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Learning, Teaching, and Demonstration of Unique Chemistry for the Indonesian Generation at Sanggar Bimbingan Mulia, Kuala Lumpur Malaysia

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Abstract: As a form of concern for the issues faced by the descendants of Indonesian nationals in Malaysia, especially for the Human Resources, we provide the unique theoretical and practical chemistry mentorship for future capability. Sanggar Bimbingan Sungai Mulia 5 is an organization that offers educational services for Indonesian descendants whose citizenship status is still unclear due to administrative reasons. Based on the Chemistry Department UM and Sanggar Bimbingan Mulia cooperation, It is important to enhance the nation's intellectual capacity, especially in ensuring the success of the mandatory 9-year education program. This community service aims to combat illiteracy, in still character education, and prepare students for higher education. The expected outcomes of this program is a unique chemistry Massive Open Online Course (MOOC), a service article published, a service report, and a poster. Our program successfully developed the interest of children to love a simple chemistry experiment and improved for reading and learning through various MOOC, books, and educational materials.

Keywords: Unique Chemistry; Community Service; MOOC; Sanggar Bimbingan Mulia

INTRODUCTION

Malaysia is a country that borders directly with Indonesia. This makes it possible for Indonesian citizens (WNI) who go to Malaysia for work or just for a vacation. Nearby distances also have great potential for WNI to migrate to Malaysia [3, 4, 10]. WNI that work and get money on there, some of them didn't pay attention to the administration of the occupation [9]. Not a few immigrants are involved in a licensing case that has an impact on the academics of Indonesian children. The law in force in the Malaysian Peninsula, the government of Malaysia does not allow access and education services for Indonesian children [1].

In view of this fact, Atase Education and Culture is mobilized to support the opening of access to education services for WNI [6]. Indenpendent Institution Society and partners who care about the fate of the children of the nation also contribute actively to their respective territories. Due to that concern activities, it emerged Indonesian schools on Malaysian Peninsula.

The Sanggar Bimbingan Sungai Mulia 5 is a place that provides access to educational services for children of WNI with the aim of eradicating the blindness of characters, completing the compulsory schooling of nine (nine) years, instilling character education in children, and preparing pupils towards higher levels of education. As of December 20, 2022, there are 162 students in the first to sixth grades of primary school who are following tutoring in Sanggar [2].

The objective of completing nine years of compulsory education is still not achieved due to a lack of adequate educators, facilities, and resources. The generation increases every year, some of them should be transferred to the next level of high school. The certain preparations are needed to open the advanced level of primary school there to realize the compulsory nine years of education for the children of WNI in Kuala Lumpur [5].

An analysis of the problems of Sanggar Bimbingan Sungai Mulia 5 can be identified with several aspects, such as: limited teaching staff, facilities and infrastructure that do not support the

development of student's potential to the maximum. The subject courses obtained by students are also less diverse, learning models, methods and innovative.

To solve these problems, there is a need for educational services such as model development and innovative and interactive learning methods to engage students actively in learning. Moreover, it is also necessary to add a unique learning demonstration so that the knowledge and insights acquired by students are wider to prepare for higher levels. Here, we applied the learning, teaching, and demonstration of unique chemistry as a brilliant solution for improving teaching skills and updating materials in the chemistry daily life.

METHOD

The implementation of community service at the Sanggar Bimbingan Sungai Mulia 5 was carried out in stages over 3 days. First, students were given material about chemistry in daily life which aims to introduce chemistry and the role of chemistry in life. The material was given by a chemistry lecturer and carried out in the classroom and attended by all students.

Next, a simple experiment was carried out using the experimental method, where students carry out experiments directly and prove their own activities. The experiment is carried out in groups. Simple experiments carried out included a mountain erupt production, magic milk experiments, secret message, and ice cream production.

RESULTS AND DISCUSSION

The community service was carried out on 11-13 September 2023. On the first day, September 11, an opening was held and basic training in Microsoft Word and Paint program was carried out. On the second day, chemistry in daily life material was given, and a simple experiment was carried out on a volcanic eruption and a secret letter production. On the third day, a simple practical experiment on Magic Milk and making Ice cream was carried out in this program.

The community service was a form of concern for the problems faced by generations of Indonesian citizens in Malaysia. The HR team of the Department of Chemistry has provided very valuable science assistance in theory and practical chemistry, which provided provisions for this young generation in the future. The community service also has an important role in eradicating illiteracy, instilling strong character education in children, and preparing students to achieve success at higher levels of education.

Figure 1. Introduction of Basic Chemistry

Microsoft Word training was carried out by dividing into two groups: men's group and the women's group. Due to the limitations of the computer, the training was carried out alternately in one group. This activity aims to introduce children to the basic use of Microsoft Word, an important word processing application in today's technological world. The training participants consisted of children in grades 5 and 6. During the training, the participants were invited to understand Microsoft Word, starting from the main menus to basic functions such as creating, saving, and editing documents. They also learn how to format text, add images, and use other

features such as lists, tables, and paragraphs. Through an interactive approach and role playing, children can easily understand these concepts.

We really appreciate the active participation of the participants, which can be seen from their enthusiasm for taking part in this activity. Students as instructors also provide examples of using Microsoft Word in daily life, giving children a deeper understanding of the relevance of this application in their education and future careers. This basic Microsoft Word training activity went smoothly and successfully, with participants showing significant improvement in their understanding of using this application. We hope that the knowledge they gain in this training will make a positive contribution to the development of their technology skills in the future.

The other activity was basic Paint training. This activity aims to introduce children to the basics of digital art using the Paint application, opening the door to their creativity in the digital world. During the training, children are invited to become familiar with the Paint interface and learn about the various basic tools and techniques available. They were given guidance on how to draw and color using simple tools, as well as understanding basic concepts such as color and shape. Students as instructors provided step-by-step demonstrations and provided individual guidance to participants to ensure that they understood these concepts well.

The participants were very enthusiastic about taking part in this activity, and we saw significant development in their digital art skills. They showed great creativity in producing simple images and combining colors cleverly. This basic Paint training activity provides an opportunity for children to experience the joy of digital art and unlock their creative potential in the world of technology. We hope that the knowledge and skills they gain in this training will become a strong foundation for the development of their artistic talents in the future**.** The next activity was providing Chemistry in daily life material which aims to introduce chemistry in daily concepts to children. This activity is specifically designed to invite children to explore the world of chemistry through daily situations that they often experience, such as cooking, cleaning, or playing. Children are invited to try simple experiments. Through this activity, they could see how color changes, gases released, or even changes in shape can occur due to the interaction of different chemicals. Apart from that, they also learned about the importance of cleanliness and safety when dealing with chemicals.

During this session, the participants were very enthusiastic about asking questions and participating in experiments. They looked very interested when they saw chemical reactions that they had previously only read about in textbooks. We also discuss the applications of chemistry in daily life, such as the fermentation process in making bread or the oxidation process in chocolate production. In this way, they can see the direct relevance between chemical concepts and the products they consume every day.

This activity not only provides a deeper understanding of chemistry, but also stimulates children's interest in science. We hope that through this experience, children do not only see chemistry as a subject at school, but also as a fun and rewarding part of their everyday lives.

In this community service, simple experiments were also carried out using materials that are easily available and of course not dangerous for children. This simple experiment aims to show the applications of chemistry in daily life. This also shows that chemistry is a fun science and encourages children to be interested in chemistry. These simple experiments were done: 1. A mountain erupt production, 2. a secret message creation, 3. Magic Milk, 4. Ice Cream production [7]. The experiment was carried out in class by forming 5 study groups.

Before carrying out the experiment, students were first provided with knowledge about Personal Protective Equipment (PPE) which must be worn in the laboratory. These included laboratory coats which function to protect the body from chemicals, glasses which function to protect the eyes from chemicals, gloves which function to protect fingers from chemicals and keep materials sterile, and masks to protect the nose and mouth from chemicals.

Mountain Erupt Production

The experiment of making a volcano erupt required tools and materials such as water, soda, detergent, food colouring and citric acid [6]. Their experiment began with each group making a mountain from newspaper moistened with water. The purpose of adding water is to soften the newspaper to shape. The newspaper was shaped into a cone to form a mountain and at the top is placed a test tube.

The students are very enthusiastic. They dissolved the detergent in water glass and mixed it with soda and red food colouring. They carefully enter the citric acid in 100 mL of water. Finally, they put the detergent-soda mixture halfway into the mountain, and added the citric acid solution until it fills the mountain (Figure 2).

Figure 2. The experiment of Mountain Erupt

Secret Massages Creation

The experiment's product secret messages need tools and materials including medium plastic cups, cotton buds, HVS paper, turmeric extract, and detergent [11]. In the first stage, they dissolved detergent in water. They took a cotton bud and dipped it in the detergent solution. The message was written on HVS paper using a cotton bud that had been dipped in detergent solution beforehand. The detergent solution becomes wet in the HVS paper and leaves traces and dried on the HVS paper.

They can read the message that has been written, using a cotton bud, which is dipped in the turmeric extract solution and rubbed onto HVS paper that has been dried previously. Their products are shown in Figure 3.

Figure 3. The product of Secret Message Experiment

Magic Milk

The magic milk experiment was carried out using milk, food coloring and dish soap [8]. The tools used are a basin and cotton buds. Their experiment began with pouring milk into a basin. They added one drop of food coloring. They took a cotton bud and dipped it in dish soap. Cotton buds that have been dipped in dish soap are then dipped in milk in a basin. They observed the changes that occur. They followed our instructions well.

The color of the food coloring spreads into the milk. The reason is explained to students because the fat in milk dissolved in the dishwashing soap. The fat dissolved in the soap causing a circular or rotating movement of the color. They used more than one color of dye to obtain more color

Figure 4. Student interest survey on the first day of training

Ice Cream Production

In the practice of making ice cream, the main ingredients are needed, such as: milk, ice, and salt. Tools used include basins and glasses. Basins are used as ice containers and glasses as containers for milk, which are mixed together into ice cream. The way to make ice cream is quite easy. The students can follow our instructions. They put the ice in a basin and then sprinkle it with salt until mixed perfectly. Finally, they shake the glass in a circular motion and the milk in the glass becomes frozen and successfully forms the ice cream. This is due to the concept of colligative properties of solutions, especially freezing point depression. Colligative Properties of Solutions: These are properties of solutions that only depend on the number of solute particles in the solution, not on the identity of the solute particles. Colligative properties of solutions include freezing point depression, boiling point elevation, vapor pressure reduction, and osmotic pressure. Depression of freezing point is a phenomenon where the freezing point of a solution is lower than the freezing point of a pure solvent. In this practice, the addition of salt causes the freezing point of ice to be lower than that of milk. This allows the milk to freeze.

Figure 5. The Ice Cream Production

The students looked very enthusiastic and showed interest in the experiments that had been carried out. This shows that students have high curiosity and are interested in new things. The service team also conducted a survey of 25 Sanggar's students regarding what experiment that the students liked. The results of the survey are presented in the Figure 6, as follows:

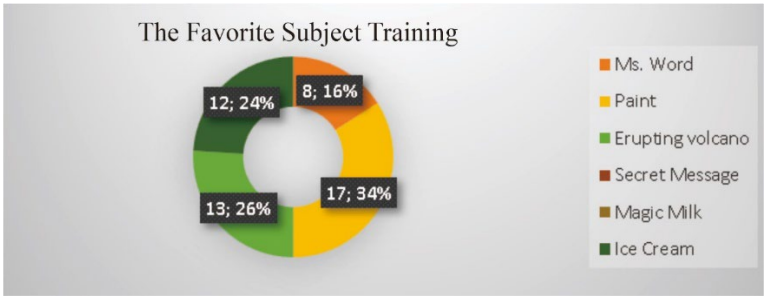

Figure 6. The favorite subject training

As shown in Figure 6, it was found that students enjoyed the Paint training program activities and the experiment of making Mount Erupt and Ice Cream. These simple experiment activities are recommended to be carried out regularly for students at the Sanggar Bimbingan Mulia 5. In order

to cooperate with this place, we provided reading books and simple practical inspirations. The reading book was handed over to the Head management symbolically.

A future discussion was held with the Sanggar management regarding the sustainability of the service program that had been implemented. This program is initiated to become continuing and routine activities next year in improving knowledge of science for students.

Figure 7. Team with the Students of the Sanggar Bimbingan Sungai Mulia

CONCLUSIONS

Students are interested in chemistry study subjects in daily life. Students were given the unique and interesting simple experiment, including: 1) a Mountain Erupt, 2) a Secret Message, 3) Magic Milk, and 4) Ice Cream productions. Most students like the experiment of a volcano eruption and ice cream production. Students were also given training in Microsoft Word and Paint to increase students' knowledge in the field of technology. Most students prefer and like paint training. The community service team provided the reading books and simple practical inspirations for improvement and study experiences.

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