



# UNIT U in Singapore

Date: 2015/03/02 — 2015/03/11  
 University: Nanyang Technological University (NTU)  
 Secondary school: Maris Stella High / St. Joseph's Convent  
 (All boys / All girls, grade 9 — 10)

Masaki Oishi (Engineering)  
 Yuki Yamada (Engineering)  
 Keiko Tomii (Education)  
 Hiromi Shimada (Education)



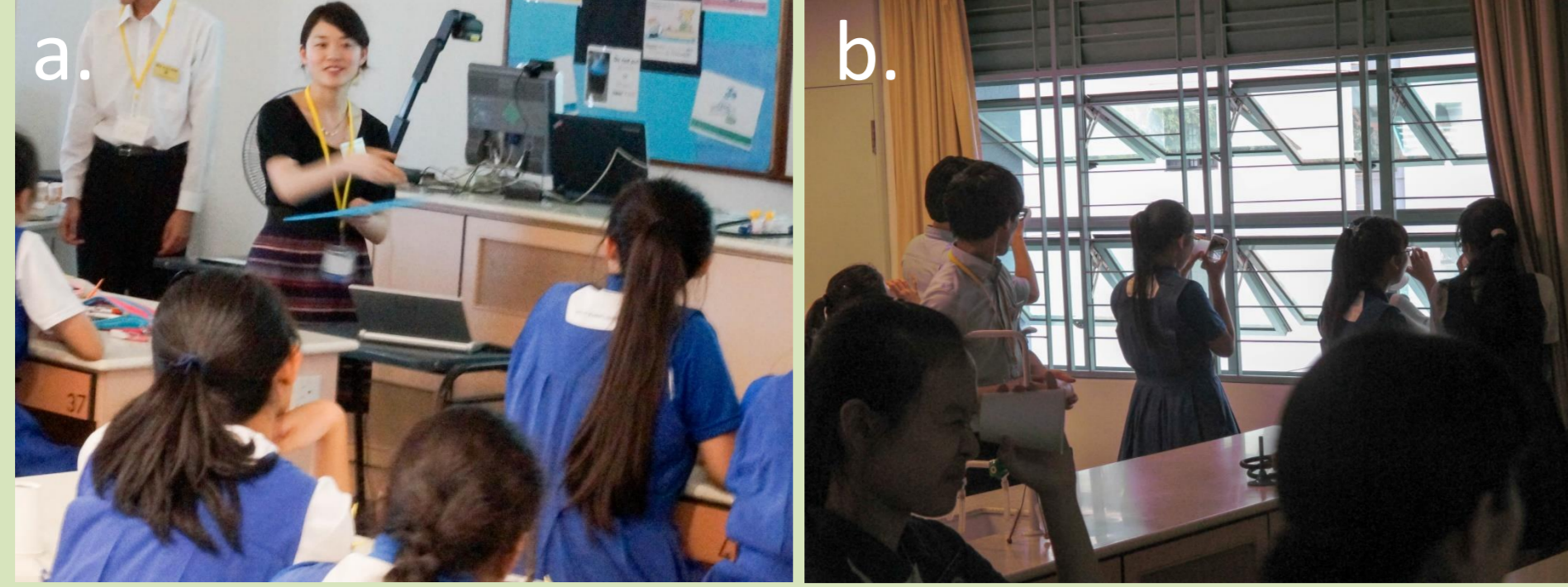
## Science "Optical Multiplex Communication"

## Japanese culture "The viewpoint of Disaster"

### I. Contents of class

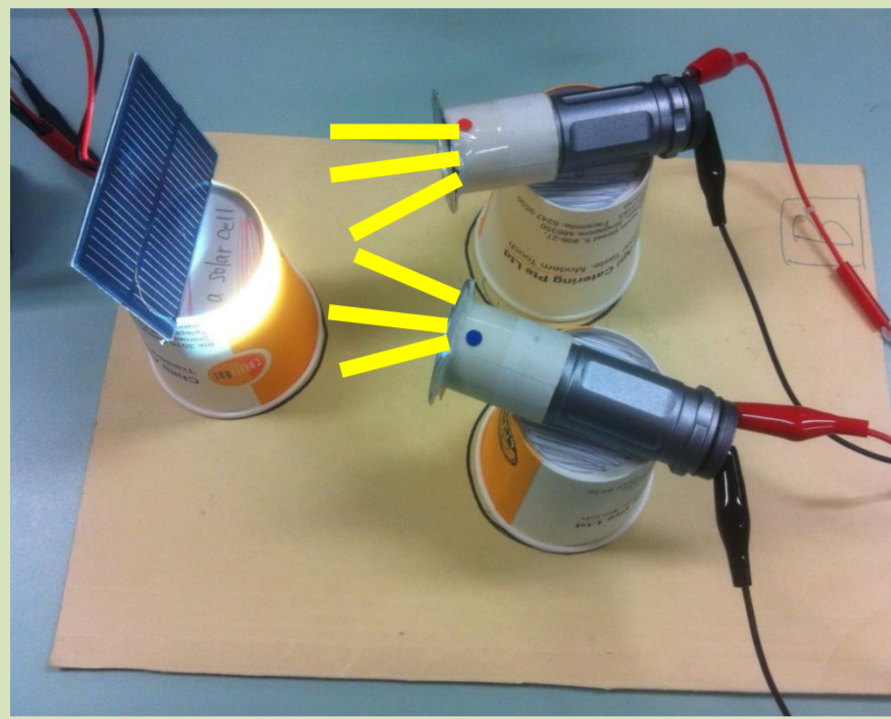
#### 1. The Nature of light: Wavelength and Polarization

- a. Light is a wave.
- b. Activity: search polarized light around us.



#### 2. Experiment of optical multiplexing communication

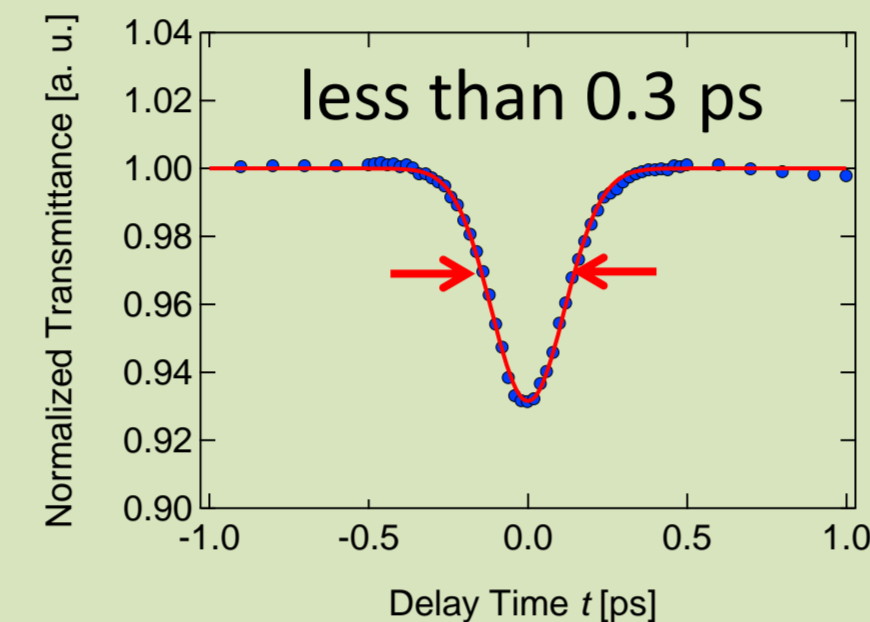
Polarizer as a switch for the two superposed light signals of music.



Experimental system

#### 3. Our research: all-optical switch

Promising result of very short response time



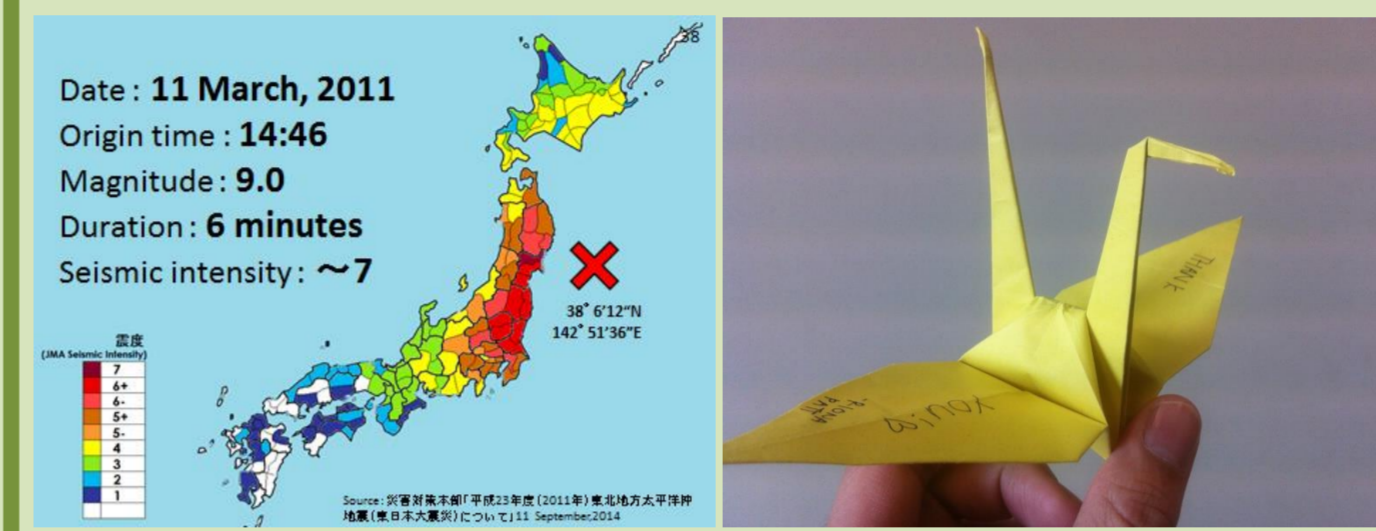
#### 1. Nature, Disaster and Earthquake drill in Japan

- a. Japan's abundant nature and disaster
- b. earthquake drill and its Experience



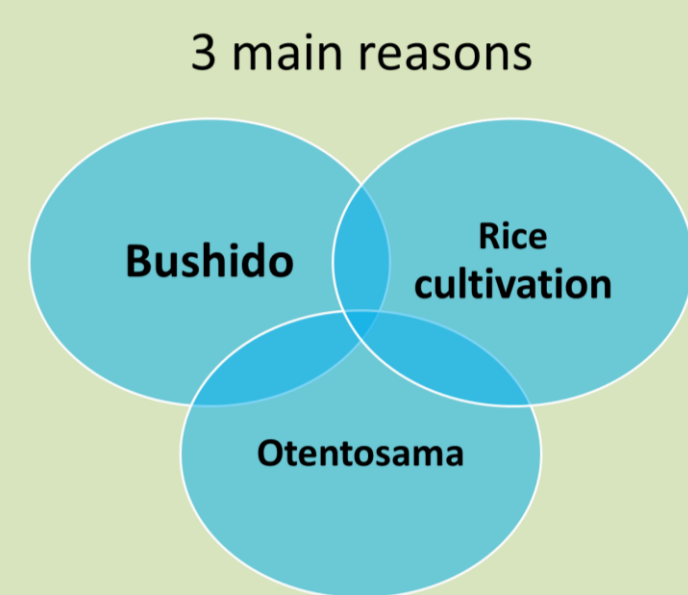
#### 2. Tohoku earthquake

Statistics, personal experience and origami activity



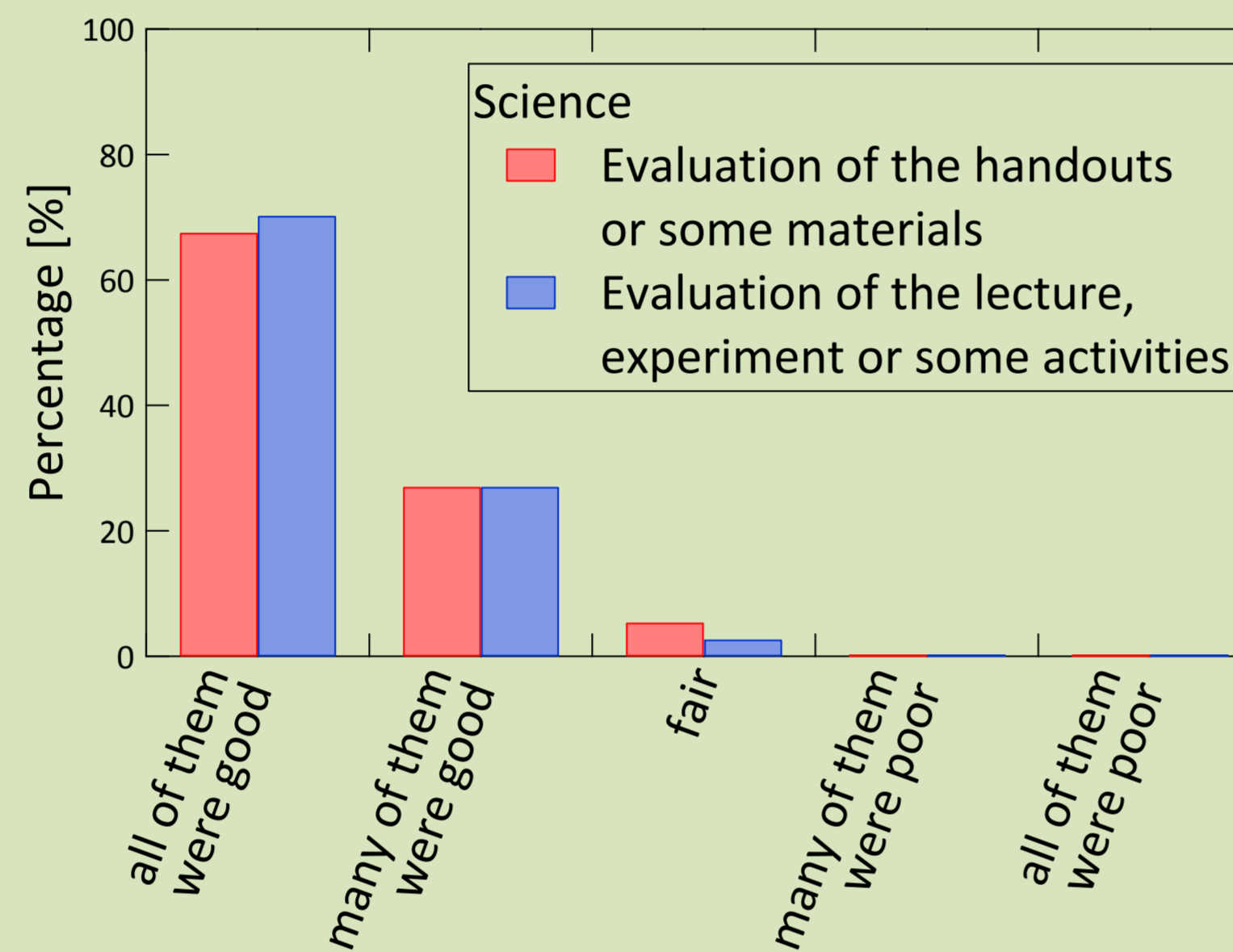
#### 3. Features of Japanese

Newspaper of Japanese behavior after the earthquake and its analysis

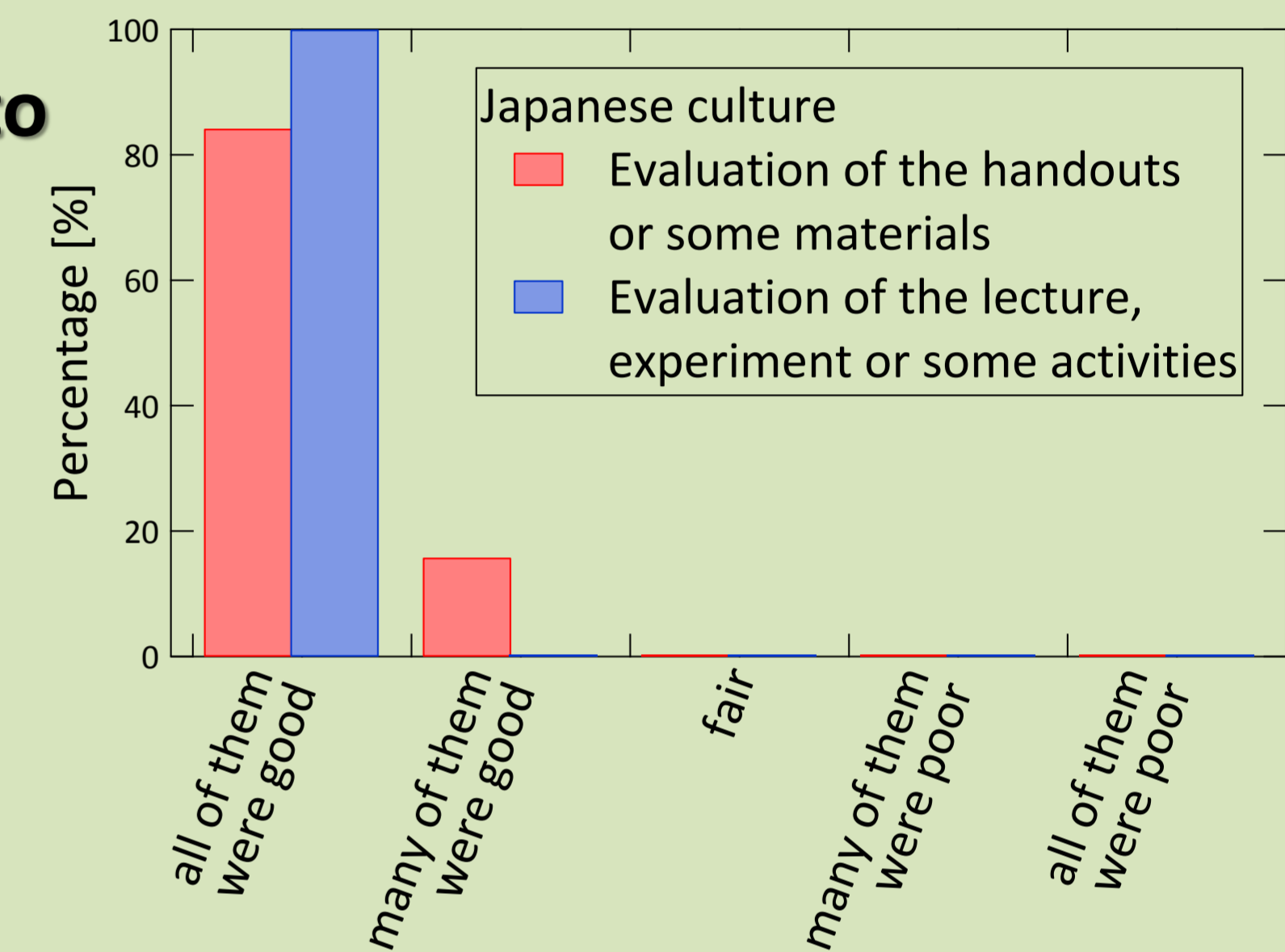


### II. Student's Reaction

- The experiments involving the polarizer were **very interesting**. It kept me thinking.
- It also **opened my eyes** to the future of communication.
- I got to deepen my knowledge of physics even more.



- The activities were **enjoyable to learn** about the Japanese culture.
- **It was fun and interesting** to know more about Japanese culture.
- I hope our school would host a program like this again.



### III. Improvements and Achievements

- Cut graph of experimental results  
→ We were able to introduce interest of our research so that students understood it.
- Use equipment which explain polarization and polarizer  
→ Students understood polarization and effect of polarizer.
- Explain of experiment **step by step**, and **define the positions** with backing paper and paper cups.  
→ Students were able to experiment smoothly

- Cite from the newspaper about Japanese behavior  
→ Approach to characteristic of Japanese objectively
- Shows a video clip  
→ Students were able to imagine the earthquake drill in Japan.
- Experience a Japanese earthquake drill  
→ Students were able to be simulated it and have **high awareness of earthquake**.
- Compare with Sumatra-Andaman Earthquake  
→ Small number of missing life owing to preparation for earthquake

### IV. Self-Reflections

- ◆ The relationship between first lesson and second lesson was shallow.
- ◆ The progress of the experiment varied widely.
- ◆ Experiment of optical communication attracted students.
- ◆ Students were interested in polarizer very much.

- ◆ There was not enough time to measure their comprehension.
- ◆ We should improve skill of English and presentation.
- ◆ Students showed an active response to the activities and questions.
- ◆ Surprisingly, **students made paper crane for us which have massage**.

### What we saw in Singapore

- Multinational cultures esp., language and foods Chinese, Indian, Malay, Arabic,...

- Clean town but a lot of FINE notice  
-No eating and drinking in a train: fine \$500  
-No durians in a train

- Beautiful night street and modern architectures



Chilli Crab

Ice Kacang



Dosai

Lo Hei Yu cheng

