

SCIENCE LESSON

Dye-sensitized solar cell (DSSC)

Unit: C
Place Visited: University of Indonesia (UI)
SMAN 1 Depok/SMA Kolese Gonzaga
Duration: 2 September –15 September 2013
Name: Akiumi OBA
Affiliation: Faculty of Engineering

1 Objective

In this lesson, each student was expected to:

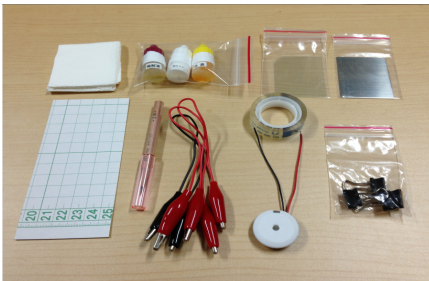
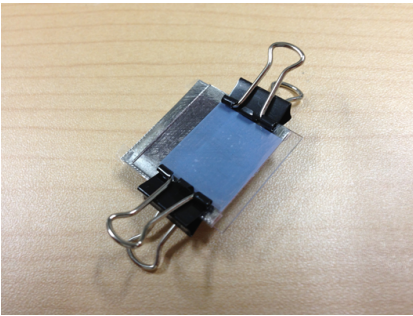
- make a simple dye-sensitized solar cell (DSSC); and
- conduct simple activity using DSSC, a mechanism that converts light into electrical energy.

2 Flow of the lesson

The lesson was conducted for 90 minutes in each class.

Time Allotment	Class Activity	Teacher's Support (Materials/Worksheet)
10 mins.	I. Introduction A. Make students think how batteries generate power and ask questions such as, "How electricity is generated?" <i>Possible answers:</i> ⇒ Thermal power system ⇒ Water power system ⇒ Wind power system ⇒ Nuclear power system ⇒ Solar power system ⇒ etc.	Pictures of several power generators will be shown through power point slide



Time Allotment	Class Activity	Teacher's Support (Materials/Worksheet)
	<p>B. After Japan had a big earthquake on 11th May 2011, Japanese people began paying much attention to renewable energy sources.</p> <p>⇒ What are the sources of renewable energy? (Wind, Water, Solar...)</p> <p>⇒ Solar power system is explained in detail.</p> <p>C. Prepare the students for an activity on solar power generation using simple materials.</p> <p>⇒ “Shall we conduct an experiment to understand the mechanism behind solar power generation?”</p>	<p>Show some data and materials of solar power system</p>  <p style="text-align: center;">↓</p> 
<p>60 mins.</p>	<p>II. Experiment</p> <p>Each group will be asked to make their own Dye-Sensitized Solar Cells (DSSC).</p> <p>NOTE: <i>Before students start making it, we explained the outline of the process.</i></p>	<p>Give some handouts about the process to make the DSSC.</p>
<p>10 mins.</p>	<p>III. Summary and conclusion</p> <p>We let them think about the advantages or disadvantages of the DSSC. We also asked them to write some comments after this lecture.</p> <p>Finally, we encourage the students to never stop generating innovative ideas and aim to make the world easier to live in the near future.</p>	

3 Realizations

These were the realizations of our group after we had our internship in Indonesia.

Plus points

- a. The experiment kits were well prepared.
- b. We used photos and videos to explain the procedure of the experiment.
- c. The students succeeded in conducting electricity through the DSSC that they made.

Minus points

- a. We didn't have enough time to respond to every student's questions.
- b. Overall, our presentation was good. However, our English was not really fluent. (students' opinion)

4 Implications for future activities

Learning how to fluently converse in English, especially when talking to foreigners, is an important skill that needs to be considered by students who plan to teach or study abroad. About science class, extra experimental kits should be prepared in case of emergency.

JAPANESE CULTURE

Origami

Unit: C
Place Visited: University of Indonesia (UI)
SMAN 1 Depok/SMA Kolese Gonzaga
Duration: 2 September –15 September 2013
Name: Hiraku WATANABE
Affiliation: Faculty of Engineering

1 Objective

In this lesson, each student was expected to:

- trace the possible origins and early uses of ORIGAMI; and
- identify how ORIGAMI is used in daily activities and in designing modern-day technology (air bags for cars and artificial satellites, among others).

2 Flow of the lesson

This lesson started from the introduction of ORIGAMI, “What do you think ORIGAMI is?”

Majority of the students seemed to know it; there was no need to explain about the basic concept of ORIGAMI in detail (see Figure 1).

After which, the students were told that papers had been expensive in the ancient Japan; i.e. papers were used only to wrap some special gifts. This led to the development of, “ORIGATA 折形,” a traditional way of wrapping. This idea was used as the springboard to make the students realize that ORIGATA had changed its way to ORIGAMI, which meant that ancient Japanese had shifted their attention from “wrapping for formality” to “folding as a play.” 15 minutes were consumed in



Figure 1. Introduction

this section.

Students were then asked to make KABUTO, a Japanese SAMURAI Hat. The students were guided in every step. This process took about 25 minutes. We originally planned to let them make a SHURIKEN, or Ninja star, but we could not due to time constraint.

This presentation was concluded by making the students infer that the practice of ORIGAMI still persists in Japan. In fact, ORIGAMI is being used in designing cutting-edge technologies, such as solar cell panels of artificial satellites and vehicles' air bags.

Table 1 summarizes the outline of the lesson.

Table 1. Flow of the lesson

Time Allotment	Activity	Teaching Materials
10 mins.	I. Introduction A. Self-Introduction B. The origin of ORIGAMI C. Explanation about ORIGATA	
10 mins.	II. Development ⇒ How ORIGAMI evolved ⇒ Shift from ORIGATA to ORIGAMI	
15 mins.	III. Activity ORIGAMI	Chiyogami 千代紙 Newspaper 新聞紙
10 mins.	IV. Conclusion ⇒ Applications of ORIGAMI	

3 Realizations

Majority of the students already knew about ORIGAMI and had the experience on making it. Fortunately nobody had experience on making KABUTO and SHURIKEN.

With regard to the GOOD POINTS of our lesson: one of which is using newspaper for the activity. When students were making KABUTO, we told them to make two variations of KABUTO.

One was made of a special paper, or CHIYOGAMI 千代紙, and the other using newspaper. The use of newspaper seemed effective because the students happily wore the large KABUTO hats (see figure 2).

Since communication is important in every lesson, we thought it was necessary to always interact with the students. In our case, we continuously talked to the students even during the activity; i.e. we asked their thoughts regarding the activity, and whether it is difficult or not. We also helped them out and regulated the total pace whenever they had difficulty understanding any aspect of our lesson.

Activeness is a remarkable difference in characteristics between Indonesian and Japanese students. Japanese students are rather reserved when compared with foreign students. Most of the Indonesian students raised their hands and shared their thoughts as audibly as possible. We have to entertain them and motive their curiosities in the lesson. This facilitated the smooth flow of our presentation and their smile also motivated us during the lesson.

However we also realized that no matter how hard you prepared for the lesson, somehow you would feel you could not satisfy the students' interests. You would feel that you ought to make lessons that could inspire students' souls for better understanding the lessons. It seemed as if, "It was not enough, though we prepared much."

DISCUSSIONS ON OUR LESSONS

Discussions on our lessons at Universitas Indonesia

Unit: C
Place Visited: University of Indonesia (UI)
SMAN 1 Depok/SMA Kolese Gonzaga
Duration: 2 September –15 September 2013
Name: Syunsuke KOIKE
Affiliation: Faculty of Education

1 Objective

In this training, each participant was expected to:

- revise and check the teaching materials, based on the feedback of teachers and students in UI; and
- share some insights regarding the lesson and experiences during the internship program

2 The training sessions

The training had two sessions. One was prior to our lesson, while the other was after we had our teaching experience in UI. Each training are described as follows:

The prior training (4 September)

Some students and teachers from the University of Indonesia gave us suggestions on how to improve our science and Japanese culture lesson. Table 1 and 2 summarizes the flow of the training during this session.



Table 1. The prior training of science lesson

Time Allotment	Activity	Teaching Materials
10 mins.	I. Introduction of the lesson A. Self-introduction B. Motivation	Power point slides
15 mins.	II. Development A. Experiment B. Discussion	Experiments kit
5 mins.	III. Conclusion	

Table 2. The prior training of Japanese culture lesson.

Time Allotment	Activity	Teaching Materials
10 mins.	I. Introduction of the lesson A. Self-introduction B. Motivation	Power point slides
10 mins.	II. Development ⇒ Activity	Origami and Newspaper
5 mins.	III. Conclusion	

The subsequent training (9 September)

We presented and discussed the results of our teaching experience. There were also video clips on last year and this year's TWINCLE program were played. Table 3 shows a summary of the activities during this session.

Table 3. The subsequent training

Time Allotment	Activity	Teaching Materials
10 mins.	I. Summary of the lessons A. Science lesson B. Japanese culture lesson	The result of questionnaires by SMA N 1 and SMA Kolese Gonzaga
30 mins.	II. Feedback from the teachers III. The TWINCLE Program video clips	

3 Realizations

These were the realizations of our group after we had our internship in Indonesia.

Plus points

✧ *About Japanese culture lesson*

- a. The handouts were as interesting and unique as the topic.
- b. The materials used were available everywhere. Everyone can make it anytime.

✧ *About science lesson*

- a. The purpose, materials, and procedure were clearly explained.
- b. A student said, “We can try the experiments about solar cells and then we will know why and how.”

Minus points

✧ *About Japanese culture lesson*

- a. More regional origami (Japanese special origami) would be nice.
- b. The activity time was short to make origami.

✧ *About science lesson*

- a. A student quipped, “It was not explained the reason must be TiO_2 and why to use the TiO_2 .”
- b. Another one wrote, “It was not explained how the glass is transferring the electricity.”

4. Implications for future exchange programs

We felt the importance of teaching materials. By using these things, the students can remember much of the concepts they learned. We can overcome the issue of language barrier by providing visually appealing devises as teaching materials.

CULTURAL EXCHANGE

Cultural Exchanges Among Indonesian People

Unit: C
Place Visited: University of Indonesia (UI)
SMAN 1 Depok/SMA Kolese Gonzaga
Duration: 2 September –15 September 2013
Name: Syunsuke KOIKE
Affiliation: Faculty of Education

1 Objective

In this internship, we were expected to:

- experience some aspects of Indonesian culture; and
- acquire a new insight by knowing the differences between Japan and Indonesia.

2 Our activities with UI members

We experienced some aspects of Indonesian culture in two weeks. Table1 shows our activities

Table 1. Our activities

Date	Activity
5 Sept.	<ul style="list-style-type: none">• Tour around UI• Experience of traditional musical instruments at SMAN 1 (inset)
6 Sept.	<ul style="list-style-type: none">• Exchanges with Japanese club members at SMAN 1• Trip to Bogor Botanical Garden with Bogor group (N and O) and Indonesian students
7 Sept.	<ul style="list-style-type: none">• Experience traditional life in a village in Bogor



This is a continuation:

Date	Activity
8 Sept.	<ul style="list-style-type: none">• Trip to Ayer island in a boat• Participation in Jakarta-Japan Festival of Monas
11 Sept.	<ul style="list-style-type: none">• Traditional music and dance at SMA Kolese Gonzaga (figure 1)
13 Sept.	<ul style="list-style-type: none">• Trip to CIKINI• Painting workshop with children at CIKINI (figure 2)



Figure 2: Bali dance



Figure 3: CIKINI Workshop

3 Realizations

These were the realizations of our group after we had our internship in Indonesia.

In the past two weeks, I was able to experience some aspects of Indonesian culture. Certain cultural aspects of Indonesia and Japan are different such as diet and lifestyle. However, we learned that many Indonesians like Japanese food, anime, and music, among others. Thus, the experience made me realize that the wonders of Japanese culture can also be viewed from outside.