KEMENTERIAN PENDIDIKAN MALAYSIA

KOLEJ KOMUNITI MALAYSIA

REPORT

JAPAN ASIA YOUTH EXCHANGE PROGRAM IN SCIENCE 2018 : SAKURA EXCHANGE PROGRAM IN SCIENCE

4 - 10 FEBRUARY 2018

JAPAN INTERNATIONAL SCIENCE AND TECHNOLOGY EXCHANGE CENTER (JISTEC), TOKYO, JAPAN

DEPARTMENT OF POLYTECHNIC AND COMMUNITY COLLEGE EDUCATION

2018

REPORT JAPAN ASIA YOUTH EXCHANGE PROGRAM IN SCIENCE 2018 : SAKURA EXCHANGE PROGRAM IN SCIENCE

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DIRECTOR GENERAL
DEPARTMENT OF POLYTECHNIC AND COMMUNITY COLLEGE EDUCATION
MINISTRY OF EDUCATION MALAYSIA

Congratulations to the Malaysian delegation comprising of officers from Department of Polytechnic and Community College Education (DPCCE) who have been selected to participate in the Japan Youth Exchange Program in Science 2018: Sakura Exchange Program in Science in Tokyo, Japan from 4 to 10 February, 2018. This is the first time a delegation of seven officers from DPCCE was invited to be part of this programme which was fully sponsored by the organizer, Japan Science and Technology Agency (JST).

Participation in this program is in line with Malaysia Education Blueprint 2015-2025 (Higher Education): Shift 2: Talent Excellence where the objectives is to enhance the academic community's talent to be more

relevant, referred and respected. Thus, officers are encouraged to continuously strive to raise quality standard, and embrace professional development to inspire their students.

The opportunity to participate in such a program will certainly instill and increase values of excellence in the development of innovation and creativity and these values can be shared with the students.
This report is a sharing of the delegates' experience and findings of the TVET education system and educational policies in Japan, Indonesia, Vietnam and Thailand. Delegates also took the opportunity to promote the TVET Education System in Malaysia to the other participants and the host. The findings and proposals of this program could be taken into consideration in establishing a collaborative network with the countries involved.

To conclude, I would like to congratulate the Malaysian delegation for the effort to produce this report. I would also like to express my gratitude and appreciation to the organizers of Japan Asia Youth Exchange Program in Science 2018: Sakura Exchange Program in Science for the opportunity to participate in this programme. It is hoped that the continuous cooperation with Japan Science and Technology Agency (JST) will boost the future of TVET Education System in Malaysia.

PROF. DATO 'Ts. DR. MOHD ISMAIL BIN ABD AZIZ
Director General
Polytechnic and Community College Education Department

ABSTRACT

Japan-Asia Youth Exchange Program in Science (SAKURA Exchange Program in Science) 2018 is the program for enhancing exchanges between Asia and Japan of the youths who will play an important role in the future field of science and technology. The competent Asian youths was selected among the lecturer, post doctorial researcher or officer who is under 40 years old, and has never stayed in Japan before basically. In this program, Japan Science and Technology Agency (JST) invites eligible youths from Asian countries which is Malaysia, Indonesia, Thailand and Vietnam and provide opportunities for the delegations to see the most advanced scientific technology of Japan and contract outstanding scientists. This program was implemented through the close collaboration of industry-academia-government by facilitating short-term visits to high school, universities, research institutions and private companies in Japan. By this program, Asian delegations was enjoyed a significant experience in Japan that can contribute to the development of science and technology in Japan and Asian countries.

1. INTRODUCTION

The Japan-Asia Youth Exchange Program in Science (Sakura Science Plan: SSP) is a short-term invitational program launched in 2014 by Japan Science and Technology Agency (JST), targeted at aspiring young people in Asia. The program aims to promote innovation in Asia by deepening participants' knowledge of science and technology and encouraging the active exchange of ideas and opinions in a multi-lateral environment. The program goal is to help to nurture aspiring young scientists in Asia. For the 2018 SSP, 7 officers from the Department of Community College Education have participated in the 7 days program representing Malaysia.

2. PROGRAM/VENUE/DATE

Program: Japan Asia Youth Exchange Program, In Science 2018 : Sakura Exchange Program In Science. Japan International Science And Technology Exchange Center (JISTEC), Tokyo, Japan.

Date: 4-10 February 2018.

3. OBJECTIVE

i. To share Malaysia TVET system and policy with other participants from different countries.
ii. To create sustainable partnership and collaborations with Japan Science and Technology.
iii. To introduce and promote TVET Malaysia to other countries.
iv. Enhance exchanges of youth between Malaysia and Japan.

4. ORGANIZER

Japan International Science And Technology Exchange Center (JISTEC)

5. REPRESENTATIVES FROM MINISTRY OF EDUCATION

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Mr. Roazam Bin Ahmad

Assistant Director Academic

Sungai Petani Community College

Aznur Anuar Bin Ab Azid

Director

Kuala Kangsar Community College

6. ACTIVITIES

The program itinerary as in Appendix 1.

DAY 1: 4 FEBRUARY 2018 (SUNDAY)

DEPARTURE TO TOKYO

Seven participants from Department of Community College has been selected to represent Ministry of Higher Education to attend the Japan-Asia Youth Exchange Program in Science: Sakura Exchange Program in Science in Tokyo Japan.

Picture 1 : Participants departure from KLIA

The participants depart from Kuala Lumpur International Airport (KLIA) at 9.50 am and arrived at 5.30 pm in Narita International Airport. Upon arrival, the Japan International Science and Technology Exchange Center (JISTEC) representative brought the participants to Tokyo Chinese Muslim Restaurant in Kinsicho, Tokyo. During dinner, all participants had an ice breaking sessions, led by the Japan International Science and Technology Exchange Center (JISTEC), Miss Kasumi McAlister. After done with dinner, all participants are taken to Sotetsu Fressa Inn Tokyo Kinsicho.

DAY 2: 5 FEBRUARY 2018 (MONDAY)

JAPAN SCIENCE & TECHNOLOGY AGENCY TOKYO HEAD QUARTERS

Introduction

Japan Science and Technology Agency (JST) is a major Japanese funding agency that works vigorously to implement science and technologies policy in Japan. JST clear mission is to create innovation in close cooperation with the Ministry of Education, Culture, Sports, Science, and Technology of Japan (MEXT).

JST is also engaged in providing a sound infrastructure of science and technology information, raising awareness, encouraging an understanding of science and technology related issues in Japan, and promoting various international cooperation and exchange programs, including the Sakura Science Program (SSP).

The visit to the JST Tokyo Headquarters was held for two hours. Three main sessions were carried out during the visit mainly focused on sharing of knowledge and ideas: Greetings by JST Representative, Presentations by KOSEN/JST, Presentations of Each Country Representative. The sessions were moderated by Mr. Fumihiko Imamura from Japan International Science and Technology Exchange Center (JISTEC).

Activities

The greetings or welcome address was given by Mr. Sotaro Ito, the Deputy Director General of Japan-Asia Youth Exchange Program in Science Promotion Office. In his speech Mr. Ito has expressed his sincere gratitude to the all participants who are willing to join this program. He also took the opportunity to welcome all the participants to Japan and hoped that the program will be impactful so that it can benefit all parties involved. In order to break the ice, every participant was also requested to introduce themselves during this session.

The KOSEN/JST presentations were given by three speakers, Mr. Yuji Kato, Mr. Nobuyuki Fukasawa and Mr. Hiroshi Omura representing JST, SSP and KOSEN respectively. Mr. Kato presented some useful information such as introduction of JST as well as their activities, mission and strategy in becoming an advanced network-based research institute that promotes the state-of-the-art R&D projects and boldly leads the way for creation of futuristic innovation together with the society. The next presentation was given by Mr. Fukasawa who shared about the outline of the SSP which was initiated in 2014 with 14 countries and regions in Asia. SSP is a short-term invitational program which aims to enhance exchanges of youth between Asia and Japan in the field of science and technology, contribute to nurture youth in Asia in the field of science and technology, and raise the interest of Asian youth towards Japan’s science and technology. Mr. Omura was the last presenter of the session who spoke about a very unique education system in Japan known as KOSEN or National Institute of Technology (NIT). KOSEN aims to produce innovative and practical engineers where it

promotes the growth and changes the society for the better human life in utilizing science and technology.

Picture 2: Mr. Omura answering the questions rose by participants during his presentation about KOSEN

In the final session, presentations were given by the representative of each country about the technical and vocational education and training (TVET) system in their own country. Mr. Muhamad Fajar Subkhan from Indonesia presented about the vocational education system in his country. Indonesian vocational education system consists of several institutions such as Community Colleges, Polytechnics, Academies, Institutes and Universities. In Indonesia there are 3152 Universities, Institutes and Colleges, 1103 Academies and 262 Polytechnics, that provide vocational education from specialist, profession and diploma programs with the duration of study range between 1 and 4 years. Among the policies related to TVET system outlined by Ministry of Education and Culture Indonesia are to instill

entrepreneurship subject, focus on planning the development and expansion of TVET, foster employers' involvement in making the national TVET policy, strengthening training in mastery of key competencies such as Literacy, Mathematics, Communication, Teamwork, etc., provide continuing education and training, and develop competency standards, recognitions and certification of skill. The next presenter was Dr. Syafizwan Nizam bin Mohd Faroque who represented Malaysia. Dr. Nizam presented about the current policy and development of TVET in Malaysia which based on several strategic documents such as Malaysia Education Blueprints, National Higher Education Strategic Plan Beyond 2020, Blueprint on Enculturation of Lifelong Learning for Malaysia 2011-2020 and Eleventh Malaysia Plan 2016-2020. Currently in Malaysia there are 36 and 94 Polytechnics and Community Colleges respectively, which provide TVET programs from Certificate to Bachelor's Degree levels.

Picture 3 : Dr. Nizam presenting about Community College and TVET system in Malaysia

Malaysian Polytechnics and Community Colleges aim to be the leading-edge TVET institution. Their missions are to provide wide access to quality and recognized TVET programs, empower communities through life-long learning, develop holistic, entrepreneurial and balanced graduates, and capitalize on smart partnership with stakeholders. Dr. Thiradet Jiasuksakun and Dr. Kittisak Kaweekijmanee represented Thailand in the third presentation slot of the session. Dr. Jiasuksakun introduced the overview of engineering and TVET education in Thailand that can provide three qualification levels, i.e. Vocational Certificate, Higher Vocational Certificate and Bachelor's Degree. Upon finishing lower secondary school, students have the options either to enter upper secondary school or Vocational Certificate program, both for three years. Students who have finished the Vocational Certificate program can subsequently enter the Higher Vocational Certificate for two years and are eligible to enroll for a Bachelor's Degree studies upon successfully completing the program. Next, Dr. Kaweekijmanee shared about a special project instigated by the Ministry of Education and the Ministry of Science and Technology Thailand known as the Science-based Technology School (SBTS) comprising five national vocational schools for gifted and talented students who have developed skills in invention and technology. The aim of the SBTS project is to develop those gifted and talented students to become future technologist or innovator. Dr. Kaweekijmanee also shared STEM capacity building of teachers and students, vocational education for workforce development, and awareness and partnership building for STEM & vocational education in Thailand. The final presenter in this session was Dr. Pham Xuan Bach representing the Vietnam delegation. Vietnam TVET

system consists of long term and short term vocational training for 1 to 3 years and less than 1 year respectively. As a way forward, Vietnam has outlined 9 strategies to be taken in order to leverage the country's TVET system: build a National Vocational Qualification Framework (NVQF), renovate state management of vocational training, ensure the quality of vocational training, control of vocational training quality, link vocational training with the labor market and the participation of enterprises, mobilize resource for the vocational training sector, raise awareness of vocational training development, and promoting international cooperation in vocational training.

Picture 4 : Dr Nizam as a representative of Malaysian Delegation presenting a plaque to Mr Sotaro Ito, Deputy Executive Director of JST

Reflection

There are some useful information obtained as a result of the visit to the JST Tokyo Head Quarters:

1) Every country has different entry requirements into TVET institutions in terms of prior education, academic achievement, age, etc.
2) Networking is important to encourage the sharing of ideas and knowledge and technology transfer between countries.
3) Good education quality and collaboration with the industries implemented in KOSEN have successfully maintained their graduate employability at 100%.

There are some issues and challenges that need to be overcome in order to improve the quality of TVET system in the country which includes:

1) Mismatch in quantity and quality for both TVET institutions and universities.
2) Lack of recognition towards TVET track in terms of career path, professionalism, salary determination, access to higher education and social acceptance.
3) Weak TVET-industry collaborations.
4) Shortage of skilled and competent TVET instructors.
5) Obsolete or outdated curriculum which mismatched with the rapid technology advancement.

CHIBA INSTITUTE OF TECHNOLOGY TOKYO SYKTREE TOWN CAMPUS

Picture 5 : View of the building located beside Tokyo Skytree Tower

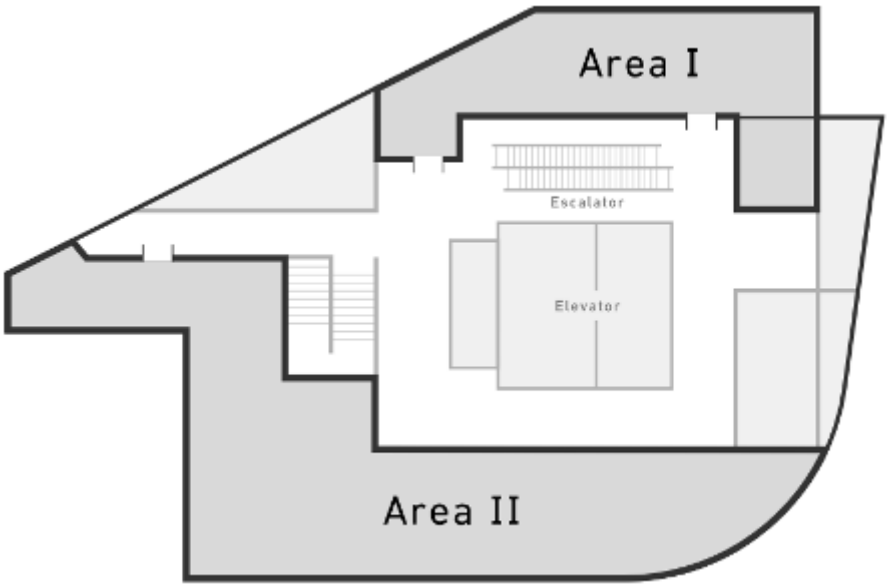
Picture 6 : The Tokyo Skytree Town Campus Entrance

Introduction

On February 5, 2018, SAKURA Exchange Program in Science participants were brought to visit a new campus of the Chiba Institute of Technology, the Tokyo Skytree Town® Campus which is located at Sumida-ku, Tokyo beside the second tallest tower in the world, Tokyo Skytree Tower. The visit took about one and a half hour. The Tokyo Skytree Town® Campus was opened on May 22, 2012. It is open to the public every day from 1030 to 1800 as an experiential action zone, applying the leading edge technologies developed through the research activities at Chiba Institute of Technology. Here, everyone is free to experience the technology of the future.

The exhibition presents the research findings of Chiba Institute of Technology Future Robotics Technology Center (fuRo), Planetary Exploration Research Center (PERC) and Software Technology and Artificial Intelligence Research Laboratory (Stair Labs). The Tokyo Skytree Town Campus is intended to develop continuously in step with the functions and roles required by the times, forming a bridge linking individuals, the university and society at large.

Tokyo Skytree Town Campus is divided into 2 sections. Floor map below shows the location of area 1 and area 2 of the exhibition center.



Picture 7 : The Tokyo Skytree Town Campus floor map

Activities

Upon the arrival of the participants at the exhibition, participants were divided into 2 groups. Malaysia and Thailand delegates were in one group meanwhile Indonesia and Vietnam delegates were in another group. Each group was accompanied by a tour guide along the visit. Malaysia and Thailand group started the tour at Area 1 meanwhile Indonesia and Vietnam group started the tour at Area 2. Area 1 and Area 2 exhibition center highlights is as listed below. At every point of exhibition, detail briefing and demonstration were held to deliver full information and experience of the technology.

Area 1 Exhibition

Robotic Shadow

Using 3D sensor technology, duplicate is enacted on a large screen as if a magnetized aggregate of cubes, toward which spheres is hurled and scatter the cubes

Picture 8 :Participant of the program experiencing Robotic Shadow technology

Hananona

Visualization of how artificial intelligence has learned over 300,000 flower photos

Picture 9 : Participant was briefed about the use of Hananona

Picture 10 : Sample of the flower images

Rescue Robot

First Japanese robot employed at Fukushima Nuclear Power Plant

Picture 11 : Rescue Robot unit

Picture 12 : Demonstration of the Rescue Robot climbing steps and went through obstacles

Rescue Robot Simulator

Robot operator training software

Picture 13 : Participant experiencing Rescue Robot Simulator

Robot Anatomy

A robot consists of a number of precision components such as cameras and sensors to understand its surrounding environment, motors to achieve complex motions, and computers that integrate and control them.

Picture 14 : Participant experiencing the complex view of Robot Anatomy

Halluc Ii, Halluc IiX

A future vehicle that transforms into three modes and travels in any direction on legs or wheels

Picture 15 : Halluc model

Magic Card On The Fly Paper

A mere paper card quickly turns into a tablet computer

Picture 16 : Demonstration on how Magic Card turns into tablet computer

Gigantic Robotic Screen

Use the gigantic screen to anatomize a robot and manipulate its design sheets

Picture 17 : Wide view of Gigantic Robotic Screen inside the Exhibition Center

Morph

Humanoid robots with advanced functionality

Picture 18 : Participants was briefed on Morph robot capabilities

Picture 19 : Morph version 3 unit

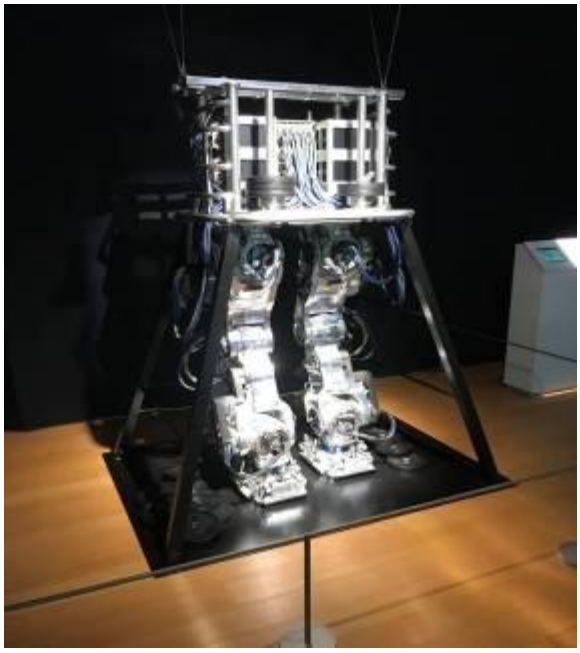
Hallucigenia01

Next-generation multi-purpose vehicles with eight wheel modules

Picture 20 : Hallucigenia model on display

Core

A biped robot that carries the world's heaviest payloads



Picture 21 : CORE robot model

Robot Eye (Sensor)

Using 3D distance information, a robot can grasp the surrounding topography and obstacles

Picture 22 : Robot Eye sensor located at the main entrance of the Exhibition Center

Area 2 Exhibition

Astrogate

The space door has opened! Get ready to launch!! Visitors are greeted with responsive messages and visuals as they pass through. The “Interactive Visual Gate” is the embarkation point for the space tour.

Picture 23 : Astrogate is located at the entrance of Area 2 with responsive messages and visual

Step Tap

Play with planets, stepping and kicking them around a visual game using augmented reality (AR)

Picture 24 : Participants having fun playing with Step Tap visual game

Solar System Grand Tour

Venture out on a journey to the solar system with a 120-inch planetary guide.

Picture 25 : Demonstration on a journer to the solar system using Solar System Grand Tour

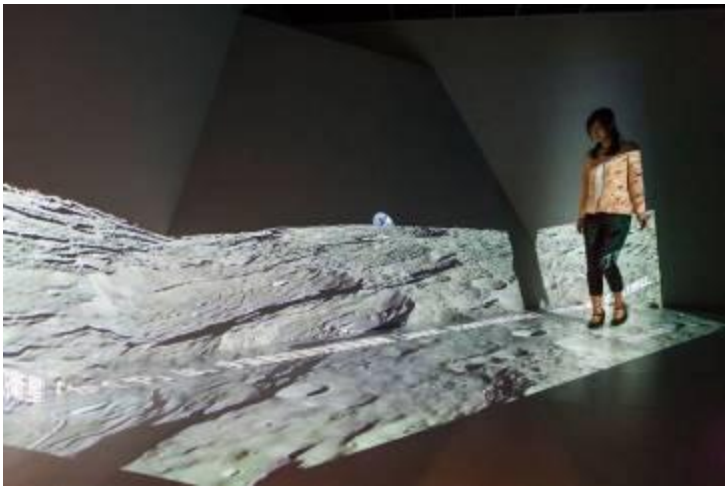
The Sword Of Heaven ("Tentetsutou")

A Japanese sword forged from ameteorite, the "Sword of Heaven"

Picture 26 : Japanese sword "TENTETSUTOU" on display

Moon Walker

Travel the surface of the moon with high-resolution images from the "Kaguya" lunar probe



Picture 27 : Participant experiencing travelling the surface of the moon using Moon Walker

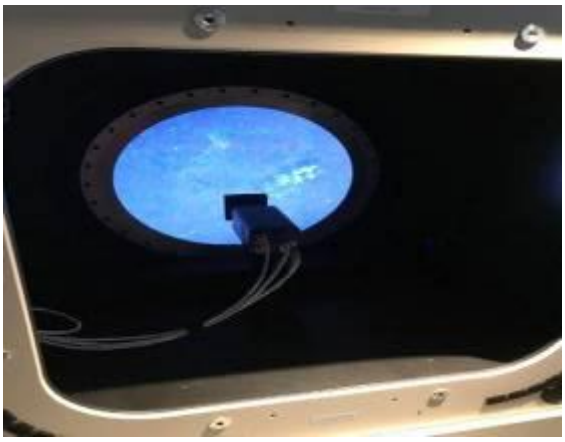
300-Inch 3d Space Theater

A 13.8 Billion-Year Space Voyage-The Earth and Life. This theater was realized with full cooperation by “Godzilla” Director, Koichi Kawakita. We Invite You on a Journey through Time and Space with 300-Inch 3D and 5.1 ch Surround Sound

Picture 28 : Participants experiencing 300 inch 3D space theater through the story of 13.8 Billion-Year Space Voyage-The Earth and Life

Meteor

World’s first! “ Long-term observation of meteors from space”



Picture 29 : Demonstration on how observation of meteors at space were recorded

Valkyrie Vf-25f

The Main Macross Frontier Machine ‘Valkyrie VF-25’ Appears in Life Size at Solamachi (first permanent exhibition) Hidetaka Tenjin Invited to Produce an Exhibition of Unprecedented Detail!

Picture 30 : Main Macross Frontier Machine ‘Valkyrie VF-25’ on display

Reflection

Picture 31 : Malaysia delegation handing over plaque as a souvenir to the representative of Tokyo Skytree Town Campus at the end of the visit

The Tokyo Skytree Town Campus visit was a great experience for all the participants of the program. We were briefed in detail and experiencing first-hand into the latest technology applied in Japan. Below are the findings obtained from the visit:

The Tokyo Skytree Town Campus exhibition shows a clear view of the Japan greatest achievements in Science, Robotic and Space Exploration.
The knowledge obtains in various types of robot used on field was great. Participants were experiencing first-hand in controlling the robot using simulator. Through simulation, it increases the awareness of the importance of robotic technology in the future.
Experiencing the exhibition display, it really shows us the importance of innovation and research in our country. The exhibition visit creates ideas and passion into creating great innovation in Science and Technology.
The Tokyo Skytree Town Campus exhibition highlights the importance into new technologies that we should concern such as the Internet of Things, AI (Artificial Intelligence), Virtual Reality /Augment Reality and Big Data (analytics).

DAY 3: 6 FEBRUARY 2018 (TUESDAY)

NATIONAL INSTITUTE OF TECHNOLOGY (KOSEN), JAPAN

Introduction

KOSEN is a very unique and successful educational system in Japan for higher educational on engineering. There are few uniqueness that can be seen in KOSEN.

KOSEN is a higher tertiary education institute that have 5 years from 15 years of experience in engineering education and 2 years in advanced course. This institute emphasizing on scientific experiments, workshop training and practical manufacturing skills.

Besides, all KOSEN college have their own dormitory on or near the campus to make it easy for the students to go to study.

There are 51 KOSEN colleges that are nationwide in Japan. They have more than 50,000 students learn there include about 500 international students. About 4000 faculty members have doctoral degree (PhD).

As KOSEN is the higher tertiary educational institute, not all students can enroll there. After finishing compulsory education- primary and secondary, only 1% of students can enter into KOSEN colleges. Those who are interested in engineering, highly motivated with an excellent academic achievement of Mathematics and Science can apply and be the students there.

Graduates from KOSEN get jobs in Japanese major companies. The companies offer more than 20 offers for each graduates to work in Japan

and if they want to, they have also the possibility to enter the top class universities in Japan.

To sum up, in order to acquire both knowledge and skills for engineering it is the best way to learn in KOSEN. This is because the high level education in KOSEN is on par with university with academic research provided. As you know, higher education can be obtained from both industry and university.

Activities

Greeting from a representative from the ASEAN Delegation and Photo Session.

Picture 32 : Photo Session ASEAN Delegation with Dr. Isao Taniguchi, President of National Institute of Technology (KOSEN), Japan.

Presentation from Dr. Isao Taniguchi, President of National Institute Of Technology (KOSEN), Japan.

Pictures 33 : Dr Isao Taniguchi President of National Institute Of Technology (KOSEN), Japan.

Pictures 34 : Participant from ASEAN Delegation - Malaysian, Indonesian, Siamese and Vietnamese.

Question and Answer Session.

Picture 35 : Q&A Session From Malaysian Delegation

Picture 36 : Q&A Session From Indonesian Delegation

Picture 37 : Q&A Session from Vietnamese Delegation

Picture 38 : Q&A Session From Siamese Delegation

Reflections

1. To encourage KOSEN graduates to become Social Doctors and Creators.
2. Social Doctors are those who need to keep the society healthy and treat properly for recovering the society healthy, when the society has problems. They need to behave like doctors for the society.
3. Engineers also create new concepts/new values/new technology for the future society. This means engineers will be creators.
4. For an example the Pokemon Inventors also from KOSEN.

TOKYO STATION

Travelled from Tokyo to Nagoya by Japanese Bullet Train (Shinkansen) at Tokyo Station.

Picture 39 : At Tokyo Station, Japan

Picture 40 : Bullet Train Transportation (*Shinkansen*)

Pictures 41 : Malaysian and Indonesian Delegation

Pictures 42 : Vietnamese and Siamese Delegation

NATIONAL INSTITUTE OF TECHNOLOGY (NIT), TOYOTA COLLEGE

Introduction

Foundation of the College

The remarkable development of Japanese industry since 1950s urgently demanded numbers of qualified engineers. In 1961, the Ministry Of Education revised a part of the school system to found the National Institute of Technology which was a new style of a higher institution for technological education.

This unique college has two major characteristics. Firstly, it provides an engineering education to students who have graduated from junior high school. Its educational style is not only composed of technical lessons but of the liberal arts, which are compiled in a well arranged curriculum for five academic years. Secondly, the practical aspect of engineering is emphasized through many credits of experiment. It aims to train young students to be outstanding engineers with practical abilities as well as scientific viewpoints.

National Institute of Technology, Toyota College was established in April, 1963 in the City of Toyota, which is a significant center of the automobile industry in Central Japan. An additional revision of the law in 1991 enabled our college system to have a two-year advanced engineering course following the five-year college course. The advanced engineering course was added to our college system in April, 1994. The students have the opportunity to acquire research experience in developing new engineering products or systems and to create new technologies for future generations.

By another revision of the law, we started as a college which was established by the National Institute of Technology, Japan, in April 2004.

Activities

Welcome address by a school principal and overview of the school

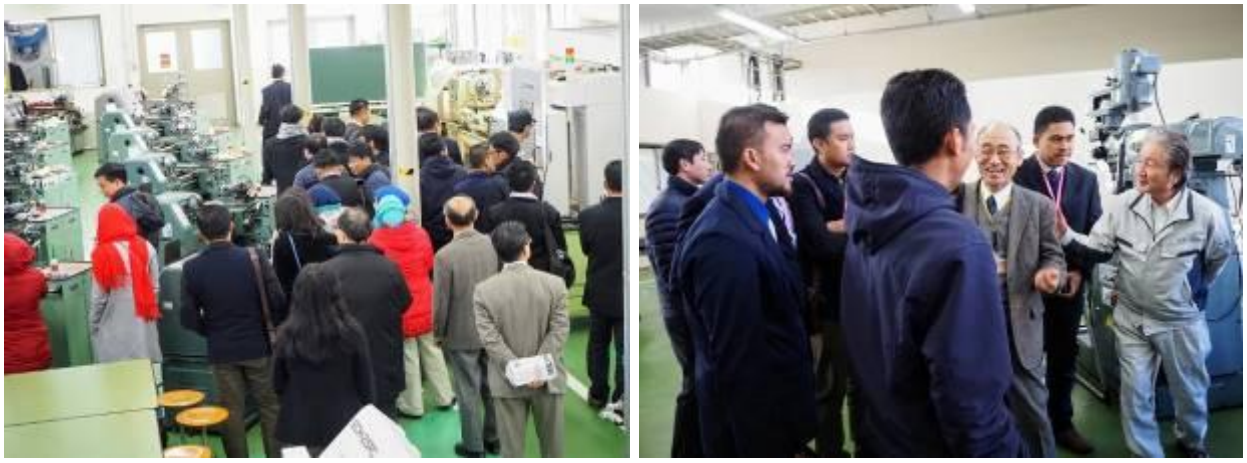
Picture 43 : Presentation by Mr. Tagawa, Tomohiko, President National Institute Of Technology, Toyota College

Picture 44 : Greeting from a representative from the ASEAN Delegation lead by Dr Syafizwan Nizam Bin Mohd. Faroque, Malaysian Delegation.

Pictures 45 : Dr. Hitoshi Nishizawa, Chairman of Advanced Engineering Course NIT, Toyota College explain about the students paticipating competitions such as Robocup Soccer

Facility Tour CNC Workshop/Laboratory

Pictures 46 : Introduction brief by Miss Sakura as Tutor at CNC Workshop/Laboratory



Pictures 47 : Dr. Hitoshi Nishizawa, Chairman of Advanced Engineering Course NIT, Toyota College explain about the facilities at CNC Workshop/Laboratory.

Tour at school dormitory

Picture 48 : Dr. Hitoshi Nishizawa, Chairman of Advanced Engineering Course NIT, Toyota College explain about the school dormitory

Picture 49 : Dr. Hitoshi Nishizawa, also lead the site visit of school dormitory

Tour at school library

Pictures 50 : Dr. Hitoshi Nishizawa, explain about the Research of Extensive Reading (ER) method in English among the students to improve their English communication skills.

Exchange discussion with students and teachers

Picture 51 : Mr Nobuyuki Fukasawa brief to ASEAN students before discussion session

Picture 52 : Miss Syahirah, Malaysian student at Toyota College

Pictures 53 : Malaysian representative, Mrs. Mornizawati and Mr. Roazam participate during the discussion session

Picture 54 : Malaysian representative, Ms. Zarina exchange views and opinion

Picture 55 : Photo Session at National Institute Of Technology, Toyota College with Mr. Tagawa, Tomohiko

Reflections

1. The National Institute of Technology, Toyota College has a total of 51 national colleges.
2. Their student's statistic show that 50% of students are involved in job market as a young engineer, 40% of students go to third year University and 10% of them to advanced Engineering Course.
3. In 1 year there are only 14 students in each courses, 200 students are in foundation course and 15 students are in advance course. The total of students enrolments are only 650 students only.
4. The learning approach is more to Learning Practical Skills such as Mechanical Engineering, Electrical and Electronic Engineering, Information and Computer Engineering, Civil Engineering and Architecture.
5. All the programs are accredited by Japan Accreditation Board for Engineering Education (JABEE).
6. NIT students very active join all competitions such as Participating Competitions such as Robot, Programming, Robot Football (RoboCup Soccer) and Design Creative.
7. Extensive Reading (ER) method has been implemented to improve their English communication skills. This method maybe we can execute to our Community College system.
8. Special dormitory/hostel is available for the best student.

DAY 4: 7 FEBRUARY 2018 (WEDNESDAY)

KOJIMA INDUSTRIAL CORPORATION

Introduction

Kojima Industries Corporation was founded in 1938 and is based in Toyota City, Japan. The Company is a member of Toyota Group, and is the manufacturer of interior and exterior automotive parts for the Toyota Group. The products composite parts incorporating technology on electronics, plastic, and iron. The parent organization of the companies, the Kojima Group, has more than 30 affiliate companies and organizations with over 7,500 employees.

Based on the management philosophy of “one-business, one-company management, and in order to produce the best products at the cheapest prices, each company work as independent and developed management techniques for producing and managing specialized products.

Picture 56 : Participants with representative of Kojima Industrial Corporation

Picture 57 : The overview of Kojima Industrial Corporation

Activities

Upon the arrival in Kojima Industries Corporation, the participants were brought to the briefings session on the introduction and overview of the company by the Manager of Kojima Industrial Corporation and Vice-Principal of National Institute of Technology, Toyota College. Throughout the session, the participants had been acknowledge about the history of the company collaboration with Toyota Group. As Toyota Group was founded in 1937, the founder of Kojima Industries Corporation had proposed on the collaboration of producing vehicle parts for Toyota Group.

With the development of technology and Toyota products, Kojima Industries Corporation also worked on research development to explore to new business opportunity such as artificial spider synthetic spider thread material and autonomous vehicle.

The participants also were brought to see the exhibition of autonomous car that being developed by Kojima Industries Corporation. This project are estimated to be launched in 2027, and need more research to complete the development of prototype of autonomous car. On the day of the visit, the participant were informed that the project has completed 50% of the whole prototype development. Participants from each country also has been given the opportunity to operate the autonomous vehicle prototype.

Kojima Industries Corporation also had invited three former students from National Institute of Technology, Toyota College who have also worked with Kojima Industries Corporation since graduated. One of them is Mr. Shigemi Kawai, who has been working for 30 years as Production Engineer with Kojima Industries Corporation. He presented about the system of

education that being implemented in National Institute of Technology, Toyota College and the collaboration between KOSEN and industries that give benefit to both parties. Through his presentation also, Mr Shigemi Kawai explained the products of vehicle parts that being developed by his team since he work in Kojima Industries Corporation. Miss Masako, who has been in Kojima Industries Corporation for 10 years as Quality Assurance Engineer, shared about the Project Based Learning concept that being applied during her study in Toyota College. The participants also being informed about the employer welfare and benefits that had been provided by the industry throughout their service.

Malaysian participants also had actively participated during the discussion and Q&A session with Kojima Industries Corporation by discussing on the academic evaluation by the industry for Toyota College students, and also the technology applied to build autonomous vehicle prototype.

Picture 58 : Presentation by Mr. Shigemi Kawai

Picture 59 : Presentation by Miss Masako

Picture 60 : Malaysian representative, Mrs Norawati participate during the discussion session.

Reflection

1. The collaboration since 1938 between the industry and Toyota College is based on the concept of loyalty which gives impact to prolonged cooperation.
2. Collaboration between the industries and KOSEN plays an important role in ensuring that graduates from KOSEN will become experts in their field.
3. The industry helps the institution in providing technical education and training based on the development of technology. As return, the graduates will contribute back to the industry and develop better technology suitable to the demand of the industry.

TOYOTA INNOVATION CENTER

Introduction

Toyota Motor Corporation, in Toyota City has lead the car industry and as major automotive part manufacturers. In the automobile industry, various changes are anticipated in the future, such as building a global production system, next-generation automobiles, and responding to advanced information and communication technologies. In order to cope with such changes, regional SMEs need to solve various problems such as technological improvement, human resource development, development into new fields, and so on. However, it is not easy for medium-sized enterprises with limited management resources and manufacturing centers (SENTAN) to independently address these challenges. Therefore, as part of the "Toyota City's most familiar support organization" to support the resolution of technical management issues of regional manufacturing companies, in collaboration with the three members of Toyota City, Toyota Nakadeni College of Technology and Toyoda Chamber of Commerce and Industry,in June 2012, Toyota Innovation Center was established. Since September, 2007, they started operations at the 2nd floor of "Manufacturing Creation Base SENTAN (Sentan)" and 2 offices in Toyoda National College of Technology Techno Center and Toyota National College of Technology Collaborative Techno Center.

The Center, which the three parties operate in cooperation, provides,

i) Human resources development for manufacturing,

ii) Technology and management consultation, and

iii) Support for creating new technologies and new industries in order to develop regional enterprises.

Picture 61 : All participants with representative of Toyota Innovation Center

Activities

Upon the arrival in TOYOTA Innovation Center, the participants were brought to the briefings session on the introduction and overview of the center by the representative of TOYOTA Innovation Center. This center actively participated in providing training manufacturing engineers program for young engineers in the manufacturing industry. The participants also being informed that the center provide a practical curriculum combining theory by professors of Toyoda National College of Technology and regional universities with practical skills and experiments with abundant teaching materials and curriculum closely tailored to manufacturing by corporate training institutes and internal lecturers in cooperation with regional companies.

After the briefing sessions, all participants were brought to visit the laboratory that provide spaces and tools for the students, or community to discuss, design and developed new innovation project. The representative also presented few projects that created in SENTAN.

Picture 62 : Briefing session by the representative of Toyota Innovation Center

Picture 63 : Visit to SENTAN Laboratory

Picture 64 : Briefing on the facilities provided in SENTAN for Innovation Project

Reflection

1. Toyota Innovation Center are established to ensure that the younger generation can generate new ideas to support the development of technology.
2. The center also helps the industry to identify the best ideas generated by students or local communities to be used in their project development.
3. There are various innovative products created to facilitate the demands or needs in daily routine.

TOYOHASHI UNIVERSITY OF TECHNOLOGY

Introduction

The Toyohashi University of Technology was opening in 1976. The TUT philosophy and motto is 'Master Technology, Create Technology'.The mission of Toyohashi University of Technology (TUT) is to conduct research and education in technological science, developing new technologies through scientific inquiry. Based on this mission, TUT targets new graduates from technical colleges and high schools for enrollment. TUT carries out research in technological science with an emphasis on postgraduate study, fostering the new generation of engineers who will find practical solutions to the challenges of tomorrow. While focusing on science, TUT nevertheless emphasizes the importance of social context. Accordingly TUT strives to promote social diversity and works to enhance collaboration with the local community. Through these efforts, TUT strives to be a top-class engineering university that is open to the world.

The university Features and activities are ;

i. "Spiral-up Curriculum
ii. Fostering advanced engineers and innovative human resources,
iii. Upgraded and refocused as a new, future-oriented education and
iv. research organization
v. Educational system focused on postgraduate education and research
vi. Research university (Foundational research and research in cutting-
vii. edge fields)

viii. Collaboration with Kosen (National Institute of Technology) colleges
ix. Active international relations
x. Varied industry-academia-government collaboration and cooperation
xi. with the local community

With these features and activities, The TUT conducted training and higher education for more than 2160 students in 88 acres campus size. Based on statistic, 8% of the students (173) are International students which came from Asia (India, Bangladesh, Malaysia, Singapore, Indonesia etc), Central & South America, Europe, Middle East and Africa.

The university Fields of study are Mechanical Engineering, And Electronic Information Engineering, Computer Science And Engineering, Enviromental and Life Sciences, Architecture and Civil Engineering & Institute of Liberal Arts and Sciences.

Under the Formation of a Value Creation Engineering Research Core, the TUT have Research Centers and Laboratories to support the research activities. The centers are Electronics-Inspired Interdisciplinary Research Institute (EIIRIS), Venture Business Laboratory, Center for Human-Robot Symbiosis Research, Research Center for Agrotechnology and Biotechnology, Research Center for Future Vehicle City, Research Center for Collaborative Area Risk Management (CARM), Information And Media Center & Cooperative Research Facility Center. The

Picture 65 : Toyohashi University Of Technology (TUT)

Activities

Session 1

Upon arrival at Toyohashi University of Technology (TUT), all participants welcomed by Prof. Mitsuteru Inoue, Vice President (Picture 64) and TUT Administration staff . At Seminar Hall (Picture 65), the visiting begin with greeting speech and Introduction to the University & Engineer by Prof. Mitsuteru Inoue.

Picture 66 : Prof. Mitsuteru Inoue

Picture 67 : Seminar Hall, Administration Bureau

Session 2

Next speech is from Professor Akihiro Wakahara, Executive Presidental Advisor and KOSEN Liaison (Picture 66). The presentation content about relationship between KOSEN and TUT for the development of human resource who are strong in technology, and also development a curriculum collaboration KOSEN and TUT (Picture 67).

Picture 68 : Professor Akihiro Wakahara

Picture 69 : Question & Answer

Session 3

The program continued with discussion about education of Engineer & KOSEN scheme. International support Program, International Exchange Program and National University Project also discussed. This session conducted by Associate Professor, Dr Lim Pang Boey for Malaysia Delegate.

Associate Professor, Dr Lim Pang Boey is Malaysian, from Sg Petani, Kedah. She was an academic staff at TUT and also rensponsible for international student. The topic covered for discussion are similarity education system (Malaysia & Japan), career, situation of student life in campus, financial informations, events, club activities, support service liked orientation, tutor system, counselling support, medical and health care, insurance, Japanese language education and also accommodation (Picture 6.0). Until early 2018, the biggest number of international students is from Malaysia, which is 62 students out of 163 students. The total countries send their student to TUT are 25 excluded Japan.

Picture 70 : Associate Professor, Dr Lim Pang Boey for Malaysia Delegate

Session 4

This session is discussion of Asian Foreign Student and program participants which is from Malaysia, Indonesia, Vietnam and Thailand.

Three Malaysia student invited by International Affairs, TUT to jointed the discussion. The discussion between Malaysia Delegate and Malaysia student covers about program studied, student life, Japanese Language & off campus life.

Picture 71 : Discussion Session

Picture 72 : Malaysia Delegate & Malaysia Students

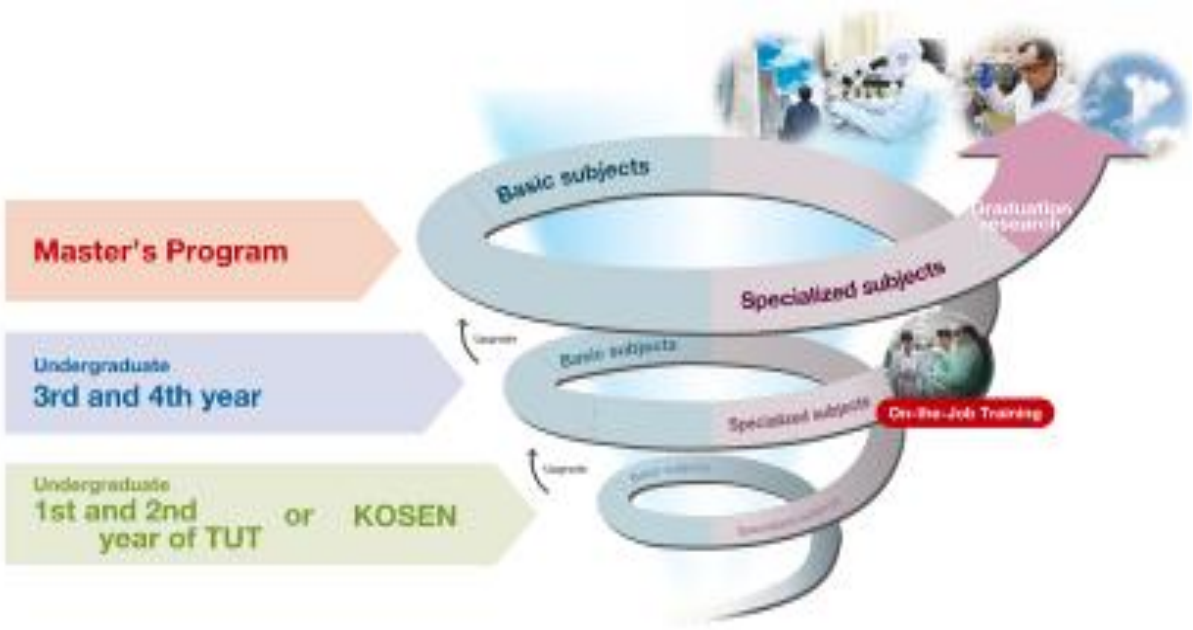
Reflections

Based on program objectives, the reflections from this session focused on education system link to KOSEN system, students life and careers.

A major feature of TUT's education system is its "spiral-up curriculum" (Figure 73). In this curriculum, students who received specific technical instruction (basic and specialized) in their first and second years of undergraduate education and technical college (National College of Technology, KOSEN), will repeat the subjects from their third year with more advanced approaches in order to accumulate further competence in their basic and specialized education, creating a spiral-like education. In their fourth undergraduate year (before advancing to graduate school), students will undertake long-term internships in the business sector, and through their experiences in dealing with problems as a working engineer, they will come to understand the meaning of their education, and how the master's program is meant to create practical, creative, and innovative engineers.

In this way, TUT is able to nurture students who understand science and have a deep interest in technology due to their repetition of basic and specialized education and their practical training in the work place.

TUT also developed a curriculum in collaboration with KOSEN which takes care of transfer students all the way from entrance at undergraduate level, through graduate school, to finding employment as elite engineers.



Picture 73 : 'Spiral-up' Curriculum

Through unified undergraduate to graduate education, TUT trains advanced engineers equipped with outstanding skills in the technological development needed to drive industry in Japan and throughout the world. Based on the record, graduate s from TUT are active all over the world as "practical and leading engineers". Graduates from TUT are employed in companies such as Toyota Motor Corporation, Daihatsu Motor Co. Ltd, Nissan Motor Co. Ltd, Fujitsu Limited, Fuji Xerox Co. Ltd etc. At education or research institutions, the graduates are employed at Kyoto University, The University of Tokyo, Technical University of Malaysia Malacca, University Technology of Malaysia etc.

Information from discussion with Malaysia students, while the students focus on course studied in class or laboratory, TUT also equipped the

student life with many events, activities, support service and good accommodation. There are many events where international students can interact with Japanese students and members of the local community such as International Exchange Day, University Festival & Study Trip. For support services, TUT prepared Tutor System for newly-arrived international students for one year to facilitate their new lives in Japan. The others services liked medical, health care and accommodation (on campus & off campus).

Picture 74 showed all participants, TUT management officer and KOSEN officer at end session.

Picture 74 : Participants, TUT Management Officer and KOSEN Officer

DAY 5: 8 FEBRUARY 2018 (THURSDAY)

HAMAMATSU PHOTONICS CENTRAL RESEARCH

Picture 75 : Participants, Hamamatsu Management Officer and KOSEN Officer

On February 8 2018, SAKURA Exchange Program in Science participants were brought to visit Hamamatsu Photonics Central Research which is located at Hamamatsu City, Shizuoka. The visit took about two hour that

involving 26 participants from four ASEAN countries (Malaysia, Thailand, Indonesia and Vietnam).

The visit was also attended by officials from Japan Science and Technology Agency (JST) and also Japan International Science and Technology Exchange Center (JISTEC).

Introduction

Originally, the firm was called "Hamamatsu TV". The name came about because Heihachiro Horiuchi, who was the founder of the firm, was a student of Kenjiro Takayanagi and later took over his professor's spirit and technology, establishing the coupling of opto-technology and industry as the doctrine behind the founding of the company and the business goal of the firm. Because of that connection with his former professor, Horiuchi wanted a name that would make people think of Dr. Takayanagi. The name Takayanagi was largely synonymous with the concept of "television" at that time, so he named the firm Hamamatsu TV. The name was often mistaken for a television station, and up-and-coming television personalities would visit the company in search of interviews, or requests would come in for repair of household televisions.

Picture 76 : Professor Kenjiro Takayanagi

Professor Kenjiro Takayanagi (1899 -1990) was born in Hamamatsu, and after graduating from a teachers' college, became an assistant instructor at Hamamatsu Industrial High School (now the School of Engineering of Shizuoka University). At that time, he was engaged in television research. Heihachiro Horiuchi, the founder of Hamamatsu Photonics, was at that time a student in Professor Takayanagi's seminar, and became fascinated by the professor's television technology, absorbing his passion for the realm of the unexplored.

In 1926, Professor Takayanagi's research team succeeded in producing a Japanese character on the world's first electronic television screen. (The photograph shows a device reproducing the character in the Hamamatsu Science Museum.)

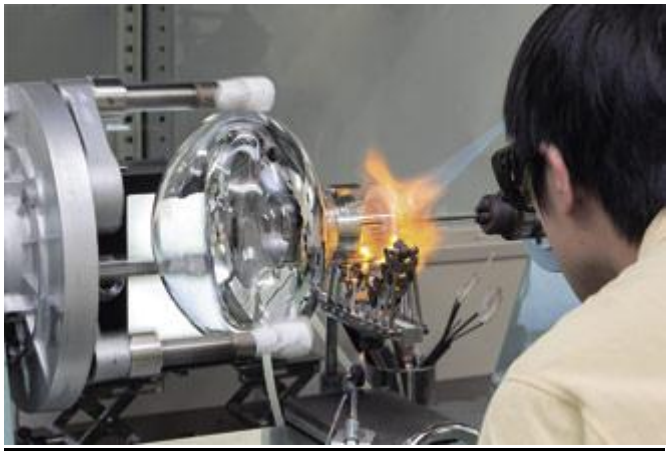
Business Domain

Electron Tube Division

Pursuing the ultimate in performance guided by past experience in fabricating devices for academic research has led to applications in high-

precision optical measurement such as in medical, environmental and measurement fields, and its use has even spread to monozukuri or namely the creating of things that support life.

Electron tube devices are key devices for measuring and capturing phenomena that were impossible to find up to now. They achieve this by applying their long-fostered basic and element technologies. Their new manufacturing technology creates innovative devices that are more compact and optimized for particular usage environments, expanding the application fields of the equipment in which those devices are mounted. Electron tube devices that have actively been used in a wide range of fields such as medical diagnosis, spectroscopic analysis, semiconductors, biology and academic research are now being pushed to their ultimate performance limits and applied to meet customer needs in a virtuous circle to expand the market.



Picture 77 : Electron Tube production process

CTA experiment (Cherenkov Telescope Array) Gamma-ray telescope experiment

When ultra-high energy gamma rays traveling through outer space collide with the Earth's atmosphere, a natural phenomenon that produces many particles called an air shower occurs. Observing the Cherenkov light generated from this collision with a gamma ray telescope makes it possible to measure the source and energy of high-energy gamma rays. This will help find and reveal the workings of various phenomena such as those occurring in the center of active galactic nuclei, supernova explosions, and gamma ray bursts, which are unexplained phenomena in our universe. In the CTA experiment, Cherenkov light is collected by mirrors and the resulting signals are read out with a special camera that uses about 2,000 photomultiplier tubes per unit.

Picture 78 : Cherenkov Telescope Array

Solid State Divison

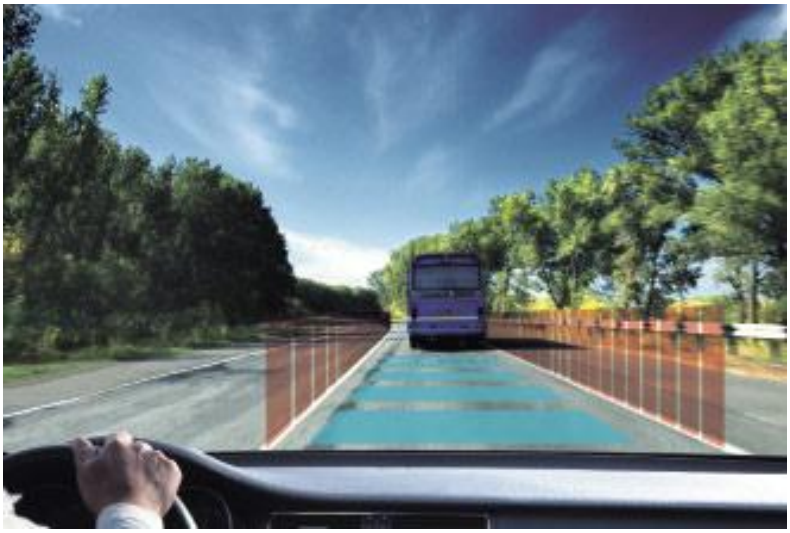
Getting a grasp on what lies one step ahead for our world. Pushing the limits of our unique opto-semiconductor technology to meet advanced user needs.

The Solid State Division has explored physical properties that determine opto-semiconductor performance since the early days in this field and succeeded in creating a variety of product lineups. Hamamatsu Photonics opto-semiconductor products incorporate unique semiconductor process technology, mounting & packaging technology, and MEMS technology, and cover a wide wavelength range from infrared, visible, ultraviolet, all the way to X-rays and high energy rays. They are used in wide-ranging fields including medical care, scientific measurement, communications, consumer electronics, and vehicle on-board electronics. They will continue to pursue opto-semiconductor technology, always staying one step ahead, to meet the increasingly sophisticated needs of the future.

Picture 79 : Semiconductor process technology

Opto - semiconductor devices for driving support systems

Advanced driving support functions for cars are evolving at an ever more rapid pace. These include interfaces for reliably checking information essential for driving and systems for detecting possible hazards in advance. Hamamatsu Photonics Solid State Division is actively working to commercialize opto-semiconductor devices (Si APD, MPPC, distance image sensor, etc.) for detecting vehicle periphery information which plays a vital role in making these on-board vehicle functions work effectively.

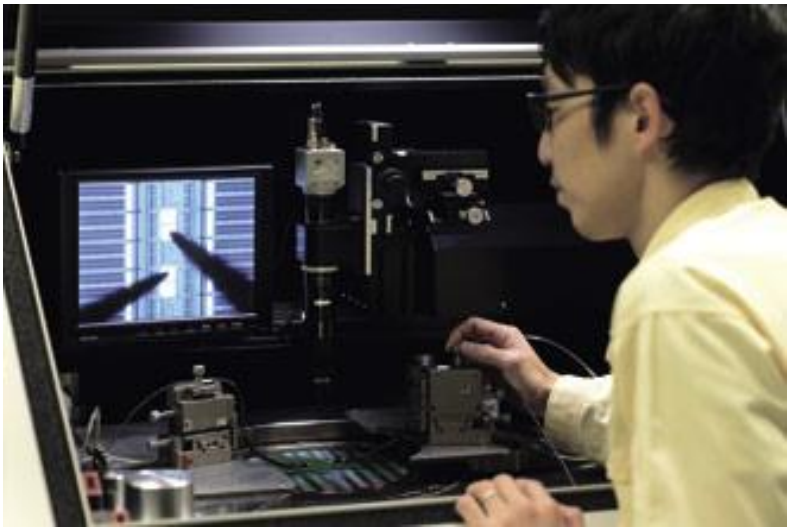


Picture 80 : Opto - semiconductor devices for driving support systems

System Division

Creating the breakthrough specialized systems based on the optical sensor technology

Hamamatsu Photonics Systems Division is developing and manufacturing systems that integrate light detection technology, imaging technology, and image processing technology by using optical sensors. By utilizing their expertise and high technology as a leading sensor manufacturer, they design and develop specialized systems that combine core products, such as cameras with peripheral technologies and equipments.



Picture 81 : Creating the breakthrough specialized systems based on the optical sensor technology

Developing digital CMOS cameras for scientific measurement

Hamamatsu Photonics digital CMOS cameras for scientific measurement simultaneously deliver high speed, high sensitivity, and high resolution, making them widely relied on as an industry standard for fluorescence microscope cameras. At Hamamatsu Photonics they continually work to make fluorescence microscope cameras with more user-friendly and advanced functions that are still easy to use.

Picture 82 : Digital CMOS cameras for scientific measurement

Laser Promotion Division

Fabricating high-reliability laser products with Hamamatsu Photonics advanced technology

With laser fusion research as its core, they are working on multifaceted developments of laser technologies.

They are exploring still further possibilities for laser by merging integrated optics technology and their cultivated technology by laser fusion research, such as gas laser, semiconductor laser, and solid state laser.

Picture 83 : Laser technologies

Next - generation social infrastructure devices

Sensing technology is currently used in all kinds of situations in our daily lives. Among these, non-contact optical sensing technology using light from compact lasers is very promising. Small and highly robust semiconductor lasers will play an indispensable role in every part of our daily lives, such as for various promising self-driving sensing functions including car collision

prevention, human body sensing for auto door operation on subway and railroad station platform, and for detecting people at railway crossings.

Picture 84 : Sensing technology

Central Research Laboratory

Life Photonics

A future world with an optimal balance among Earth, people, and all life. Hamamatsu Photonics aim to achieve this wonderful dream through the research into “light” which is the source of all substances.

To make this dream a reality we have to overcome many obstacles and meet many challenges. Hamamatsu Photonics Central Research Laboratory does R&D that conforms to “sustainability” values. They call this research “Life Photonics” which is based on the theme of “life” encompassing broad-ranging areas such as life, living things, human life, vitality sources, and ways of living. They will work on research into “Life Photonics” to make full use of various optical technologies.

Facilities

The Central Research Laboratory in Hamamatsu City, Shizuoka Pref. is home to a host of specialized research facilities including the Research Center, the Material Center, the PET Center, the Medical Imaging Center, and the Biotechnology Center. In the Central Research Laboratory, a wide range of research is carried out ranging from basic research which pursues the nature of light to applied research in which the knowledge and technology acquired through basic research is applied in industries.

Tsukuba Research Laboratory in Tsukuba City, Ibaraki Pref. primarily conducts research on bio-photonics in which opto-technology is applied in the field of life science.

Picture 85 : Tsukuba Research Laboratory

Products

UV-LED Light Sources (Linear Irradiation)

Hamamatsu now offers LED-UV light sources that are compact, lightweight and air-cooled, yet deliver the high power that has been a challenge for LED-UV light sources. These LED-UV light sources, called the LIGHTNINGCURE LC-L5G Series, are available for various printers including inkjet printers. GJ-75, GP-75, GC-77, GL-120, GL-150C, GL-250, GL-430.

Picture 86 : UV-LED Light Sources

PMT (photomultiplier tubes)

In the photosensor field, photomultiplier tubes (or PMT) are known to have particularly high sensitivity. PMT also have dozens of other advantages such as high-speed response time. PMT are the subject of recent wide attention because of their use to detect neutrinos by Professor M. Koshiba who received the Nobel Prize in Physics in October 2002. Currently, PMT use is growing in a diverse range of fields where highly precise photometric

capabilities are required. In the medical field, the PMT is used in clinical examination equipment as well as nuclear medical imaging and diagnostic systems. In fields involving chemical analysis, the PMT is used in various types of analytical instruments including spectrophotometers, environmental measurement equipment, etc. In academic research fields, the PMT is used in high energy physics experiments. In the measurement and industry field, the PMT is used, for example, in oil well logging and radiometry; and in the optical field is used for laser scanning confocal microscopy (LSCM). The PMT is also widely used in the semiconductor field for wafer surface inspection, plasma process monitoring, and thickness measurement.

Picture 87 : Photomultiplier tubes (PMT)

PMT Modules

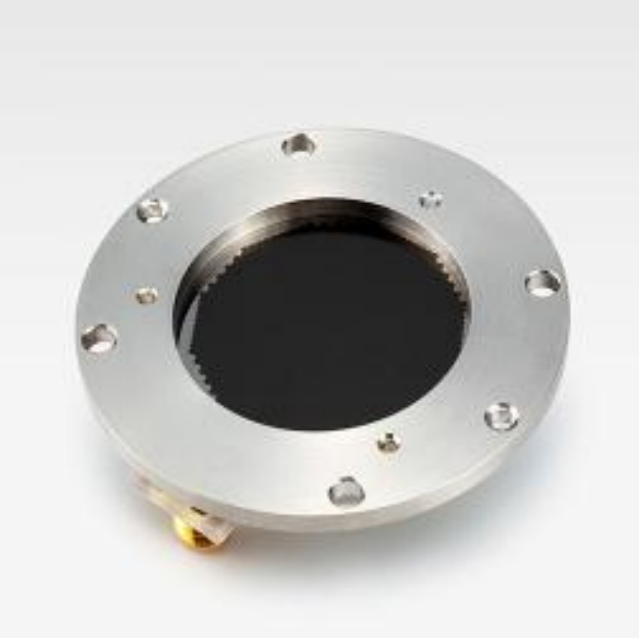
The PMT module is basically comprised of a photomultiplier tube to convert light into electrical signals, a high-voltage power supply circuit, and a voltage divider circuit to distribute the optimum voltage to each dynode, all assembled into a single compact case. In addition to these basic PMT modules, Hamamatsu also provides modules having various additional functions such as signal processing, cooling and interface to PC.

Picture 88 : Photomultiplier module

MCP (microchannel plates)

This assembly has enough time response characteristic for TOF (Time of Flight) measurement. In addition, HV electrode is able to set the potential from -5 kV to +5 kV. It will be useful to optimize for positive/negative ion or electron detection.

Robust MCP in this assembly brings good reliability and low time jitter. In case of high sensitivity is required, large OAR (open area ratio) MCP (funnel type) is also available optionally. Custom modification is also available.

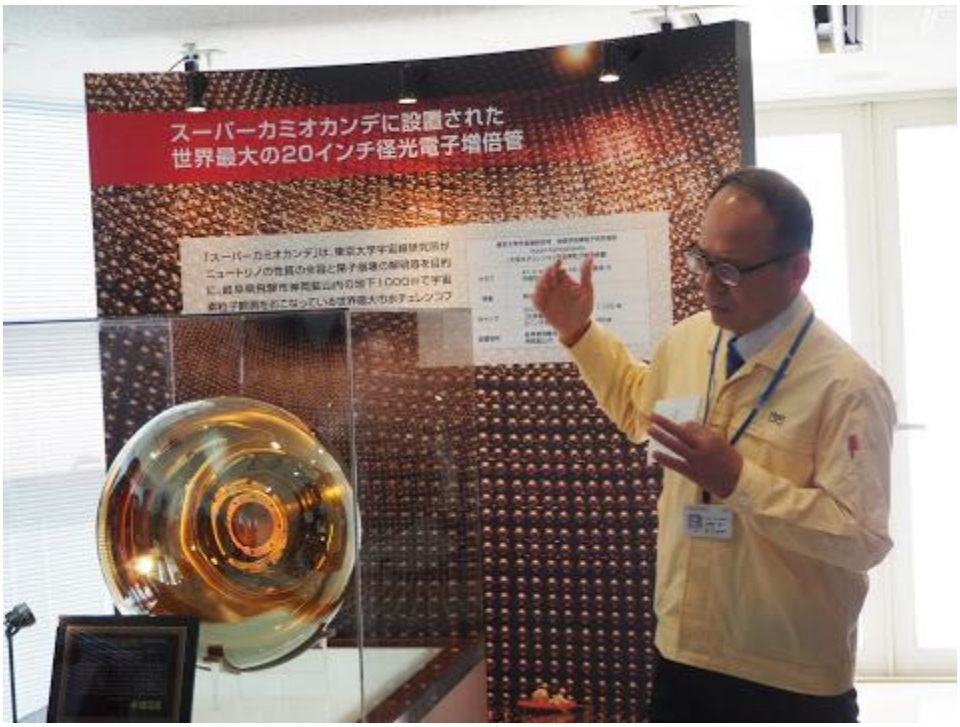


Picture 89 : Microchannel plates (MCP)

Activities

Picture 90 : Welcome address by Dr. Otshuka from Hamamatsu Photonics Central Research.

Picture 91 : Introduction of neutrino and products to the delegations



Picture 92 : Briefing about electron tube by Dr. Otshuka

Picture 93 : Short explanation to the delegation

Picture 94 : Briefing about photomultiplier tube (PMT) products

Picture 95 : Short presentation of another products to the delegation

Picture 96 : Plaque presentation by representative of Malaysian delegation

Picture 97 : Group photo between Malaysian delegation and representative of Hamamatsu

Photonics Central Research

REFLECTION

There are useful information obtained as a result of the visit to the Hamamatsu Photonics Central Research:

1. All participants gained a new experience in photonics technology.
2. Take a closer look at the products produced by Hamamatsu.
3. Sharing the studies conducted by Hamamatsu regarding the development of photonics technology.

DAY 6: 9 FEBRUARY 2018 (FRIDAY)
NATIONAL MUSEUM OF EMERGING SCIENCE AND INNOVATION (MIRAIKAN)

Introduction

"Miraikan" is a nickname of the National Museum of Emerging Science and Innovation. Miraikan is the exhibitions providing the visitors to understand the current and future technologies from scientific point of view. It's opened in July 2001 within the Tokyo Academic Park based on the "The Basic Plan for Science and Technology." It was born as a center for deepening an understanding of science and technology, and to fulfill Japan's aim of becoming a scientifically and technologically creative nation. In addition, Miraikan offered permanent displays and exhibitions that provide people with a chance to enjoy hands-on contact with science and technology, Miraikan's colorful line-up of offerings includes experienced based classes, and talks. While exchanging opinions and ideas with Science Communicators, visitors can experience the technological progress of today, from simple day-to-day questions, to the latest technologies, the global environment, and space exploration.

Information details:

Name : National Museum of Emerging Science and Innovation
Nickname : Miraikan
Chief Executive Director : Mamoru Mohri, Ph. D.
Operated by Japan Science and Technology Agency (JST)
Location 2-3-6, Aomi, Koto-ku, Tokyo 135-0064, Japan
Opened on July, 2001
URL : http://www.miraikan.jst.go.jp/en/

Activities

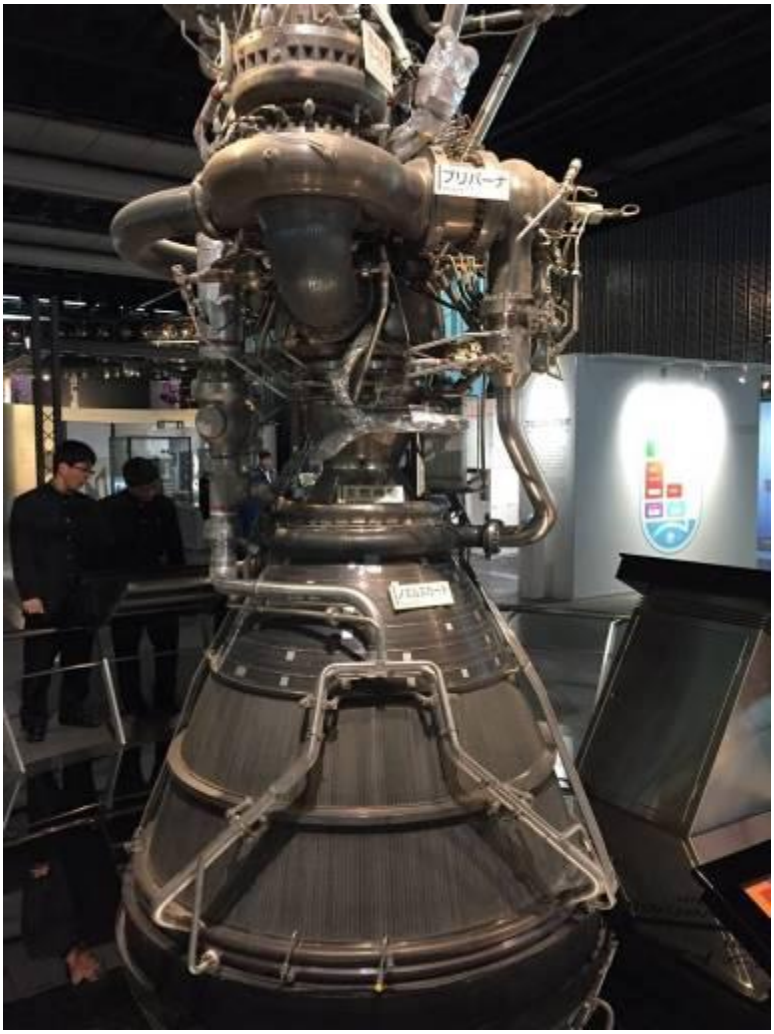
Picture 98 : Malaysian delegation in front of Miraikan entrance

Participants were given 1.5 hours to explore Miraikan. Miraikan encourages visitors to learn about themselves through the museum's exhibits and events, and to consider the future to create. Miraikan has established the overarching theme of "TSUNAGARI," and separated the various fields of cutting-edge science and technology into the two themes of "Explore the frontiers" and "Create your future."
In "Explore the frontiers," the visitor enable to gain an understanding about the place of humans, through learning about space, and life. In "Create your future," the visitor were given opportunity explore ways to enrich the lives of humans, such as through innovation and information.
Basically in Miraikin, the exhibitions were divided to 3 divisions. There are:

Explore the frontiers

This zone enable the visitor to explores, on a variety of scales, the construction of the world around us, the Earth's environment and all the life nurtured within, as well as our solar system, and the universe. Looking back on the universe's history that spans 13.8 billion years, how did humans begin, and how are we living and interacting with the world around us? By taking a scientific viewpoint, visitor can think from a broad perspective on which path they should follow to the future.

Picture 99 : Life-size recreation of a part of the Super-Kamiokande

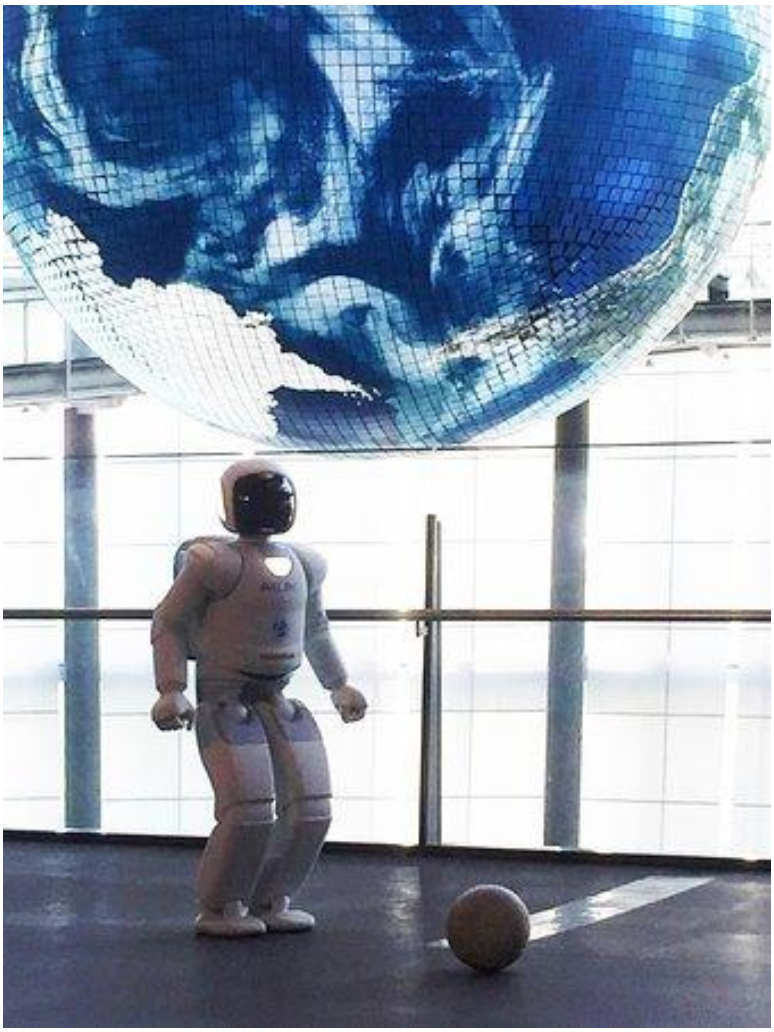


Picture 100 : LE-7A engine that is installed in Japan's flagship rocket H-IIA

Create your future

This zone illustrates desirable societies and lifestyles, and considers ideas human can use to achieve them. What science and technology is needed, and how should human use it to develop a society that can sustain a world population in excess of seven billion? This space provides a projection of a future society as human search for knowledge that will enable human to continue their prosperous lives. The visitor can understand "What kinds of technology do human use to build future society?"

One of the attractions is ASIMO demonstration. ASIMO is a Humanoid Robot. The show gives the clear picture to visitor of a future society in which will live alongside robots.



Picture 101 : ASIMO demonstrates kicking ball skills

Picture 102 : Androids - Human like robot

Picture 103 : Hands-On Model of the Internet

Discover your Earth

This space offers experience, understanding and sharing the links between life and the Earth environment, through cutting edge technology. Geo-Cosmos which is the symbol exhibit of Miraikan, as well as Geo-Scope, Geo-Prism, and Geo-Palette, offer visitors the opportunity to view a diverse range of scientific information related to the Earth. By examining the “tsunagari” (connections) among the various lifeforms in the Earth’s ecosystem, as well as the “tsunagari” that has developed between human beings and the Earth through the Earth’s 4.6 billion years of history, attempt to position the existence of human beings, and of ourselves, within the framework of the Earth’s large-scale “tsunagari.”

Picture 104: Geo-Cosmos which is the symbol exhibit of Miraikan

Reflection

1. Japan is moving to Society 5.0. Therefore, the exhibitions in Miraikan give the clear pictures about earth, human and future from the scientific point of view.
2. The exhibitions and shows aims to educate and preparing the society towards tackle several challenges by going far beyond just the digitalization of the economy towards the digitalization across all levels of the Japanese society and the (digital) transformation of society itself.
3. The important technologies that we need to concern such as the Internet of Things, AI (Artificial Intelligence), cyber-physical systems, Virtual Reality /Augment Reality and Big Data (analytics).
4. Volunteers are from the retired engineer and expertise who contributes back their knowledge, skills and experiences to the visitors.

DAY 7: 10 FEBRUARY 2018 (SATURDAY)
DEPARTURE TO MALAYSIA

- Last day of the programme.
- All participants checked out from Hotel and travel to Narita Airport by bus. The journey took around 1 hours. The Malaysia's delegations depart at 10.20 am to Kuala Lumpur by Malaysia Airlines flight MH 89 from Terminal 2 Narita Airport.
- The Malaysia delegation safely arrived Malaysia around 5.00 pm.

7. OUTCOME AND IMPACT

Outcome

1. Introduced the TVET system in Community College such as the policy, strategic plan, programs offered, student activities and achievements.
2. Promoted TVET system in Malaysia especially the Community College to the delegation of other countries.
3. Created opportunities for future participation from Community College and Polytechnics in the SSP program and other programs conducted by JST especially in Science and Technology Education.

Impact

1. Understand the education system of other countries such as Japan,
2. Thailand, Indonesia and Vietnam in order to leverage the TVET system in Malaysia especially in Community Colleges and Polytechnics.
3. Exposed to the Japanese positive working culture such as their discipline, attitude, commitment, diligence, courtesy, creative and innovative.
4. Discovered possibility to map Community Colleges' diploma and certificate with KOSEN programs for international recognition and to increase graduate employability.
5. Created opportunity for further collaboration and networking with organizations and leading industrial players in Japan as well as in other participating countries.

6. Exposed to the state-of-the art and advanced technologies in science and technology through the visits, seminars, demons
7. Created idea in implementing innovation centre to encourage research and innovation among the community.
8. Gathered first hand feedback from Malaysian students studying in
9. Japan on the advantages and challenges of being in the Japan education system.
10. Participants managed to draw up a comparison between Japan KOSEN and Malaysia Community College education system as the following Table 1:

Table 1 : Comparison Between Japan KOSEN and Malaysia Community College Education System

ELEMENTS	**JAPAN KOSEN**	**MALAYSIA COMMUNITY COLLEGE**
Intake	15 years old	17 years old and above (SPM leavers)
Entry	Top students in Math and Science	After SPM - minimum entry requirement
Implementation	Diploma (3 years) Fully technical and academic	Certificate (2 years) Technical and interpersonal skills
Pathway	Good collaboration with the universities and industries Diploma – Job placement	Industry–driven Job placement WBL
Impacts	Higher level Engineer/Social doctor/job placement	Skilled workers/services/job creaters/job placement

SUGGESTION

1. Create further collaboration between Community College and KOSEN such as establishing a KOSEN Training Center in Community College.
2. Develop and appraise strategies to create further collaboration with the industries. This initiative can create wider opportunities for students to further their studies or going to the job market.
3. Allocate certain number of participant every year for Community College officers to participate in the SSP program.
4. Empowering the life-long learning in Malaysia with more involvement from the industries.
5. Foster the research and innovation culture among community through developing community innovation centers lead by Community College.
6. Develop and implement Extensive Reading Program in Community College in order to overcome English deficiencies among students.
7. Encouraging technical related extra-curricular activities such as competitions, science fair, exhibitions, etc.

FOLLOW UP ACTIONS

1. Prepare a paperwork to JST proposing allocation for annual participation of Community College officers and students in the SSP or other related programs.
2. Present findings of the program to Community College top management as well as to other staff in Community Colleges through
3. knowledge sharing sessions.
4. Propose and implement the idea of English Extensive Reader Program, similar to what has been implemented in Toyota College, to Community College students to overcome English deficiencies.

CONCLUSION

Sakura Exchange Program (SSP) 2018 is a good and succesful program to promote science and technology as a key engine to materialize a bright future of Asia and it is vitally important to enhance the exchange of youths between Asian countries and Japan who has been playing a crucial role in the field of science and technology. The SSP 2018 has achieved is aim to enhance exchanges between the youths of Asia and Japan who will play a crucial role in the future science and technology field through the close collaboration of industry-academia-government by facilitating short-term visits of competent Asian youths to Japan. Finally, this program has also raised the interest of the participants towards the leading Japanese science and technologies at Japanese universities, research institutions and private companies.

APPENDICES

Japan Science and Technology Agency (JST)
5-3 Yonbancho, Chiyoda-ku, Tokyo 102-8666 JAPAN

Mrs. Zainab Ahmad
Director, Policy Division
Department of Community College Education
Ministry of Higher Education Malaysia

December **, 2017

Dear Mrs. Zainab Ahmad

On behalf of Japan Science and Technology (JST), I am pleased to inform you that JST has decided to invite to Japan the seven(7) young aspiring Malaysian administrative officers, professors and researchers, who have been duly selected in line with the selection criteria as the successful candidates listed in the appendix 1 for the invitation program.
The invitation will be conducted under the framework of Japan-Asia Youth Exchange Program in Science, commonly referred to as the Sakura Science Plan.

The program dates and venues are as follow:

Dates of Arrival in and Departure from Japan:
Sunday, February 04, 2018 / Sunday, February 10, 2018

Venues: Tokyo Metropolitan Area, Aichi Pref. and Shizuoka Pref.

JST covers necessary expenses for the invitee including an international airfare of round trip to Japan, hotel accommodation, meals, domestic travel in Japan, and overseas travel insurance.

JST looks forward to welcoming all the Malaysian invitees to Japan.

Respectfully yours,

Signature

Kazuki Okimura
Director, Department of the Japan-Asia Youth Exchange Program in Science
Japan Science and Technology Agency (JST)

Attached: Appendix 1
List of Selected Malaysian Administrators/Researchers for the Invitation Program

Appendix 1 : Invitation Letter from Japan Science and Technology (JST)

Japan Science and Technology Agency (JST)
5-3 Yonbancho, Chiyoda-ku, Tokyo 102-8666 JAPAN

Appendix 1

List of Selected Malaysian Administrators/Researchers for the Invitation Program

1. Dr. Syafizwan Nizam Bin Mohd Faroque
   Information Management and Corporate Division
   Department of Community College Education

2. Ms. Zarina Binti Zaini
   Collaboration and Entrepreneurship Division
   Department of Community College Education

3. Mr. Aznur Anuar Bin Ab Azid
   Kuala Kangsar Community College

4. Mr. Roazam Bin Ahmad
   Sungai Petani Community College

5. Mr. Mohd Aznan Bin Janal
   Jasin Community College

6. Ms. Mornizawati Binti Abdullah
   Kuala Langat Community College

7. Ms. Norawati Binti Masro
   Sabak Bernam Community College

Appendix 1 : Appendix 1 : Invitation Letter from Japan Science and Technology (JST)

JABATAN PENDIDIKAN KOLEJ KOMUNITI
Kementerian Pendidikan Tinggi
Aras 6 & 7, Galeria PjH, Jalan P4W
Persiaran Perdana, Presint 4
62100 PUTRAJAYA
MALAYSIA

Tel : 603-8000 8000
Faks : 603-8888 7211
Portal Rasmi : www.jpkk.edu.my

Ruj. Kami : KPT/JPKK/BDPK 500-2/6 JLD.3 (53)
Tarikh : 17 Januari 2018

SEPERTI SENARAI EDARAN

YBrs. Dr./Tuan/Puan,

TAWARAN MENYERTAI PROGRAM *JAPAN ASIA YOUTH EXCHANGE PROGRAM IN SCIENCE 2018 :* SAKURA EXCHANGE PROGRAM IN SCIENCE DI JEPUN

Dengan segala hormatnya saya merujuk perkara di atas.

2. Sukacita dimaklumkan tuan/puan telah terpilih untuk mengikuti Program Japan Asia Youth Exchange Program In Science 2018 : Sakura Exchange Program In Science Di Jepun. Program ini akan dilaksanakan selama satu minggu seperti ketetapan dibawah:

Tarikh : 4 – 10 Februari 2018
Tempat : Japan International Science and Technology Exchange Center (JISTEC)
901 No.5 Azuma-Building, 3-38 Kanda Sakumacho, Chiyoda-ku, Tokyo 1010025, JAPAN

3. Peserta yang terpilih mengikuti program ini perlu melengkapkan Surat Setuju Terima Tawaran Mengikuti Program Japan Asia Youth Exchange Program In Science 2018 : Sakura Exchange Program In Science Di Jepun seperti yang dilampirkan, dan kembalikan kepada Bahagia Dasar JPKK sebelum atau pada 30 Januari 2018.

Appendix 2 :
Offer Letter from Department Of Polytechnic And Community College Education

4. Tuan/puan perlu mengikuti jadual dan melaksanakan segala aktiviti yang telah dirangka oleh pihak penganjur sepanjang pelaksanaan program. Tuan/puan juga perlu menyediakan satu pembentangan yang perlu dikongsi pada peringkat zon / jabatan dua minggu setelah pulang dari menyertai program pertukaran ini.

5. Sekiranya tuan/puan memerlukan keterangan lanjut, sila hubungi **Puan Husna binti Ibrahim** di talian **03- 8888 2168** atau **Puan Ngah Fadzilah binti Abdul Jalil** di talian **03-8888 3077.** Segala kerjasama dari pihak tuan/puan amat dihargai dan didahului dengan ucapan terima kasih.

Sekian,

"BERKHIDMAT UNTUK NEGARA"

Saya yang menurut perintah,

(ZAINAB BT AHMAD)
Pengarah
Bahagian Dasar
Jabatan Pendidikan Kolej Komuniti

Appendix 2 : Offer Letter from Department Of Polytechnic And Community College Education

SENARAI EDARAN

1. Dr. Syafizwan Nizam Bin Mohd Faroque

   Melalui:
   Pengarah
   Bahagian Pengurusan Maklumat dan Korporat

2. Cik Zarina Binti Zaini

   Melalui:
   Pengarah
   Bahagian Kolaborasi dan Keusahawanan

3. En. Roazam Bin Ahmad

   Melalui:
   Pengarah
   Kolej Komuniti Sungai Petani

4. En. Aznur Anuar Bin AbAzid
   Pengarah
   Kolej Komuniti Kuala Kangsar

5. Puan Mornizawati Binti Abdullah

   Melalui:
   Pengarah
   Kolej Komuniti Kuala Langat

6. Puan Norawati Binti Masro

   Melalui:
   Pengarah
   Kolej Komuniti Sabak Bernam

7. En. Mohd Aznan Bin Janal

   Melalui:
   Pengarah
   Kolej Komuniti Jasin

Appendix 2 : Offer Letter from Department Of Polytechnic And Community College Education

Sakura Science Plan for Asian Adminsitrators/Educators in Engineering Education (As of Feb.01,2018)

Participants use only

as of: 2018/2/

【Period】Sunday, February 4, 2018 - Saturday, February 10, 2018
【Number of Invitees】26 (Indonesia 7, Malyasia 7, Thailand 7, Vietnam 5)
【Mobile e-mail for emergeny message】sakura_asean03@jistec.or.jp
【Mobile e-mail for emergeny message】jst.09016072920@docomo.ne.jp (Mr. Fukasawa' s Mobil

Contact Details:
Imamura Mobile (JISTEC): 090-2465-9647
Fukasawa (JST): 090-1607-2920

Days/Hours are in local time.

Sun. February 4th, 2018 Arrival Times Only				
Vietnam	**Malaysia**	**Indonesia**	**Thailand**	Transportation:
VN310	MH70	JL720	NH848	
0:40 Depart from Hanoi Int'l Airport (Noi Bai Int'l Airport)	9:50 Depart from Kuala Lumpur Int'l Airport	6:45 Depart from Jakarta Int'l Airport (Soekarno-Hatta Int'l Airport)	10:25 Depart from Bangkok Int'l Airport (Suvarnabhumi Int'l Airport)	Chartered Bus by NTA or Airport Bus
7:00 Arrive at Narita Int'l Airport	17:30 Arrive at Narita Int'l Airport	16:05 Arrive at Narita Int'l Airport	17:55 Arrive at Haneda Airport	
	Orientation / Introdcutory Guide for the Program			
Accomodation	Hotel: Sotetsu Fresa Inn TokyoKinshicho (Tel: +81-(0)3-5625-4203)			
Mon. February. 5th, 2018				
	Breakfast at Hotel			
10:00-12:00	Visit Japan Science & Technology Agency Tokyo HQs (JST) Greetings by JST Presentation by Kosen (Kosen=National Institute of Technology) Presentation by Representative of each country			Chartered Bus by NTA
	Lunch			
14:30-15:30	**Chiba Institute of Technology Tokyo Skytree Campus** / Exhibits of Robbots, AI,			Tokyo Metro (Subway)
	Dinner			
Accomodation	Sotetsu Fresa Inn TokyoKinshicho (Tel: +81-(0)3-5625-4203)			
Tue. February. 6th, 2018				
	Breakfast at Hotel			Chartered Bus by NTA
10:00-11:30	**Visit KOSEN's Takebashi Office / Group photo, speech by KOSEN President followed by Q**			
12:30-14:11	Trip to Nagoya by Shinkansen bullet train (Lunch in Shinkansen)			Shinkansen (Bullet Train)
14:15-15:15	Trip to Toyota from Nagoya by bus			
15:30-17:30	Visit National Institute of Technology, Toyota College in Toyota City 1. 15:00-15:20 Greetings from the Principal/ Introduction to the Institute 2. 15:25-15:45 Tour: Techno-training center for Manufaturaring 3. 15:45-16:10 Tour: Students' domitory 4. 16:15-16:35 Tour: Library 5. 16:35-17:00 Discussion with Faculty and students/ Group Photo			Chartered Bus by NTA
	Dinner			
Accomodation	Route-Inn Toyotajinnaka (Tel: +81-(0)565-36-4511			
Wed. February. 7th, 2018				
	Breakfast at Hotel			
9:10-10:50	Visit Kojima Industries Corporation Introduction to the Institute, Tour of the Exhibits, Exchange or opinions with engineers			Chartered Bus by NTA
11:05-12:00	Toyota Innovation Center			
12:00-14:20	Trip to Toyohashi city			
14:30-16:30	Visit Toyohashi University of Technology 1. 14:30-15:00 Greetings Introdution to the University and Enginner (Researcher) Education by Professor /Vice president; Prof. Mitsuteru Inoue 2. 15:00-15:20 Introduction to Kosen Liaison Center by Professor Akihiro Wakahara/ Executive Presidential Advisor (Kosen Liaison)/ Director of Kosen Liaison Center 3. 15:20-15:40 Exchange of Views /Opinions on Engineering Education including Kosen/ Univ. Liaison Concept 4. 15:40-16:10 Introduction to International Collaboration/ Cooperation Projects and University Reform / Enhancement 5. 16:10-16:30 Exchange of Opinions with TUT (Aisan) International Studuents 6. Group Photo Session			
	Travel to Hamamatsu city by bus / Dinner			
	Hamamatsu Hotel (Tel: +81-(0)53-450-5555)			
Thu. February. 8th, 2018				
	Breakfast at Hotel			
10:00-12:00	Visit Hamamtsu Photonics / Tour of the Central Laboratory			Chartered Bus by NTA
12:45	**Lunch**			
13:50-14:40	Cultural Tour (Hamamatsu Castle)			
15:11-16:40	Back to Tokyo by Shinkansen bullet train			Shinkansen (Bullet Train)
Accomodation	Sotetsu Fresa Inn TokyoKinshicho (Tel: +81-(0)3-5625-4203)			Tokyo Station to Kinshicho by train
	Dinner : On your own			
Fri. February. 9th, 2018				
	Breakfast at Hotel			Chartered Bus by NTA
10:00-12:00	Visit the National Museum of Emerging Science (Miraikan)			
	Lunch			
15:30-17:00	**Program Review/Wrap-up at JST**			
	Dinner			
Accomodation	Sotetsu Fresa Inn TokyoKinshicho (Tel: +81-(0)3-5625-4203)			
Sat. February. 10th, 2018 Arrival Times Only				
Vietnam	**Malaysia**	**Indonesia**	**Thailand**	Chartered Bus by NTA or Airport Bus
VN319	MH89	JL725	NH847	
10:00 Depart from Narita Int'l Airport	10:20 Depart from Narita Int'l Ai	10:55 Depart from Narita Int'l Airport	11:00 Depart from Haneda	
14:30 Arrive at DaNang Int'l Airport	17:05 Arrive at Kuala Lumpur Int'l Airport	16:55 Arrive at Jakarta Int'l Airport (Soekarno-Hatta Int'l Airport)	16:15 Arrive at Bankok Int'l Airport (Suvarnabhumi Int'l Airport)	
VN184				
17:15 Depart from DaNang Int'l Airp				
18:35 Arrive at Hanoi Int'l Airport (Noi Bai Int'l Airport)				

References	
JST	http://www.jst.go.jp/en
Chiba Institute of Technology Tokyo Skytree Campus	http://www.mext.go.jp/en/
National Institute of Technology	http://www.kosen-k.go.jp/english/index.html
National Institute of Technology, Toyota College in Toyota	http://www.toyota-ct.ac.jp/english/
Kojima Industries Corporation	http://www.kojima-tns.co.jp/en/index.html
Toyota Innovation Center	https://www.toyota-innov.aichi.jp/
Toyohashi University of Technology	https://www.tut.ac.jp/english/
Hamamatsu Photonics	http://www.hamamatsu.com/jp/en/index.html
Miraikan	http://www.miraikan.jst.go.jp/en/

Appendix 3 : Sakura Science Plan for Asian Adminsitrators/Educators in Engineering Education Itinerary

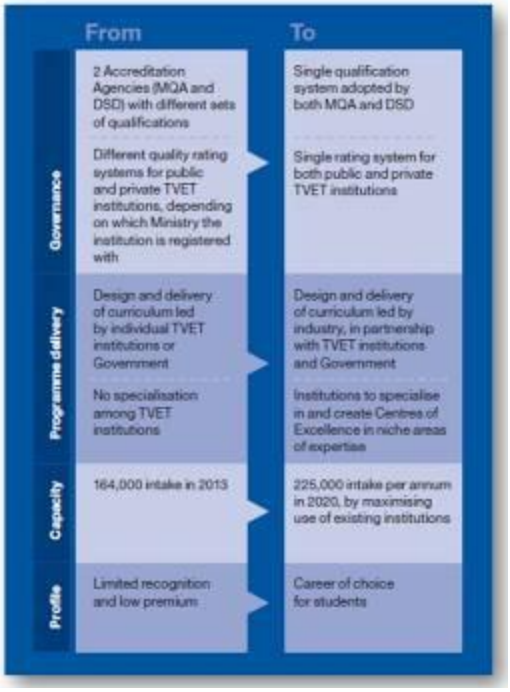
Appendix 4 : Presentation Slide from Malaysia's delegation

Appendix 4 : Presentation Slide from Malaysia's delegation

11th MALAYSIA PLAN 2016-2020

Game Changer: Enabling Industry-Led Technical & Vocational & Training (TVET)

- Supply matches demand with quality control mechanism to meet quality standards
- TVET providers and industry collaborate across the value chain (student recruitment, curriculum design, delivery & job placement)
- Attractive career pathway through a variety of innovative & industry-led programs

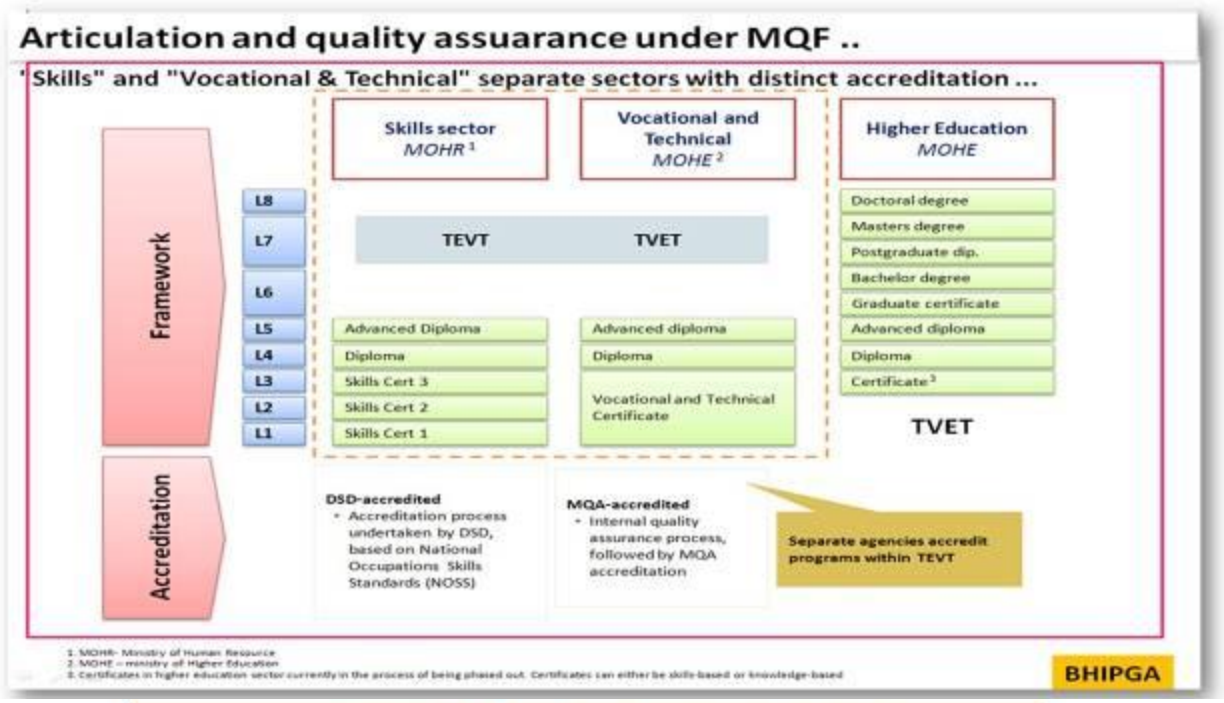


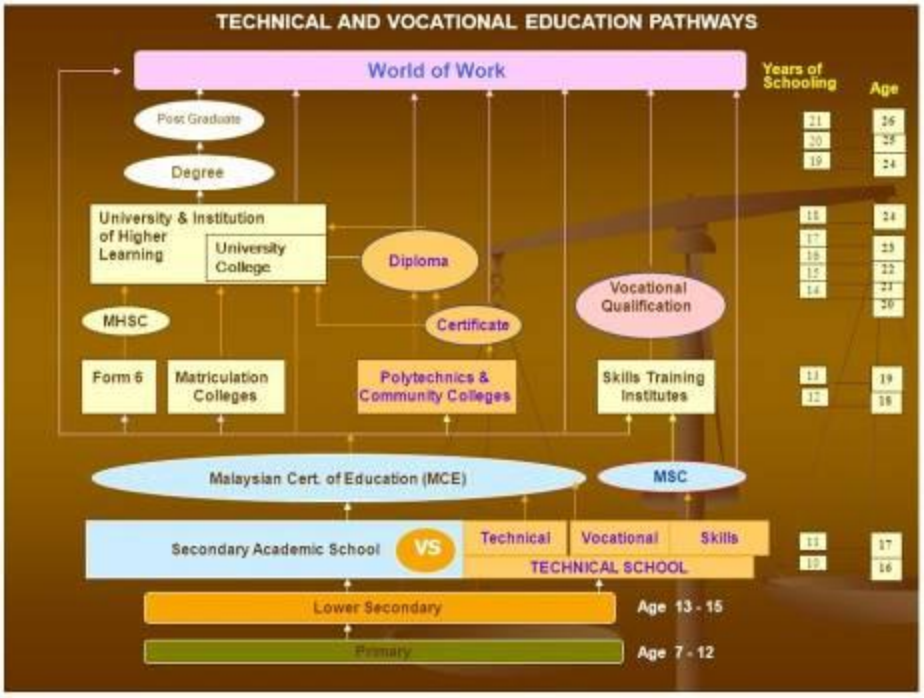
MALAYSIA HIGHER EDUCATION BLUEPRINT (2015-2025)

To achieve these system and student aspirations, the MEB (HE) outlines 10 Shifts that will spur continued excellence in the higher education system. All 10 Shifts address key performance issues in the system, particularly with regard to quality and efficiency, as well as global trends that are disrupting the higher education landscape.

The first four Shifts focus on outcomes for key stakeholders in the higher education system, including students in academic and TVET pathways, the academic community, as well as all Malaysians participating in lifelong learning. The other six Shifts focus on enablers for the higher education ecosystem, covering critical components such as funding, governance, innovation, internationalisation, online learning, and delivery.

Appendix 4 : Presentation Slide from Malaysia's delegation





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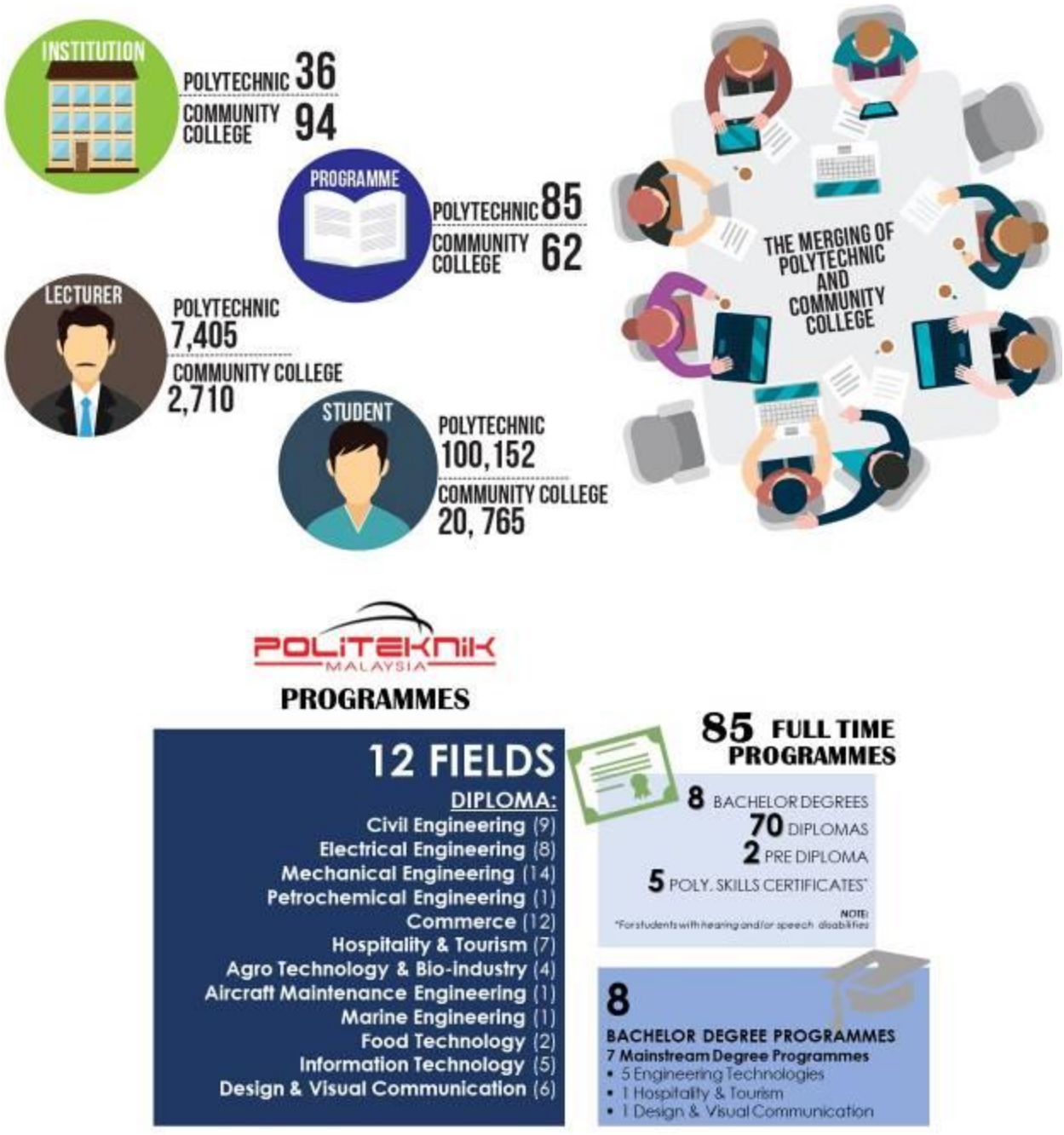

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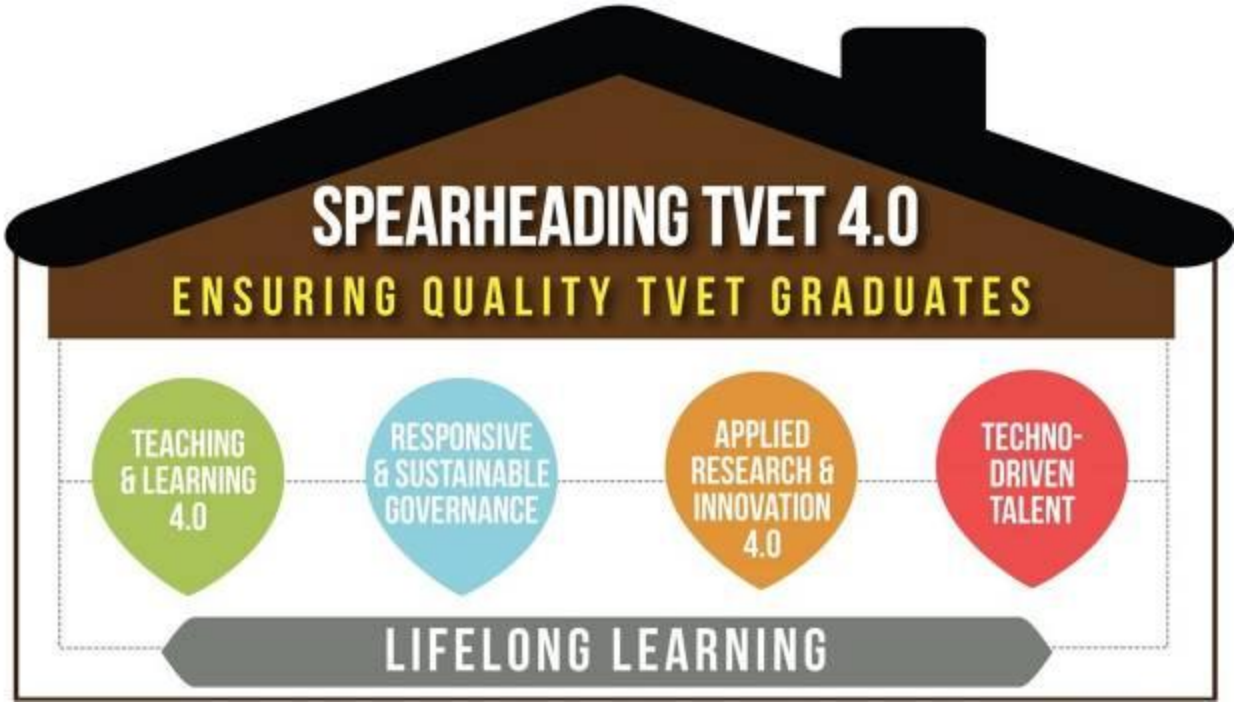

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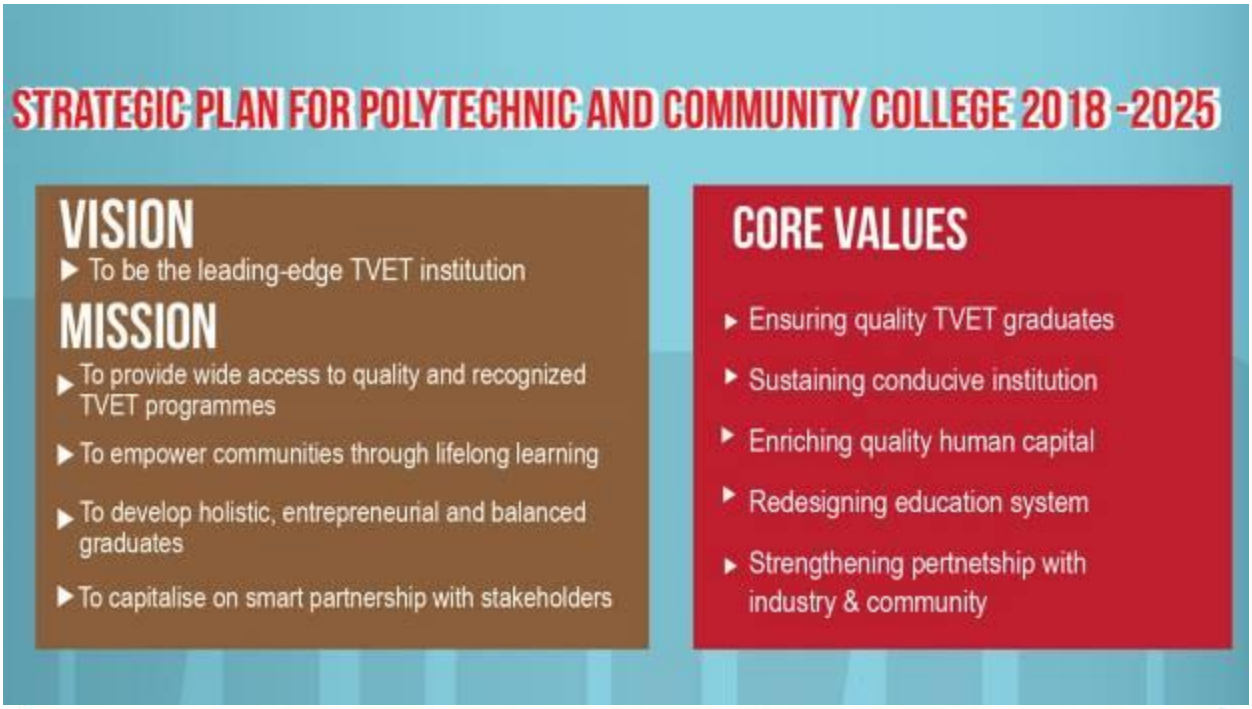

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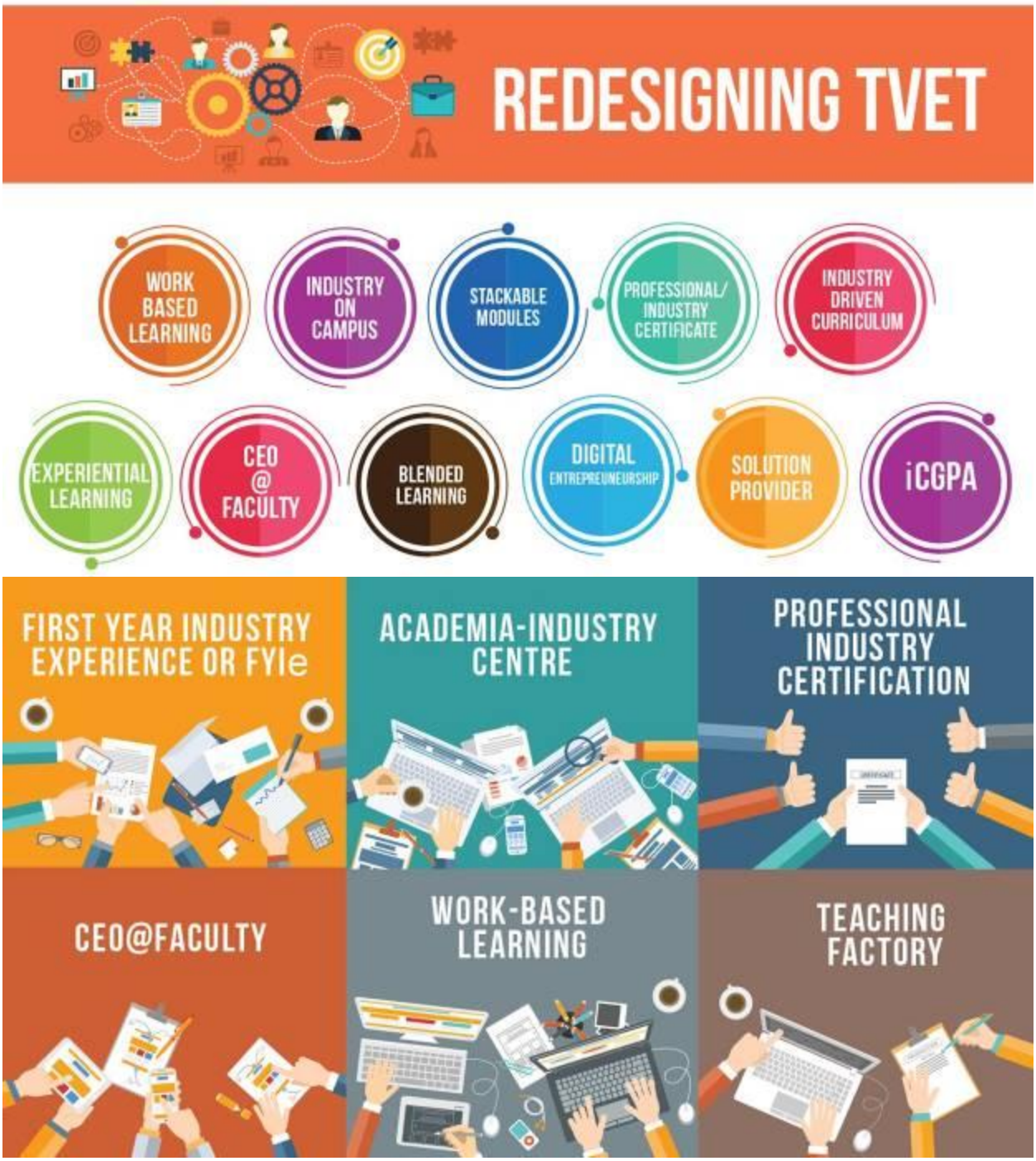

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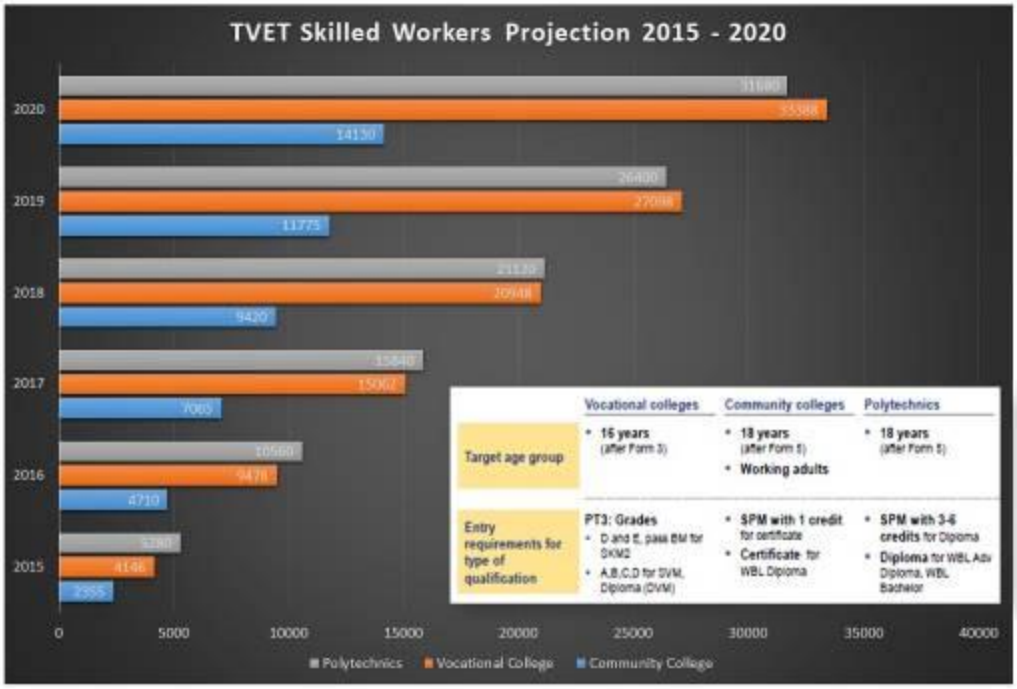

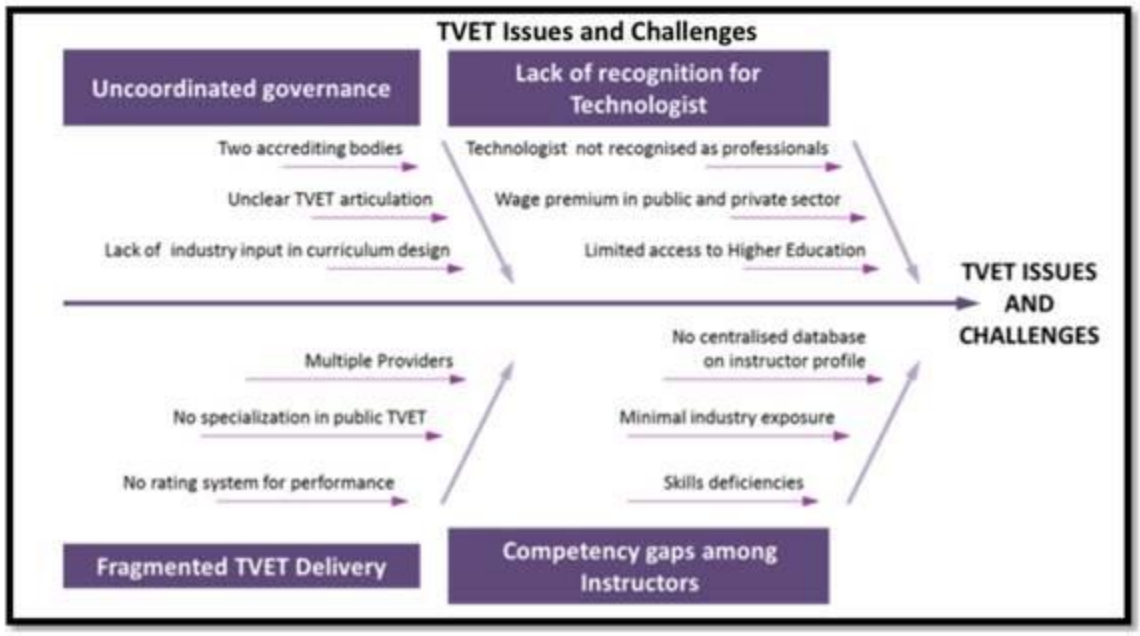

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THANK YOU

http://www.mypoliteknik.edu.my/
http://www.jpkk.edu.my/

Appendix 4 : Presentation Slide from Malaysia's delegation

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