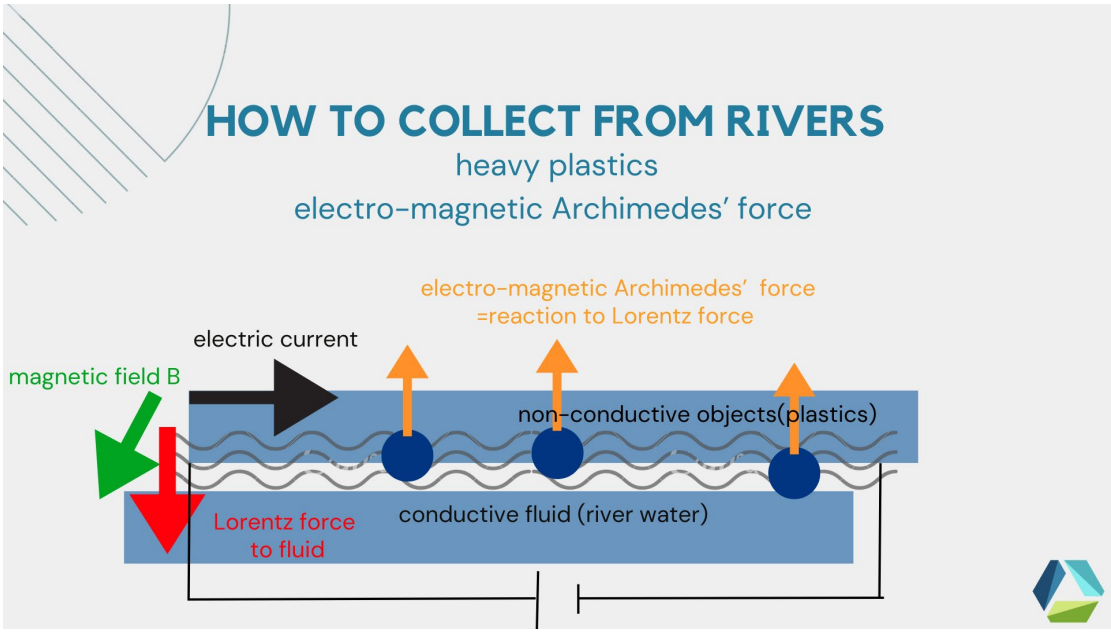


Figure 4 : Mechanism of the electro-magnetic Archimedes' force

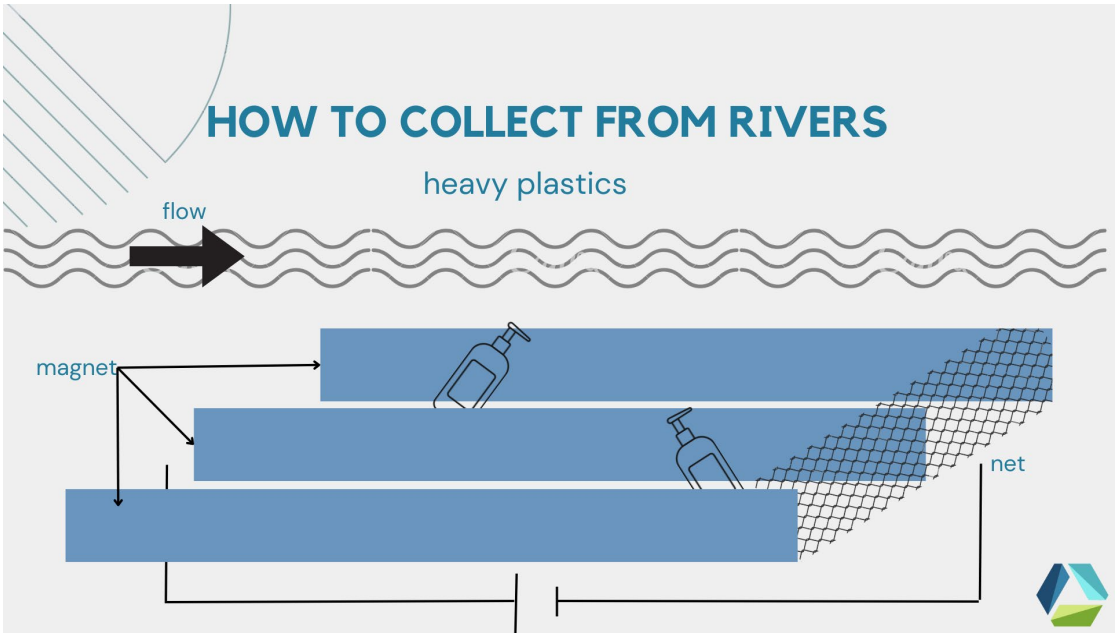


Figure 5: How to collect heavy plastics

4. Plastic Segregation

After collecting plastics, we process them. As the first step of the process, we introduce plastic segregation.

We use Near Infrared Technology (NIR) to detect a certain type of plastic. We will explain the mechanism. When spotting infrared rays onto materials (plastics), we can detect absorbance which is unique to the kinds of materials (Figure 7). Therefore, we can identify the type of plastic, as well as its quality by infrared rays. Combining NIR and sorting mechanism, we want to segregate plastics into 3 types (Figure 6):

- Recyclable PET plastic
  - We need PET in particular for making a specific part of our product
- Other recyclable plastics
  - Which is our main material for creating our products
- Rejected plastics
  - Too degraded or too many impurities/dirty

The strengths of the technology are as follows:

- Extremely fast detection: can accommodate large volumes of plastic
- Non-destructive: the plastic remains recyclable
- Can identify many types of plastics

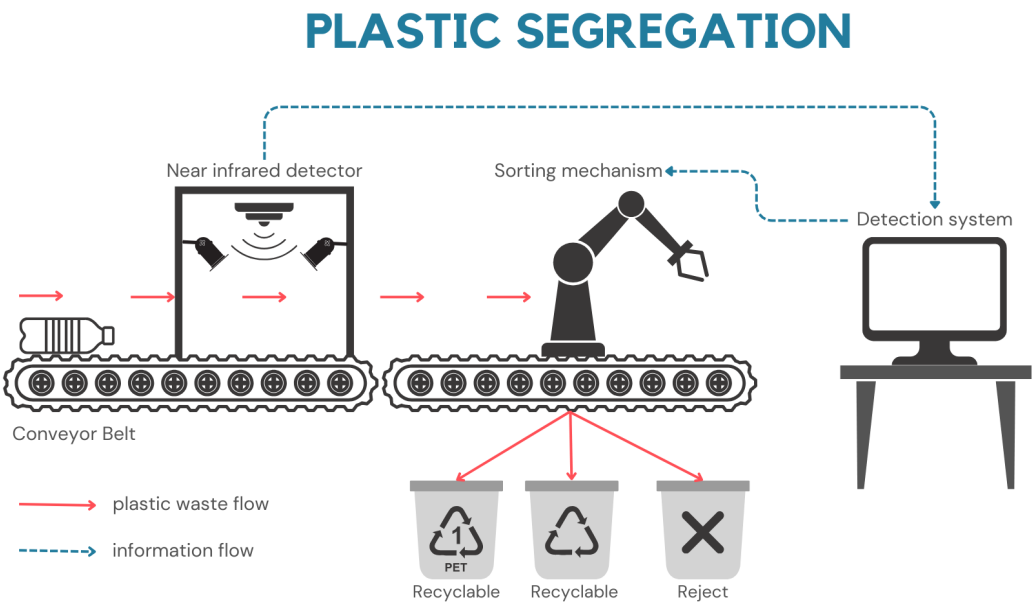


Figure 6: Plastic segregation system

Mixed plastic waste shall go through the near infrared detector. (the same technology that was used by NSTDA) Once the type of plastic is detected by the sensor, the computer shall signal its classification to the sorting mechanism. The sorting mechanism separates the plastic into 3 types.

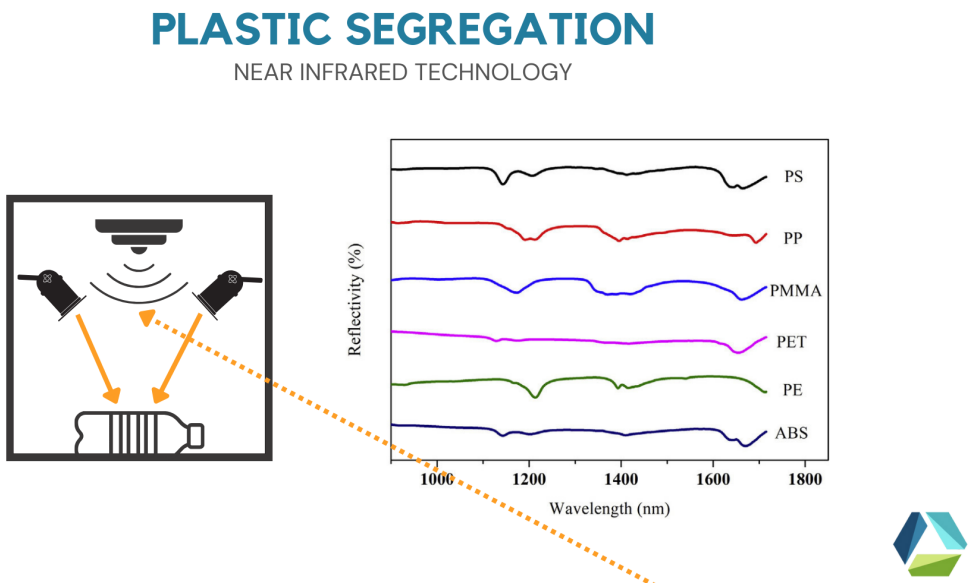


Figure 7: Measures absorbance of samples

5. Product

We decided to produce shoes and building blocks using recycled plastics. In this chapter, We will explain the reasons for this, as well as the characteristics and manufacturing process of each product.

5-1. Shoes

We choose shoes as a product because they are a daily necessity for many people. Additionally, the use of recycled plastic in shoe production is a sustainable and environmentally-friendly approach, addressing the issue of plastic waste.

Process of making shoes is the following:

1. Upcycling PET plastic into plastic pellets though the heat compression process.
2. Making plastic pellets into a yarn that have tough, durable and flexible properties.
3. Weaving yarn into fabric for upper, insole, midsole, toe box, heel counter using 3D knitting technology.
4. The general plastic waste is compressed, mixed with rubber and melted by heat. The material from the process will turn to be outsole.
5. Putting all the parts together.

5-2. Building Blocks - Gen

We chose building blocks because they can be reused without wasting plastic. Building blocks made from plastic waste have sufficient structural strength and have a lower carbon footprint than concrete blocks.

This block is ideal for many purposes. For example, retaining walls, sound walls, sheds, privacy fencing, terracing and landscaping, accent walls, and furniture.

The manufacturing process is very simple. Using only steam and compression, this system can repurpose plastic waste into building blocks without additives.

5-6. Company Mobile Application

We have created a website to provide a wide range of our services. It is our company website where customers can see what we've achieved with plastic and purchase items made from plastic, such as shoes and blocks.

Here is the link to our website.
https://www.figma.com/proto/R3pXAY7uxVkq3pjI2W6WcG/PLASTITECH?type=design&node-id=26-1291&t=BSxZH7xqw1h8y0OI-0&scaling=scale-down&page-id=23%3A912&starting-point-node-id=26%3A1291

5-7. Conclusion

- Plastitech Solutions (We) collects plastic waste and transforms it into environmentally friendly products.
- Primary goals include reducing plastic pollution, innovating eco-friendly products, and promoting sustainable change.
- We collect plastic from universities and rivers.
- Near Infrared Technology (NIR) is used for plastic sorting, categorizing it into recyclable PET plastic, other recyclables, and rejected plastics.
- We manufacture shoes and building blocks from recycled plastic, outlining their production processes.
- We also offer their products and services through a company website.

5-4. Group D

Member: Andre, Jinny, Job, Kaede, Riko

Contents:

1. **Our organization**

   In recent years, there have been many issues affecting our oceans such as pollution, destruction of coral reefs and marine ecosystems, wildlife extinctions, and other major events such as oil spills. This has been a major problem in Asia, coupled with pollution and other environmental threats. In March 2023, during a recent oil spill in the sea of Mindoro, Batangas, and Palawan, in the Philippines, different nations in Southeast Asia and Japan aided in addressing this problem. Thus, we envision an intergovernmental and interdisciplinary organization focused on coordination, monitoring, predicting, and sending immediate responses to the different issues surrounding our sees. Our organization's mission is to defend the ocean's integrity, safeguard marine ecosystems, and improve human life through the use of state-of-the-art sustainable technology through interdisciplinary research. Our organization's vision is to become Asia Pacific's intergovernmental and interdisciplinary coordinating body specializing in monitoring, predicting, and rapid-response technologies in protecting the seas. We then have the following goals:

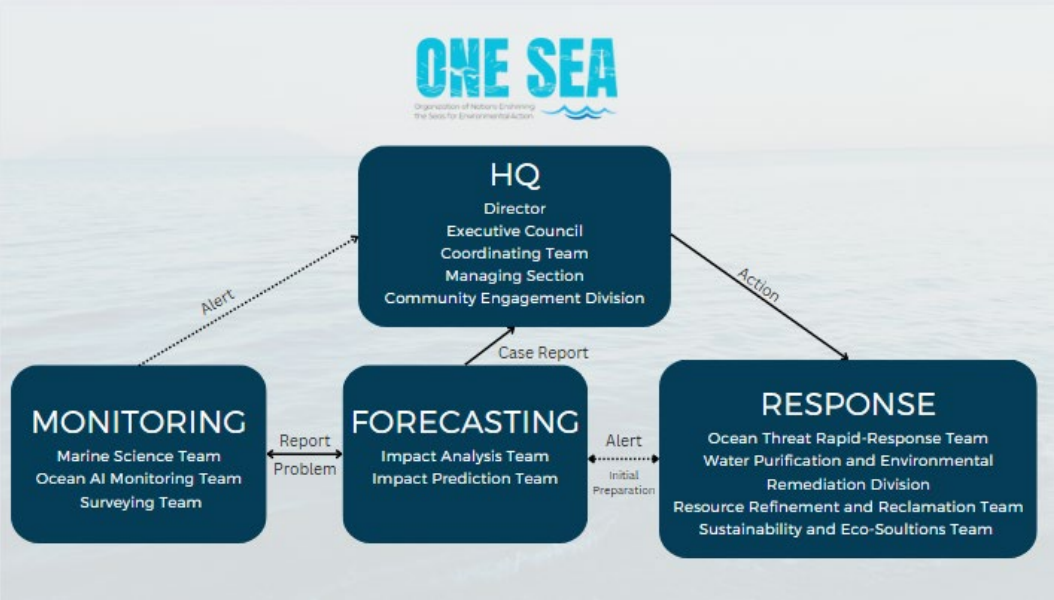
1. Monitor the condition of the seas in the Asian Pacific for possible threats to the marine ecosystems.
2. Address daily threats to the ocean and its ecosystems using existing technologies and innovations such as AI integration for monitoring, analysis, and forecasting.
3. Establish a rapid-response process in case of major threats, such as oil spills, in coordination with other government bodies and organizations in the Asia-Pacific.
4. Support interdisciplinary research and create innovations to solve the environmental problems of the current age.
5. Promote the advocacy of protecting the seas and engage different stakeholders such as the fisherfolk and farmers in advancing the goals of the organization.
6. Work with different government bodies and international organizations with the shared advocacy of defending ocean integrity.
7. Utilize sustainable materials and resources that are abundant in the region to improve the economic conditions and livelihoods of the people.

2. Marine Ecosystem

Marine pollution is destroying ecosystems and pushing some species to the brink of extinction. The destruction of marine ecosystems also affects our food supply. The following are examples of marine pollution.

Fig. 4 Organization chart

1. Chemical pollution
   Chemical spills from land are affecting marine life via ingestion, resulting in reproductive anomalies.
2. Oil spills
   Oil spills have significant effects on marine creatures and ecosystems. The



damages to their health are multifaceted, like, physical coating, suffocation, toxicity, disruption of food web, and so on.

3. Plastic pollution
   Plastic, including microplastic pollution, has severe damage to marine ecosystems. Entanglement and toxicological effects via ingestion of plastic threaten ecosystems and biodiversity as well as chemical pollution.
4. Deoxygenation
   Deoxygenation is causing effects on marine life, reducing suitable habitat. It will result in habitat compression, reducing growth rate, obstructing reproduction, and increasing susceptibility to disease.

Successful ocean pollution response requires coordination among various organizations, including government agencies, environmental groups, and industry stakeholders, to minimize the impact on marine ecosystems and human health.

3. AI integration (monitoring and forecast)

The combination of the following technologies will enable accurate prediction and observation of marine pollution and rapid response.

1. Patrol drones (real-time monitoring) to check ocean health.
2. Machine learning analysis to predict areas at risk of waste and pollution in the ocean.
3. Image processing techniques can simulate a 3D ocean model to facilitate a better understanding of the pollution in each layer of the ocean.
4. Underwater AI robots check animal life and populations to ensure that marine animals in the area are living normally.
5. Collaborate with THEOS2 satellite (GISTDA) for monitoring and collecting the data.

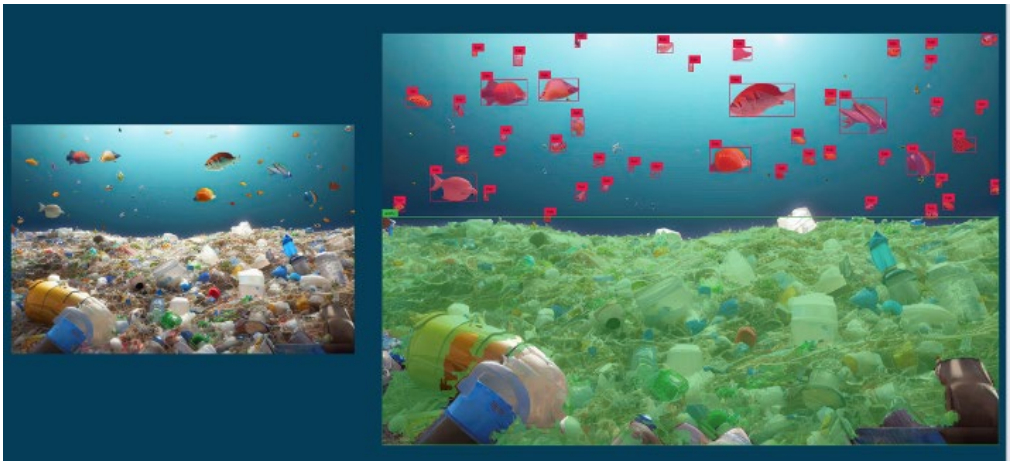


Fig. 5 Example of AI classification

4. Sea rapid-response technology

Our machine, “Ocean Guardian”, can respond quickly to where contamination is detected or predicted by integrated AI. Fig. 3 provides an overview of the structure. The curved section and the bottom are made of fishing net. Ocean Guardian moves through the ocean, led by the blue one, and uses fishing nets to eliminate pollution in the sea. The U-shaped curved structure efficiently collects marine debris from the front. Of course, Ocean Guardians are equipped with fish-repelling speakers, so they rarely catch fish by mistake. We then collect any spilled oil floating in the ocean by means of a capture unit located forward. In addition to oil spills, floating microplastic debris and chemicals are also collected here. The overall structure and this capture unit allow us to collect pollutants both at sea and in the sea.

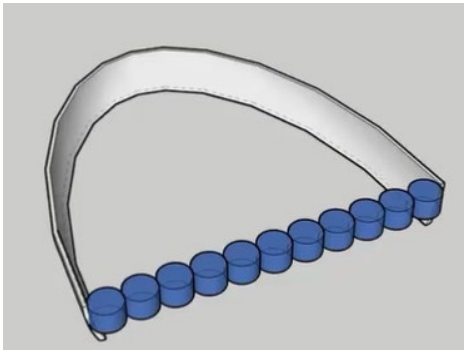


Fig. 6 Ocean Guardian

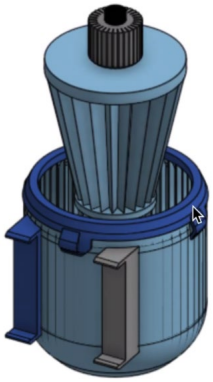


Fig. 7 Structure of Filter.

5. Chemical (filtration and purification)

Banana tree stems contain cellulose fibers which can remove the organic contaminant from wastewater (oil is organic). The cellulose fibers have characteristics such as being abundantly available (especially in Southeast Countries), biodegradable, renewable, cheaper, low abrasive nature, attractive, specific properties, and exhibit excellent mechanical properties. Fig. 4 shows the structure of the capture section including the filter.

6. Sustainability and Socioeconomics

Protecting the seas from harmful environmental impacts will increase the population of many species of fish especially those critical to our livelihood and food supply needs. Protecting the seas will also improve the lives of people who are dependent on the seas for their livelihoods.

Farmers often cut banana trees in cycles after 3-5 years to plant new ones, resulting in the availability of the stems as organic waste materials. The organization will work with the banana export communities in Southeast Asia to procure banana stems to help boost their livelihoods.

Fig. 9 Our organization's logo

Fig. 8 Banana stem

5-5. Group E

Member: Genki, Jae, Koshiro, Mek, Pia

Contents:

1. Introduction

Thailand, Indonesia and the Philippines has a large education and digital gap.

Here are the details.

- In Thailand, 75% of households have internet access. At the same time 75% of households with internet access depend on mobile broadband to access the internet. 83% of students do not use the internet for eLearning.

Source 1-[1])

- 58 million Filipinos cannot purchase one gigabyte of mobile data per month. (Source: 1-[2])
- In 2015, 384 thousand tons were discarded in Thailand. In 2021, 13.42 million mobile phones and 3.65 portable video or audio devices million units are expected to be found .
- (Source: 1-[3])
- Over 24 million phones are discarded in the Philippines. This means 3.9kg per person of phones

are thrown away every year.

- (Source: 1-[4])
- 2 million tonnes of e-waste is generated in Indonesia.
- (Source: 1-[5])

- Source: (1-[6])

2. Discussion

We have decided our target market to elementary school students in rural areas whose parents' income is low to middle. They have difficulty studying, such as sharing textbooks with multiple classmates and carrying heavy books between school and home. We will sell our educational products and foster collaboration with our primary consumers to support these beneficiaries.

(Source: 2- [1])

3. Our suggestion

Our suggestion is to establish an NGO, “Pixel Paper.”

3.1 Solution

We planned to establish an NGO, “Pixel Paper” with a tagline of “Transforming Waste. Creating Ways.” Pixel Paper is a social enterprise that aims to refurbish recycled electronic materials "e-waste", into electronic gadgets. We are sure Pixel Paper is bound to become the most viable, potent, and strongest digital waste management venture in the Southeast Asian market. With all our three flagship initiatives, XelPad, PixelMinds Digital Academy, and Pixel Drop, we empower Southeast Asian students and efficiently aid in their academic endeavors.

Fig3-1: Pixel Paper Logo

3.2 Vision and Mission

Our mission is to transform digital waste into a powerful tool that equips every underprivileged Southeast Asian student for a bright future ahead.

Our vision is ambitious and eco-conscious. We aspire to become Earth's most sustainability-centric company, relentlessly committed to providing every underprivileged student in Southeast Asia an opportunity to have the bright future they aspire to in this digital age.

3.3 Our Products and Services

XelPad:

XelPad is our main product, wherein is a tablet that is made 100% recyclable. Using the latest advancements in science and technology, every single piece of hardware in this tablet can be repurposed into a new unit, or returned as raw material.

Fig3-2: XelPad

PixelMinds Digital Academy:

PixelMinds is our digital literacy training initiative, specially crafted for primary students and teachers. Our mission is to ensure that both students and teachers not only know how to use gadgets effectively but also understand how to evaluate and teach with them.

Pixel Drop:

Pixel Drop is a donation drive for electronic waste. You can drop and donate your old or used phones with us. Plus, for corporations or NGOs who are looking to contribute, we have a dedicated website where you can reach out and join our mission. A box right in the web site is our sample bin, strategically placed for easy phone drop-offs.

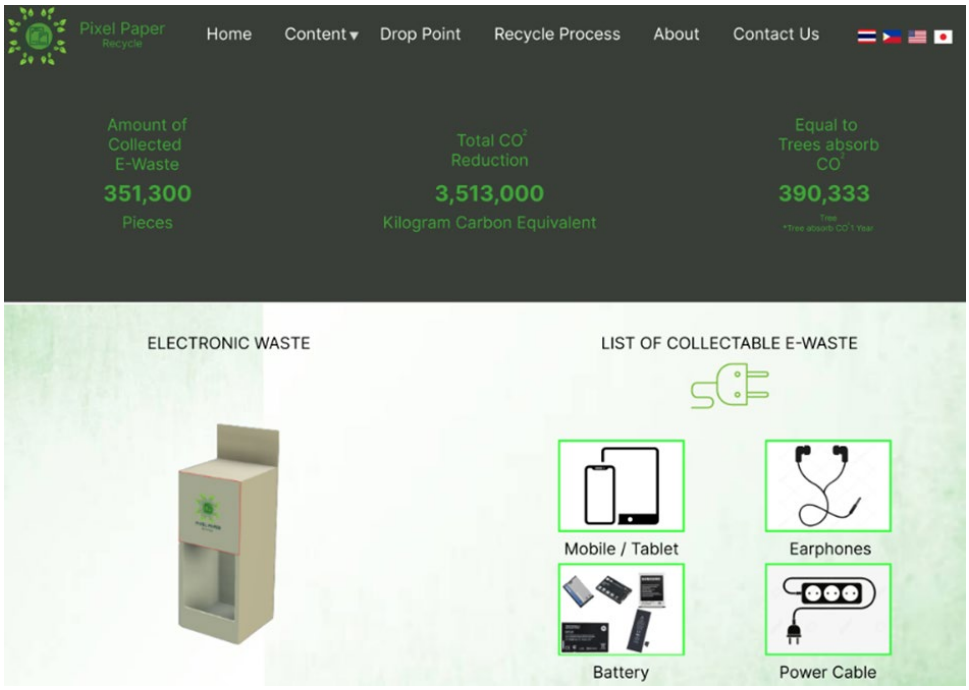


Fig3-3: Our web page

3.4 Marketing Executions

For primary students, we raise awareness through DepEd partnerships, digital campaigns, and inspiring stories. We offer digital literacy training, resources, and community services. We create student profiles and alumni programs.

For primary consumers, including government, NGOs, and companies, we build awareness through strategic partnerships, email campaigns, and demos. We offer subscription packages and provide sponsor benefits in our programs.

3.5 Operation Plan

Below is our operation plan to get this business up and running. First, we will establish our e-waste collection services under the collection. The collected metal can be sold to fund our capital so that we can move to our second phase, which is making the tablets themselves. After proposals and installations of software, these are then ready to be tested and distributed to our target market. Afterward, we would take their comments into consideration as part of our evaluation and assessment, continuously improving our product for a better user experience.

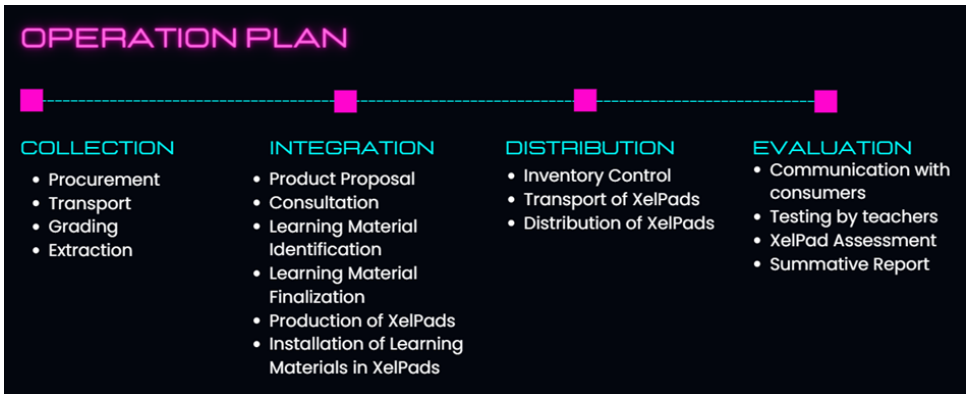


Fig3-4: Operation Plan (Cited from presentation slices)

3.6 What Makes Our Products and Services Cutting Edge

The main selling point of the XelPad is that it is completely recyclable from the get-go. This is accomplished by a few key details in its design.

First, the casing and all subsequent plastic parts are made from poly-cyclopentadiene, which is a heat, chemical, and impact-resistant plastic already in use for certain casings of vehicles. What makes this version special is that breaks can be introduced into the polymer where, once a halogen like fluorine or bromine, it breaks back down into its constituent parts. This allows for it to be used again as a thermoset plastic while having the recyclability of a thermoplastic.

Additionally, sodium-graphene batteries will be used, as they have comparable power and charge-discharge cycles to current lithium batteries while using abundant and recyclable materials.

Lastly, the glass and metal needed in a tablet will be harvested from our collected e-waste, leading to a tablet that is made to be 100% recyclable.

(Ref. 3-[1], 3-[2], 3-[3], 3-[4], 3-[5], 3-[6])

3.7 Risks and Mitigation

We focused on three risks after launching this project: Insufficient Resources, Difficult Operations, and Technical Problems.

Insufficient Resources:

Despite our sustainable approach, we might still run out of resources.

➢ This risk may force us to:

- Limit the number of beneficiaries schools.
- Interrupt our business.

➢ Mitigation

We'll incentivize schools to recycle tablets. Not only asking teachers to recycle but also putting some drop-off points so that students can donate their old tablets. Be aware, this involves costs like installation cost, transportation, and repairs.

Difficult Operations:

Based on Japanese case studies, students and teachers struggle with tablet operations, affecting classroom activities.

➢ Issue Examples:

- Accidentally changing settings on tablets.
- Too many functions, distracting from studying.

➢ Mitigation 1

Limit functionalities of the tablets to only those necessary for education like:

- Watching educational materials
- Submitting their homework to their teachers
- Contacting their teachers
- Connecting to the Internet only with permissions

➢ Mitigation 2

Automate routine operations like:

- Updating OS
- Feedback/connecting to technicians
- Connecting Wi-Fi
- Managing battery consumption and charging

Technical Problems:

Tablets have lifetimes and often come with low specs, according to precedents in Japan. It causes delays and other problems that disrupt classes.

➢ This risk may occur:

- Long time for downloading and uploading materials

- Short battery life due to overcharging
- Teacher assistance concerning technical issues that may interrupt class time

- Mitigation 1

Establish technical support centers:

This enables teachers and students to call technicians anytime they want. However, this requires many employees, which costs a lot. So, in some cases, we consider utilizing AI-powered chatbots as well. We must keep in mind that some issues can be solved only technicians visiting the site.

- Mitigation 2

Upgrade tablets and infrastructure
- Strengthen Wi-Fi in schools
- Secure ways to get more electricity
- Improve Batteries
- Include modules/downloadable content to ensure tablets are up to date

We must keep in mind the possibility of commercializing education. For example, establishing strong relationships and sharing strict rules with partners are essential.

3.8 Timeline

At Pixel Paper, our journey unfolds in five phases. In Phase 1, we're during development and operations. Phase 2 brings Quality Assurance, Certification, Pilot Testing, Supply Chain Optimization, and thorough Monitoring and Data Analysis. As we progress to Phase 3, we'll expand our learning materials and cater to a wider range of grade levels. Phase 4 marks our Regional Expansion, with additional warehouses across Southeast Asia. Finally, in Phase 5, we launch our Alumni Community Initiative while continually seeking further developments and evaluations.

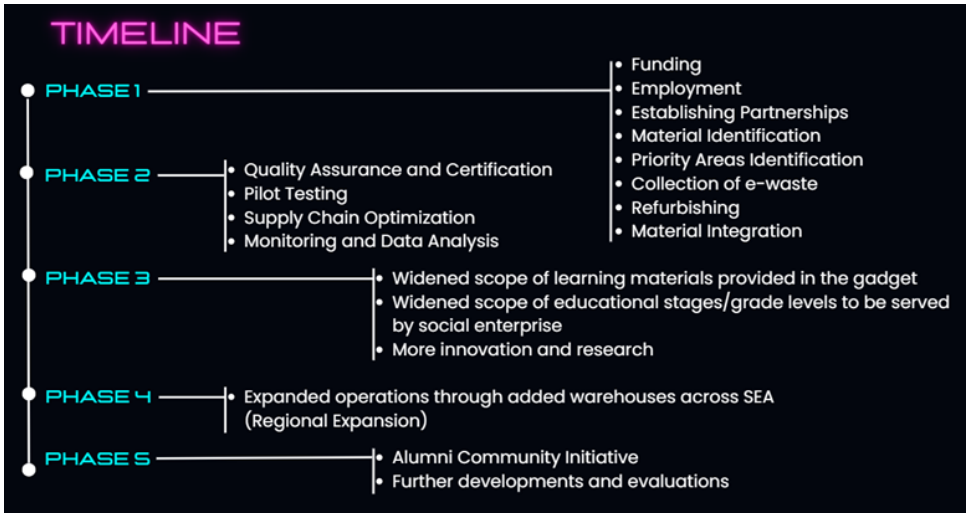
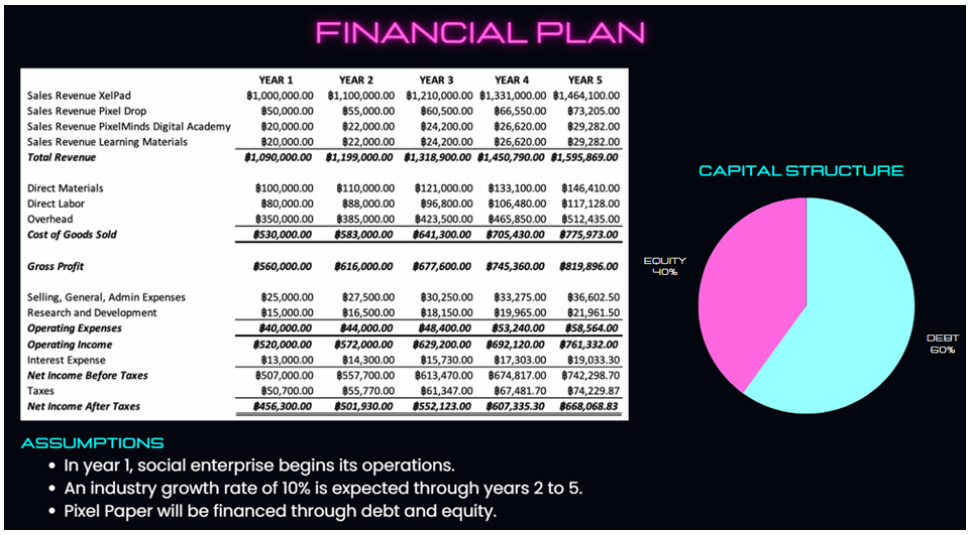


Fig3-5: Timeline (Cited from the presentation slices)

3.9 Financial Plan

According to Jea's estimation, our five-year operation plan is like below. We present our projected income statements in which we maintain a robust gross profit ratio at over 56%, surpassing the industry average of just 10% (Ref.3-[7]). This means that our social enterprise foresees a strong return on investment, ranging from 20-31% over the next five years.



	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Sales Revenue XelPad	$1,000,000.00	$1,100,000.00	$1,210,000.00	$1,331,000.00	$1,464,100.00
Sales Revenue Pixel Drop	$50,000.00	$55,000.00	$60,500.00	$66,550.00	$73,205.00
Sales Revenue PixelMinds Digital Academy	$20,000.00	$22,000.00	$24,200.00	$26,620.00	$29,282.00
Sales Revenue Learning Materials	$20,000.00	$22,000.00	$24,200.00	$26,620.00	$29,282.00
Total Revenue	***$1,090,000.00***	***$1,199,000.00***	***$1,318,900.00***	***$1,450,790.00***	***$1,595,869.00***
Direct Materials	$100,000.00	$110,000.00	$121,000.00	$133,100.00	$146,410.00
Direct Labor	$80,000.00	$88,000.00	$96,800.00	$106,480.00	$117,128.00
Overhead	$350,000.00	$385,000.00	$423,500.00	$465,850.00	$512,435.00
Cost of Goods Sold	***$530,000.00***	***$583,000.00***	***$641,300.00***	***$705,430.00***	***$775,973.00***
Gross Profit	***$560,000.00***	***$616,000.00***	***$677,600.00***	***$745,360.00***	***$819,896.00***
Selling, General, Admin Expenses	$25,000.00	$27,500.00	$30,250.00	$33,275.00	$36,602.50
Research and Development	$15,000.00	$16,500.00	$18,150.00	$19,965.00	$21,961.50
Operating Expenses	***$40,000.00***	***$44,000.00***	***$48,400.00***	***$53,240.00***	***$58,564.00***
Operating Income	***$520,000.00***	***$572,000.00***	***$629,200.00***	***$692,120.00***	***$761,332.00***
Interest Expense	$13,000.00	$14,300.00	$15,730.00	$17,303.00	$19,033.30
Net Income Before Taxes	$507,000.00	$557,700.00	$613,470.00	$674,817.00	$742,298.70
Taxes	$50,700.00	$55,770.00	$61,347.00	$67,481.70	$74,229.87
Net Income After Taxes	***$456,300.00***	***$501,930.00***	***$552,123.00***	***$607,335.30***	***$668,068.83***

Fig3-6: Estimated Financial Plan

4. Conclusion

We're feasible through partnerships, connecting with companies and supporting government education initiatives with e-learning resources. We're scalable, expanding our impact beyond Southeast Asia to the whole world. Our work has a social impact by repurposing electronic

waste and bridging the educational and digital gap. We're innovative, leveraging cutting-edge technology to drive our mission. We are Pixel Paper, “Transforming Waste. Creating Ways.”

5. References

- 1. Introduction

[1] thailand.un.org/sites/default/files/2021-08/Presentation on mapping of digital divide.pdf

[2] In the Philippines, distance learning reveals the digital divide | Heinrich Böll Stiftung Hong Kong | Asia Global Dialogue (boell.org)

[3] Electronic waste that has been left, Thai recycling operators and a new beginning full of hope - AIS E-waste (ewastethailand.com)

[4] https://www.unido.org/news/philippines-making-money-making-e-waste-safe#:~:text=According%20to%20the%20report%2C%20the,the%20environment%20and%20the%20climate.

[5] Electronic waste generation, economic values, distribution map, and possible recycling system in Indonesia - ScienceDirect

[6] https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.weareteachers.com%2Fhow-to-close-learning-gaps%2F&psig=AOvVaw0c28b0qnFGZTTBCF0zP3rN&ust=1694962856278000&source=images&cd=vfe&opi=89978449&ved=0CBIQjhxqFwoTCOi6i-qyr4EDFQAAAAAdAAAAABAJ

- 2. Discussion

[1] https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.unicef.org%2Fphilippines%2Freports%2Fsoutheast-asia-primary-learning-metrics-2019&psig=AOvVaw0_G-2bFJlGfH3S4S-1eEzw&ust=1694962951335000&source=images&cd=vfe&opi=89978449&ved=0CBIQjhxqFwoTCNiaxZezr4EDFQAAAAAdAAAAABAQ

- 3. Our Solution

[1] "What Raw Materials are Used to Make Mobile Phones?". By Owais Ali. Oct 25, 2022. https://www.azom.com/article.aspx?ArticleID=22121.

[2] "ENGINEERING NEWS: FEATURE: Graphene – the not-so wonder material?". By Rich McEachran. 05 Jan 2018. https://www.imeche.org/news/news-article/feature-graphene-the-not-so-wonder-material.

[3] "How Do We Recycle Semiconductors?". By Lucas Podmore. Mar 9, 2022. https://www.azom.com/article.aspx?ArticleID=21424.
[4] nature. “Cleavable comonomers enable degradable, recyclable thermoset plastics”. Peyton Shieh, Wenxu Zhang, Keith E. L. Husted, Samantha L. Kristufek, Boya Xiong, David J. Lundberg, Jet Lem, David Veysset, Yuchen Sun, Keith A. Nelson, Desiree L. Plata & Jeremiah A. Johnson . 20/07/22. https://www.nature.com/articles/s41586-020-2495-2.
[5] "What to Expect From the Graphene Industry in 2023". By Dr Richard Collins. https://www.idtechex.com/en/research-article/what-to-expect-from-the-graphene-industry-in-2023/28511.
[6] "How sodium could change the game for batteries". By Casey Crownhart. https://www.technologyreview.com/2023/05/11/1072865/how-sodium-could-change-the-game-for-batteries/.
[7] "Global Refurbished and Used Mobile Phones Market to Reach US$ 40 Bn by 2025 - Persistence Market Research". By Persistence Market Research Pvt. Ltd. 24 Jul, 2017. https://www.prnewswire.com/news-releases/global-refurbished-and-used-mobile-phones-market-to-reach-us-40-bn-by-2025---persistence-market-research-636262103.html.

7. Epilogue

This program taught me mainly two things: the significance of English and a major. Without ways to convey, your ideas and questions would be in vain. Without your expertise, you would not be distinct or enthusiastic. I learned that to execute international leadership with cooperation, I must master the two.

by Koshiro

Tokyo Tech-AYSEAS 2023 was really a blast. Honestly, at first, I doubt that I will learn something valuable since I am also coming from Southeast Asia country, which I thought has a very similar demographic and culture to Thailand. However, that doubt suddenly vanished when I stepped my feet on Thailand. Making new friends, trying foods, travelling around Bangkok, learning new culture of Thailand and other SEA countries, group discussion, insightful company visits, I really enjoyed those moments. Tokyo Tech-AYSEAS 2023 gives me a really unvaluable opportunities to learn and grow in a very global environment. Eleven days seems too short for all of us. Thank you Tokyo Tech-AYSEAS 2023, I am definitely not regret joining this program.

by Jessica

Though it was only eleven days, this trip proved to be the most impactful of my life. During this trip, I was able to hone my communication skills by connecting with people from vastly different backgrounds. What is more, I had the unique opportunity to speak with global leaders from both Japan and Thailand. Their stories left me feeling inspired and motivated and helped me to consider my future career path.

by Riko

In addition to making friends from overseas through this program, I wanted to broaden my horizons and improve my English skills at the same time by visiting factories and laboratories. I was able to achieve all my goals. Even after applying to participate in the program, I was nervous before going to Thailand, but all the participants treated me kindly, which eased my nerves. It was difficult to listen to technical talks in English and to ask questions, but I was able to give it my all. I am glad that I can participated in this program.

by Hina

It was my first experience, I had many impacts and was very happy to be able to participate. I felt a lot of frustration not only with the language but also with my lack of knowledge. However, I strongly felt that it is not necessary to have a perspective that stays in Japan, and that by

interacting with and helping others, I can lead many steps ahead to a world I didn't know. Thank you once again to the university staff who organized the event, to the people at the facility who graciously accepted my visit, and most of all to the AYSEAS members who accepted me as a friend and helped me in my powerlessness! I hope to see you again somewhere in the near future as we have both grown up!

by Reimi

Studying in Thailand for the first time was an incredible experience. The warm hospitality of the Thai people, delicious meals, and breathtaking landscapes were surprising to me. I embraced the rich culture and made lifelong friends from all around the world. It was a life-changing adventure that I can not forget forever.

by shogen

This was amazing experience of my life. This was beyond academic level. I learned a lot. I would like to thank the teachers who organized this program and opportunity. Everything was the first time for me to do like going abroad, making foreign friends, many conversations with foreign person in English, speaking Thai. It was the moment when my world expanded from Japan to the world. Anyway, I'm really glad I could participate. Thank you!!

by Gen

This tour was my first overseas experience. My initial goal was to facilitate communication in English, but in reality, I could not communicate well because of the strong English accents of the people in each country. However, I strongly realized an important and wonderful thing through this situation: it is much more important to try to communicate than to speak English grammatically. This has changed my whole approach to learning a foreign language. I was glad to participate this program in that I was able to encounter this shift.

by Shunpei

This program was my first experience abroad, and every aspect of the 10-day program was new to me and broadened my horizons. I learned about the similarities and differences between Japan and Thailand. Of course, I had a lot of fun interacting with the students from the member universities!

by Kaede

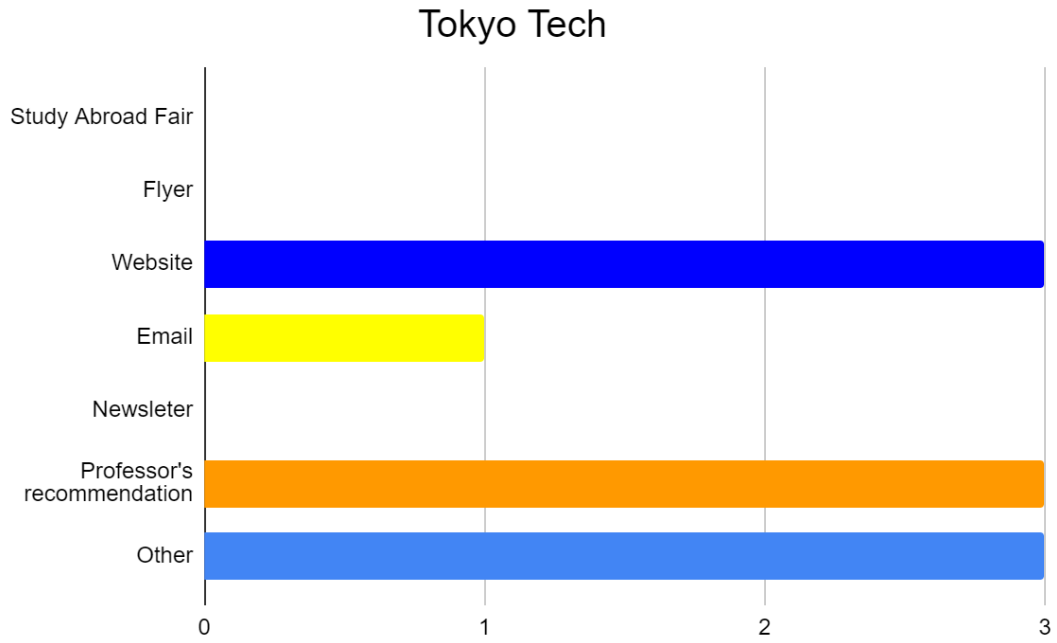
I was very glad to see the students I met in this program, and I could learn a lot about situation in Thailand. I want to make use of this experience in the future.

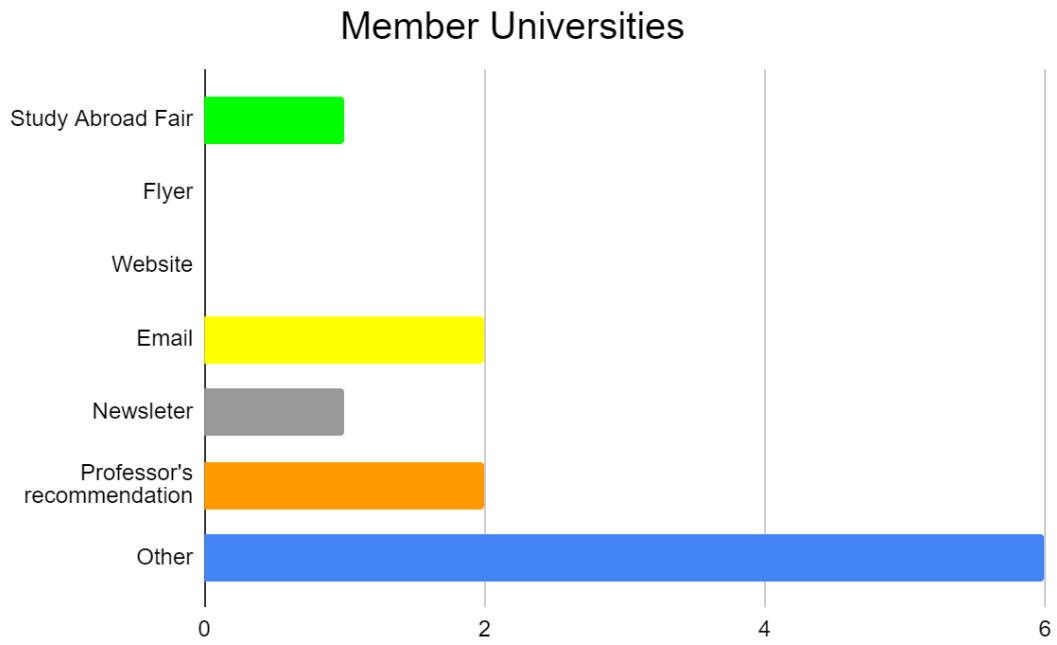
by Genki

8. Evaluation of Tokyo Tech-AYSEAS 2023

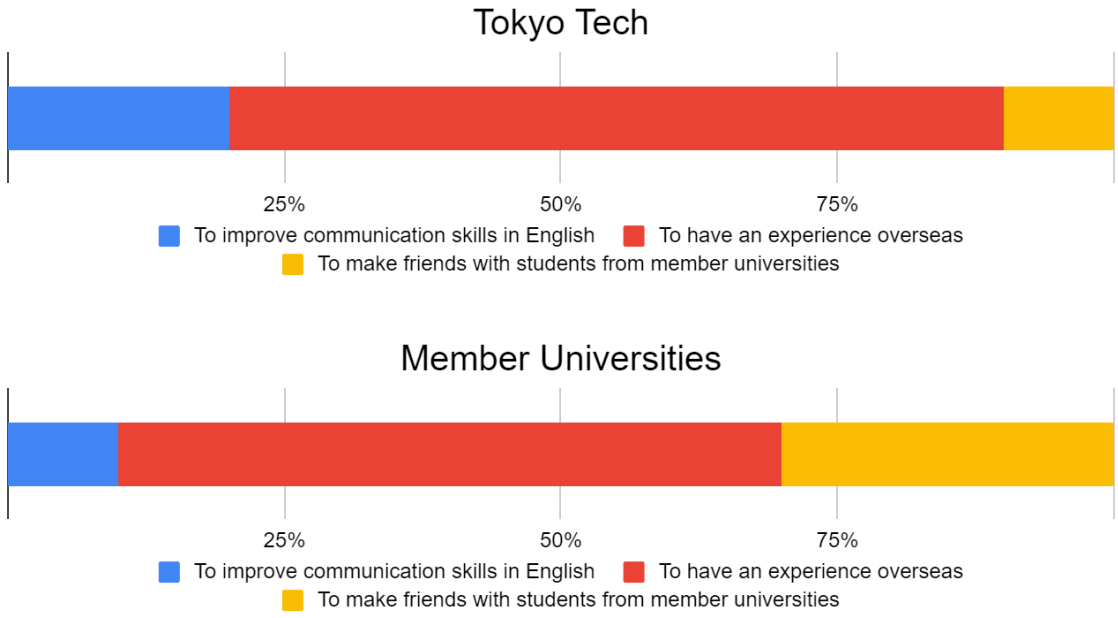
Participants in Tokyo Tech-AYSEAS 2023 were given a questionnaire about the program. The following evaluation was based on the answers to the questionnaire.

Q-1. How did you know about Tokyo Tech-AYSEAS?

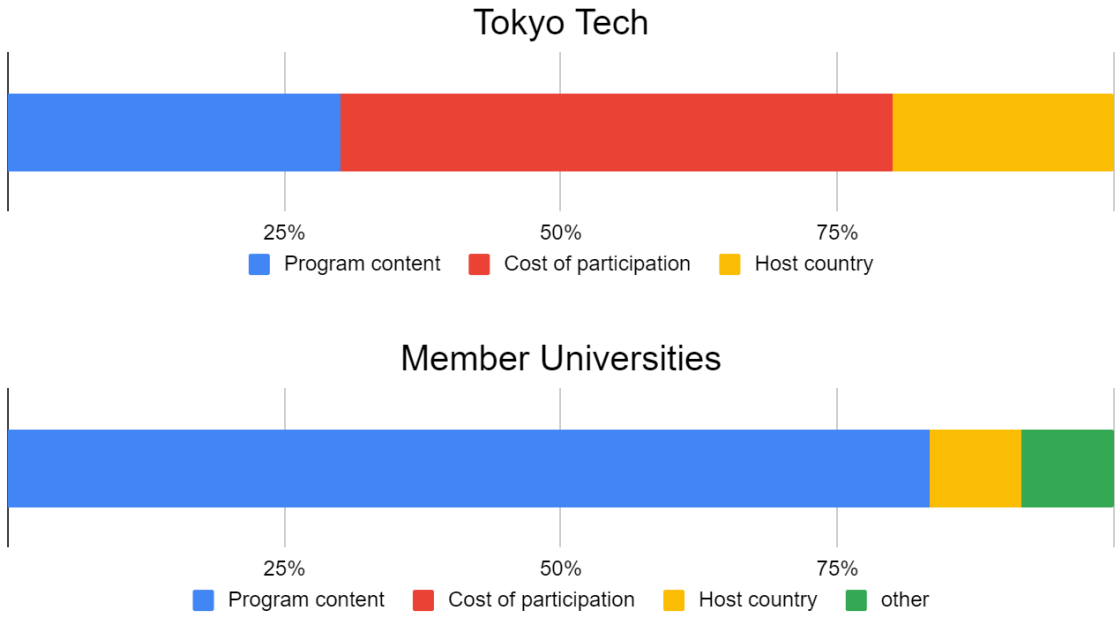




Q-2. Please specify your initial motivation joining Tokyo Tech-AYSEAS 2023



Q-3. Please specify the main reason why you ultimately decided to join AYSEAS 2023.



Q-4-1. Please indicate your overall satisfaction with Tokyo Tech-AYSEAS 2023.

Q-4-2. Please describe why you chose the above answer.

- I made friends with people from many different countries. Learning various things at various places I visited broadened my horizons and gave me an opportunity to think about my future career.
- Because I could have so many experience. Per haps we couldn’t get like this experience without AYSEAS. Definitely, this is the great memory of LIFE!! Thank you so much

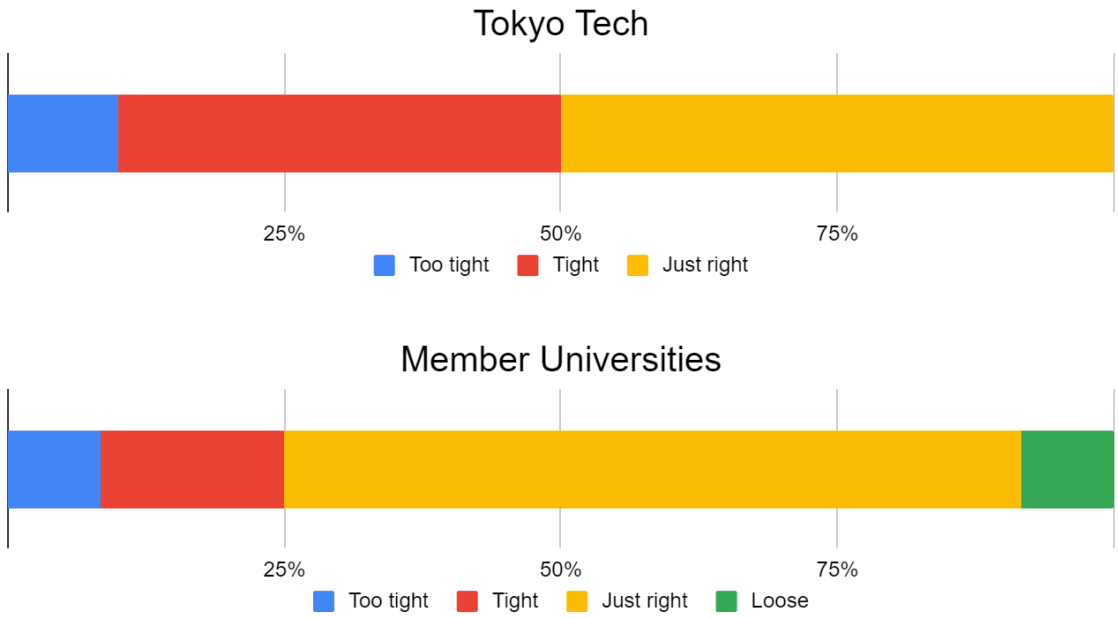
industry in Thailand and I could make friends in this program.

- Tokyo Tech AYSEAS gives me amazing experience and opportunities for becoming global leader
- My purpose in Joining this program is to make friends with people from abroad, to experience other countries' cultures, and to know what global leaders are like. In this program, I could fulfill these purposes, so I'm satisfied with this program.
- I have gained so much experience and have a chance to see how the big company manage their work and etc.
- So much knowledge and experiences I gained through this program. I also learned about cultural exchange and expanded my circle of friends. The lectures were very appreciative, friendly, and kind. They reminded me to pray and even provided a place for me. Overall, I am satisfied with this program, but I have some suggestions for next year's program. It would be beneficial to evaluate the timing and location of discussions. When it's time for discussions, the room should remain conducive and free from any activities that could disrupt the focus of the discussion. Clear guidelines are necessary for participants to schedule accordingly. Additionally, participants should not have too much freedom to wander in public places during vulnerable hours to ensure their safety and a safe return home. Perhaps it would be best if breakfast and dinner were provided by the organizers. We will cover the total cost. For lunch, participants can have options to choose where they'd like to eat. This way, during the evening, participants won't be confused about what to eat and can focus on the discussions. I felt tired when arriving at the hotel in the evening and having to search for a place to dinner. Just being cautious about unforeseen circumstances. Thank you, Tokyo Tech, and my friends from other universities. I'm glad to be a part of this program :)
- Had a lot of fun in Thailand (both through the visits, conferences, lectures and leisure)
- Great learning, great places to visit and learn from, very caring staff, had fun with a lot of friendsz
- I had fun, learnt a lot, and made many new friends. It’s even more fun now that it’s face to face!
- I had a great experience in learning more about manufacturers in Thailand, as well as gaining more cultural insights due to the diversity of the participants.
- I relished every moment of the itinerary, connecting with fantastic individuals and exchanging a wealth of diverse ideas and perspectives that enriched my knowledge. While I rated it as "satisfied," I believe there's always room for even more incredible experiences ahead.
- event and friend are amazing
- I chose “Very satisfied” because of my experiences, which include the wonderful

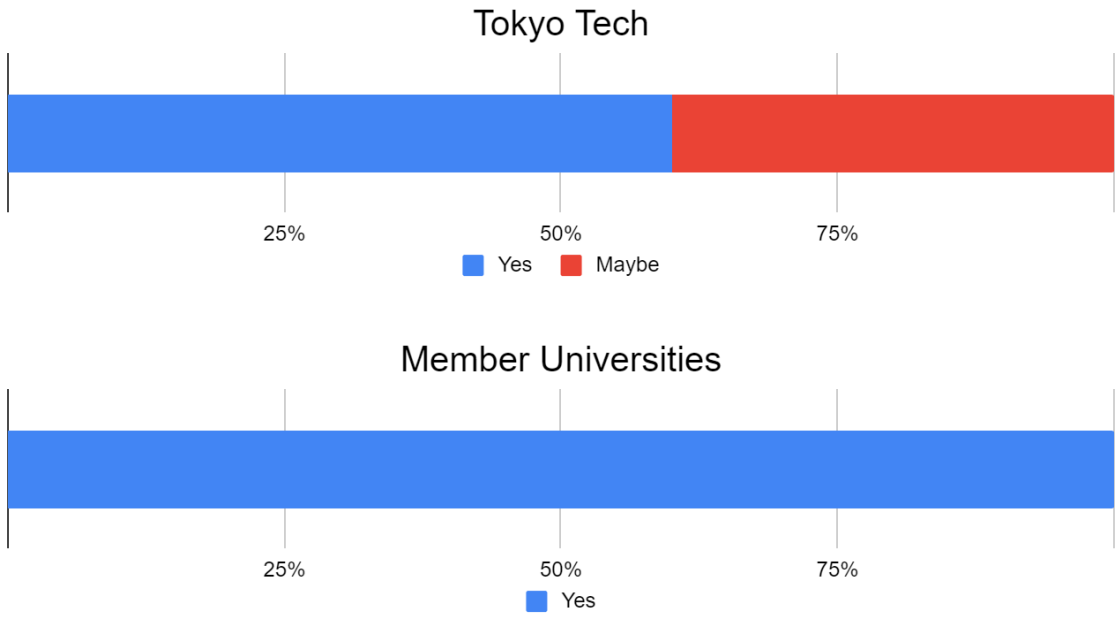
friendships, the warm welcome, exciting site visits, and enjoyable programs during Tokyo Tech-AYSEAS 2023. All these experiences made me really happy. If I have the chance, I'd love to do this program again because it meant a lot to me.

- Because this program gave me much of experience and good relationship
- I am very glad to have participated in the Tokyo Tech-AYSEAS 2023 program. From this program, I met new friends from various countries with their unique cultures and fresh perspectives. I learned the importance of management and punctuality from my Japanese friends. I found out that my Filipino friends are talkative but very polite. With my Thai friends, I tried various foods with new flavors (honestly, their food is very delicious!). I was very happy to exchange opinions and thoughts through focus group discussions to solve global issues. Visiting renowned companies provided me with real insights into how multinational corporations operate while upholding their core values. Meeting Sensei was also something I am grateful for. Sensei has been like a parent to us during our time in Thailand. Thank you, Sensei, and fellow Tokyo Tech-AYSEAS 2023 committees. I hope this program is successful and remains sustainable in the future!!
- I love international environment and collaborative working with people from different fields and backgrounds. Tokyo Tech-AYSEAS provided problems that require interdisciplinary to be solved. However, I was feeling uncomfortable when traveling in a long distance with bus.
- I like working whit foreign friends and developing skills in many areas and doing things that I have nevervtried before
- Good friend, various culture
- I HAD A LOT OF FUN! It was a perfect combination of learning and tours and random getaways with the whole delegates.

Q-5. How would you rate the overall activity schedule of Tokyo Tech-AYSEAS 2023?

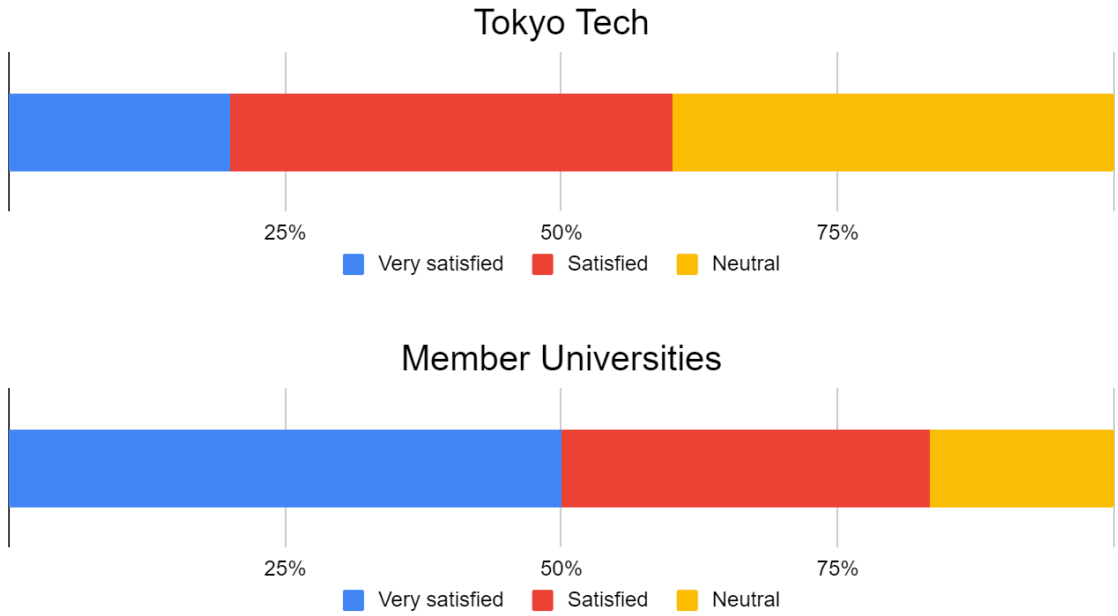


Q-6. Would you recommend Tokyo Tech-AYSEAS to others?

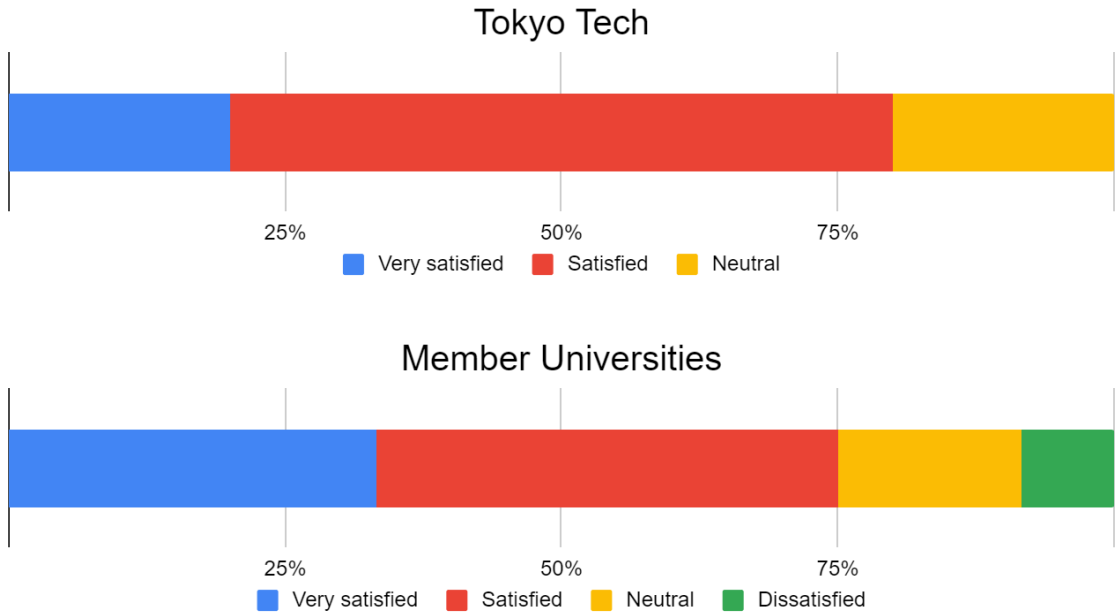


Q-7. Please indicate your level of satisfaction with the "Discussions and Presentation"

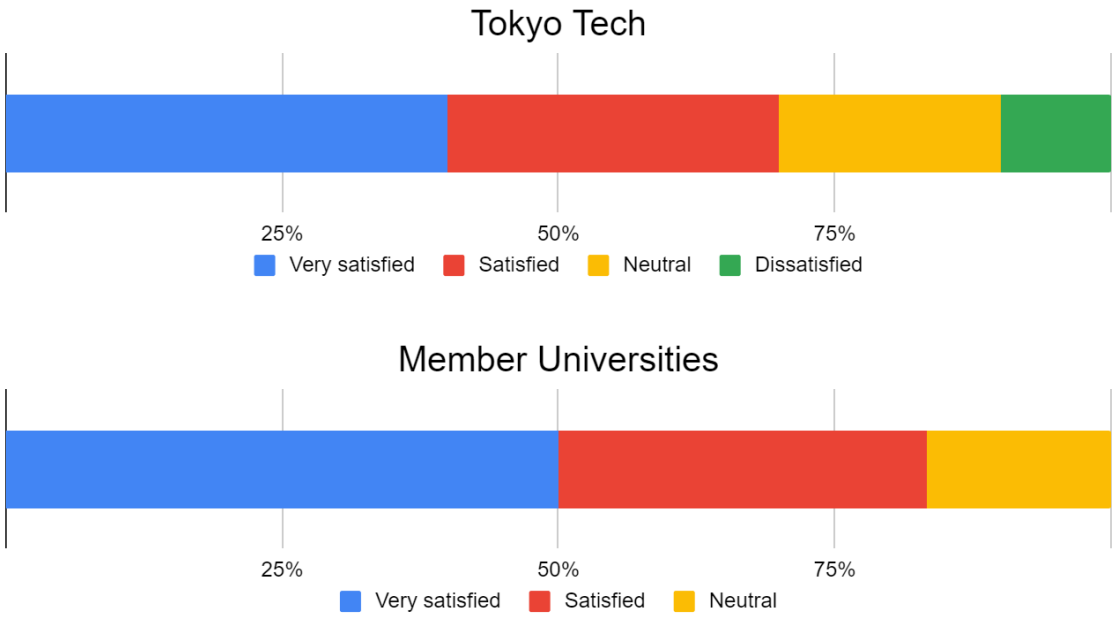
- Method



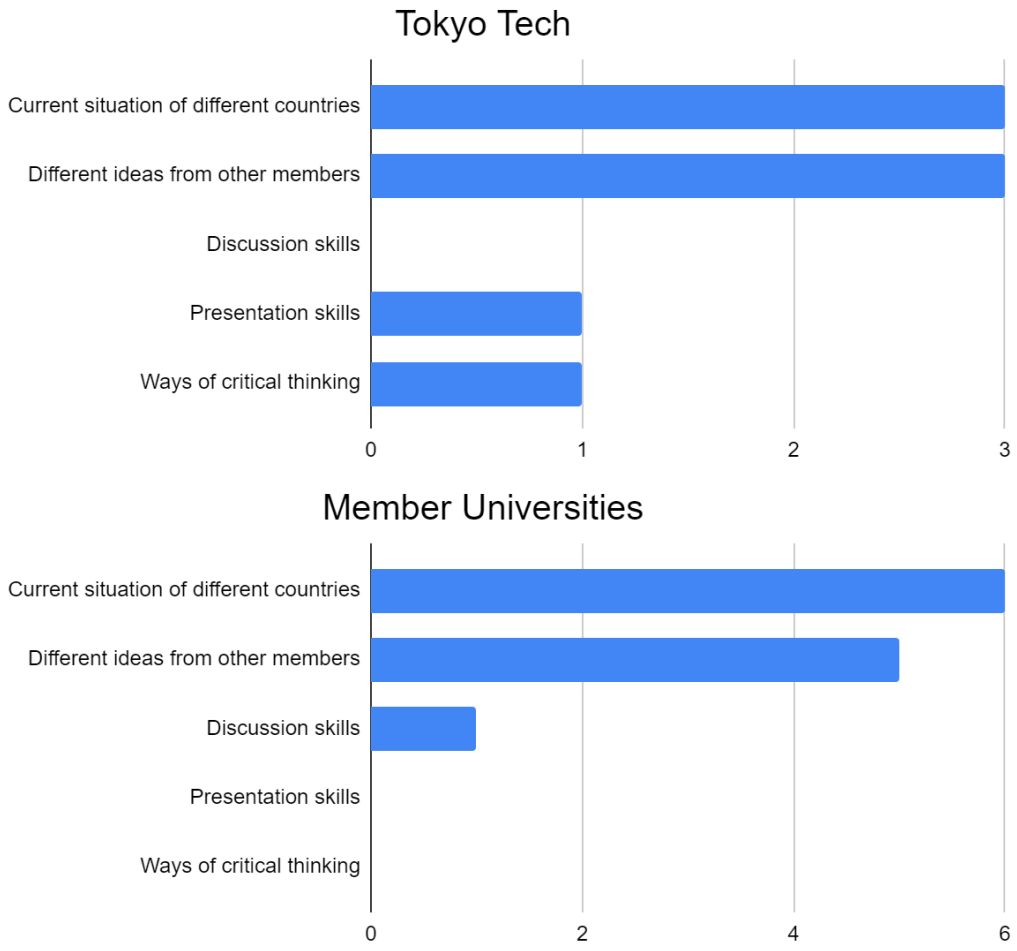
- Time for discussion



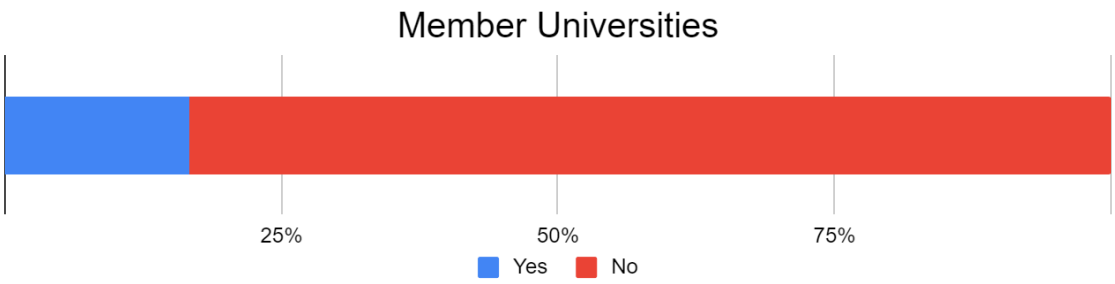
➢ Time for presentation



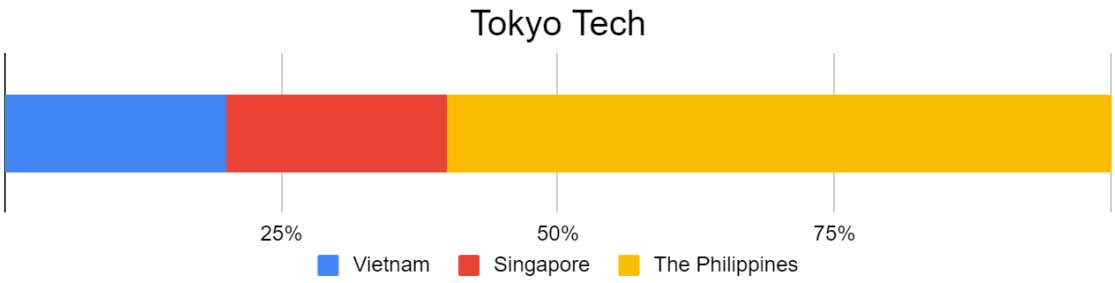
Q-8. Please answer what you learned through discussions during the program?

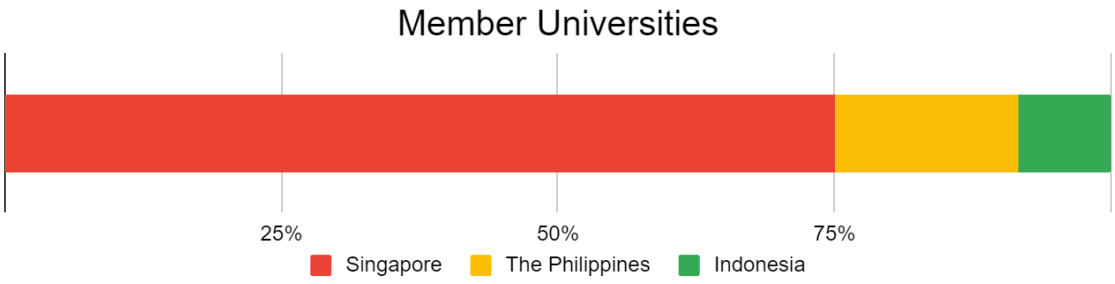


Q-9. (Only for member universities' students) Did you have an interview test in your university after sending application form?

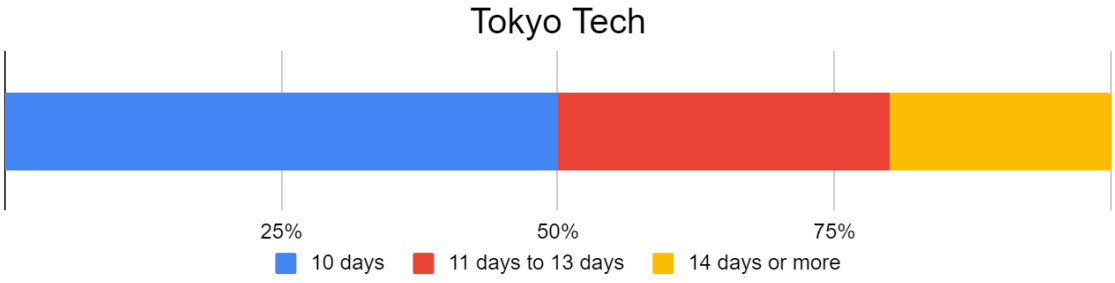


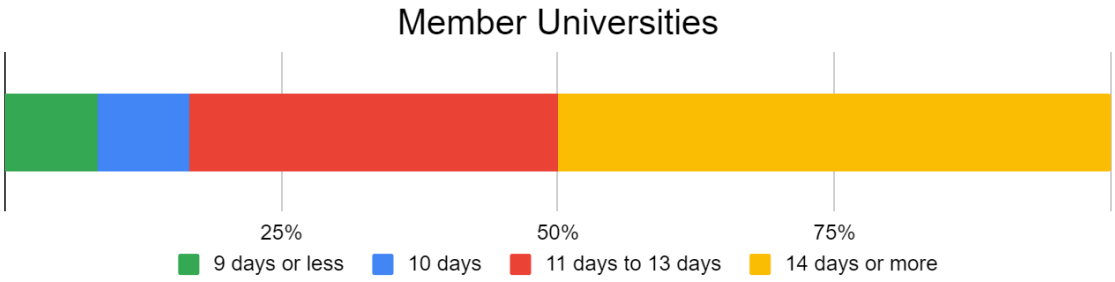
Q-10. If you were participating in AYSEAS 2024, which country would you like to visit?





Q-11. How many days would be best for Tokyo Tech-AYSEAS?





Q-12. What discussion topics would be of interest to the participants?

- recommendation of rocal foods, good places of each countries (soory, I couldn't come up with any good ideas...
- "Create a service or a product which utilizes characteristics of every group member's mother country"
- Discussion about pros and cons on AI implementation in industries from several perspectives (cost, time, moral, etc)
- What kind of industry can grow the income of people in southeast Asian countires?
- How to eliminate war.
- Disparity issues in the visitting country
- Environmental problems
- environmental problems
- How to improve the relationship of the Asis or the world.
- I think Public Health and Infectious Disease Control is an interesting topic. You can disscuss health issues in each regions and share information about the precention and management of infecitous diseases.
- I am interested in the environmental, sustainability and technology topic.
- Chemical Manufacturing, Batteries
- I guess more about potential technology that can be applied to different industries and engineering aspect rather than making political decisions and ideas on focus.
- I would find discussion topics related to technology trends, such as AI and AR/VR, particularly interesting, especially in the context of their potential use in Apple's Vision Pro in 2024.
- Business and Sales Executions
- AI and Creative World
- About sustainability
- Career discussions in STEM fields
- About the integration of STEAM
- As a chemical engineer, I would be interested in having more visits to chemical plants.

- Artificial Intelligence and Data Science
- Sustainability

Q-13. Please describe your suggestions, idea, and comments for Tokyo Tech-AYSEAS.

- It was very invaluable opportunity. Definitely glad I was able to attend!
- I think it's a good idea to let people in the same group stay in the same room, which helps them to proceed with their preparation for their final presentation. Also, if some visit sites are related to other fields than chemistry and physics, more people who major in other fields will be more willing to participate.
- Maybe it will be nice for participants from member university if we provide a seseion about Tokyo Tech (admission in general, etc) because I think most of member uni participants are interested to apply to Tokyo Tech
- I think it would be better if there is a introduction of research being done at the host university.
- The curriculum is substantial, but I was tired from the overcrowded schedule, so I would like to have a more relaxed schedule with a little more middle break in between.
- I think the schedule of ayseas is very tight. How about making visiting institutions selective?
- Most of the facilities we visited are basically good, however, the selection is biased towards mechanics. In particular, environmental problems were not focused.
- It would have been nice if the format of the final presentation was indicated in addition to the time. But overall it was a good program!
- This program is amazing, so amazing that everyone can get something. This is the experience and the memory of my life. I can get better and better having this unless I die. I would like to say Thank You to the people who managed and joined this program. Thank you so much!!
- "In this program, we visited many factories and research institutions. most of them study or explain how to produce products and how to do it more efficiently. In other words, we hardly visited a place where pure science is studied. so I think this program would be better, visiting such places.
- The overall of the program is very good but for me I think the factory and the organization mostly related to the Chemical, Mechanical, and Electrical branches. So, for me I think it would be better if we can add or adapt the program in visit place session into more program related more than just these 3 programs.
- I really enjoyed getting to know other students and befriending them! Perhaps next time I would like a bit more free time, but otherwise I would love to go next year again ^^
- I enjoyed the program, it made me realize lots of things about my major and what I want

to pursue in the future

- "I believe Tokyo Tech-AYSEAS has achieved success in various areas. If I were to make a suggestion, it would be regarding our site visits, which have often been unrelated to my field of computer engineering or only indirectly related. Therefore, if possible next year, I suggest that Tokyo Tech-AYSEAS consider visiting companies or start-ups that specialize in software, including various mobile applications.
- I want to express my heartfelt gratitude for selecting me to participate in this program. It's been an invigorating experience. I might be exaggerating a bit, but having friends from various fields stay together for just 10 days and 9 nights has brought me immense joy. If the opportunity arises next year, I will eagerly return to this program."
- This is something that I would recommend highly to anyone in the university. This did not just enticed me to learn more but I also made friends along the way.
- For me I think that all of the activities are very interesting, I think this program should get more longer for staying in program because 10 days for me it’s too short □
- I truly appreciate the time and effort that was dedicated for the utmost experience of the students.
- I hope that after visiting industry or organizations, participants can then determine what kind of idea they want to realize. So, participants have not chosen what topic they want to raise from the start of the meeting. The benefit of industrial visits is that participants get innovations, then they discuss them with their group. And the products or services they offer should be closely related to the industry or organization they have visited. Participants are also expected to collaborate directly with the industry or organization. This program is expected to be a mediator towards an unlimited window for science. So, the visit is applied to the project.
- The program overall was well prepared. We got to experience a good variety of fields in STEM and had fruitful discussions with our co-participants.
- Very great program