Overseas Workshops and Demo of Creative Making Project from Award-Winning Students in 2018 Senior High School Skills Competition

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To improve the international competitiveness of vocational education for senior high school students in the country, the Ministry of Education has provided the students with opportunities for professional workshops abroad, who won the first prize in the five major categories of industrial, commercial, domestic economics, agricultural, and marine and fisheries skills since the school year of 2015. The Ministry of Education held the “Overseas Workshops and Demo of Creative Making Project from Award-Winning Students in 2018 Senior High School Skills Competition” at the auditorium of the College of Education at the National Taiwan Normal University at 10:00 on May 29, 2019 (Wednesday); people from all sides were invited to witness the results of these students’ overseas professional workshops in vocational education.

In the school year of 2018, Yue-Ting Zheng, Principal of the National Feng-Shan Senior Commercial and Industrial Vocational School led the award-winning competitors in the commercial category to the United States (US). They went to the "Academy of Art University" to explore digital photography and 3D printing design applications and experienced virtual reality (VR) and learned commercial applications using digital technology at the "Apple Park." In addition, they learned American dessert-baking skills at the Cozymeal Cooking School; under the guidance of the former executive chef of a Michelin-starred restaurant, they fully practiced the relevant skills, from baking utensils, baking material preparation, dough making to baking temperature and time. Meanwhile, in a hands-on cooking class, they learned various cooking techniques and dining etiquette through preparing a lavish banquet. Furthermore, they learned how sets were applied in various films and TV shows, how the props were produced, and how the simulation effect and millions of garments were controlled by computers at "Warner Bros." Moreover, they learned the brewing techniques and classification of wine at Castello Di Amorosa in Napa; they even visited University of California, Los Angeles (UCLA) and understood how US universities develop a multi-racial learning environment with a balance between science and technology and arts and humanities in a guided tour.

Min-Yuan Xie, Principal of the National Penghu Marine and Fishery Vocational High School, led the award-winning competitors in the marine and fisheries category to Shiosai Market in Hofu, Japan, at which they observed fishery auctions and learned the auction gestures and experienced slicing fish and making nigiri sashimi sushi in protective clothing; then, they visited the Mitsubishi Heavy Industries Museum to learn about the ship repairing techniques and history at its shipyard in Shimonosek City. In addition, they tested the freshness of fish meat, dissected pufferfish to conduct a toxicity test, and analyzed the DNA of Japanese threadfin bream through an electrophoresis analysis in groups at the Department of Aquaculture of the Kagoshima University. In addition, they boarded the Kagoshima training ship to receive training in navigation, marine engine, and fisheries and in-depth training in the operations of the marine main engine, marine auxiliary machinery, and sea water demineralizers. What is even more

impressive was the visit to the Kagoshima City Central Wholesale Market, at which animals, such as cats and dogs, were prohibited and smoking was banned; the market was surprisingly clean. People could only enter the market in rain boots. The auctioneers were managed by the color of hats: government personnel wore red hats, regular buyers were in blue hats, and wholesalers were distinguished by black hats.

Qing-Hong Wang, Director of the Natioanl Chiatung Agricultural Vocational Senior High School, led the award-winning competitors in the agricultural category to visit the Aso Kenkou Nouen Farm in Japan to perform the internship in agricultural production and sales that incorporated primary, secondary and tertiary level of practices, to learn how agricultural production and marketing is supported by various measures, including “accommodation, calming activities, gardening, delicacies, and shopping” to increase the output value, all the while the "Kumamoto Prefectural Yatsushiro Agricultural High School," "Saga Agricultural High School," and "Oita Kenritsu Kujukogen Agriculture High School" were arranged for academic exchanges. The three schools offered classes in horticulture, landscape gardening, forestry, food processing, and analysis; local special ingredients were used in food processing; “Wanpaiyu,” one of Taiwanese pomelo varieties, was adopted to practice agricultural cultivation; they also learned how to thin and manage Kyushu's specialty of strawberries. Moreover, they visited the ISEKI Dream Gallery to learn how Japan used GPS to develop unmanned agricultural machinery, how 360° image was adopted to simulate rice planting, and how 3D agricultural machinery was operated. In addition, they visited the OPTiM Corporation to see how it adopted smart agricultural machinery that incorporated advanced technology, including artificial intelligence (AI) and big data, to achieve and realize "happy, easy, and commercial agriculture."

Gong-Huan, Lin, Principal of New Taipei Industrial Vocational High School, led the award-winning competitors in the industrial category to the MAG IAS GmbH in Germany. Through the German mentorship system, they learned mechanical design, bench work, computer numerical control (CNC) processing, and electronic circuit soldering, pneumatic control, and

electromechanical integration. In addition to enhancing their machining skills, the students understood the digital logic system and control concept of the pneumatic system through the pneumatic control class. In the electromechanical integration class, they learned automation control and practical skills through programming for the Siemens electromechanical control server. Furthermore, at the three main production lines of an Audi production site, they observed the operations of the car body assembly by fully automatic robot arms, automotive coating, and the process of assembling parts, enabling students to see the high-performance application of industry 4.0 on the fully automatic manufacturing system. However, on-site practice should be supported by theory; thus, the students were led to visit three universities to have their horizons broadened. In particular, the students were highly interested in the smart control robot arms, machine visual recognition, and electric vehicles developed in the labs of the Electrical Engineering Department of the Fachhochschule Mannheim and engaged in vibrant interaction with the professors and graduate students at the labs. On this distant professional learning journey, both the teachers and students had a rewarding experience.

Yi-Hui Lin, Principal of the Taichung Home Economics and Commercial High School, led the award-winning competitors in the home economics category to Japan's "Asakusa Wanariya of Tokyo" to learn the blue-dye techniques and the attitude in the workplace; a Japanese blue-dyed master taught the students different folding and creation, rubber band binding, dyeing, dyed fabric lifting (air acidification), washing, and drying skills with white greige in person. In addition, they learned how to roll sushi, distinguish the juice from nigiri sushi, and make tempura to prepare dinner for themselves at the Umemori Sushi School in Asakusa, Tokyo, which won the 2018 Japan GIFT Awards. The sushi masters taught them with humorous mnemonic phrases, and both the mentors and apprentices experienced pleasant interaction and exchanges, and each student was awarded a certificate of completion of six-hour training at the end of the visit. Furthermore, they learned how to conduct skin tests at the FANCL Corporation in Ginza, Tokyo, and professional beauticians guided them how to use skin care products properly. They also visited the Yakult cosmetic factory. Meanwhile, they learned how to make

children's teaching toys with eco-friendly resources at the Toy Park in Ginza. Moreover, they got to see the design of ToTo and the window and door design details of YKK at the TOTO Tokyo Center Show Room, to experience the exquisiteness and beauty of Japanese interior design. In addition, they visited Tsuji Dress Making Co., Ltd. in Nakano, Tokyo, a sewing factory specializes in high-end women's garments; guided by a Japanese craftsperson. They observed the production process of high-quality clothes and visited the Eikodo in Shinjuku, Tokyo, to observe how Japanese sweets were made. Moreover, they learned the color identification techniques, garment transfer printing, hairdressing, and braiding skills, and a Japanese TV cosmetic instructor was invited to give a lecture on cosmetic tips at the Yokohama f-College. They also participated in a Japanese wedding workshop at Hotel Izukyu in Shimoda, at which a professional makeup instructor gave a lecture on the outfit, makeup, and hairdressing for the Japanese-style wedding, which was a rare opportunity for these students. Finally, they returned to Zenmenkyo Inc., Tokyo, to learn how to make soba noodles. Through various visits and workshops on this journey, everyone experienced Japanese employees' professional and dedicated attitude and had a rewarding experience, which inspired these students to take into account the development trends of the Asian fashion industry when planning for their future careers.

In addition to presenting the results of overseas professional workshops, the winners of the Creative Making Project Competition in the school year of 2019 were also invited to present their award-winning projects, including a miniature Injection molding machine controlled by CNC developed by a student at the National Chiayi Industrial Vocational School, an automatic activation and de-activation system for scooter foot pegs developed by a student at the Affiliated Industrial Vocational High School of NCUE, a smart ball-picking robot developed by a student at the Affiliated Taoyuan Agricultural and Industrial Senior High School of National Taipei University of Technology, an overpass of arts at the school created by a student at the National Pingtung Industrial Vocational High School, design and implementation research of parent-child tours at the Black Bridge Sausage Museum conducted by a student at the National Tainan Senior

Marine Fishery Vocational School, “The Shrimp” created by a student at Yu Da High School of Commerce and Home Economics, an ecologic tour project developed by a student at the Kaohsiung Municipal Sanmin Home Economics & Commerce Vocational High School, an application for smart tourism at the Erren River developed by a student at the Kaohsiung Municipal Sanmin Home Economics & Commerce Vocational High School, a clothing project to promote slow fashion by a student at the National Chiayi Home Economics Vocational High School, as well as a homemade hand wash mousse made from fish oil by a student at the National Matsu Senior High School. It is hoped to promote the positive connotations of vocational education through this event, so as to motivate the public to pay attention to and value the senior high school skills competition and projects.