TWINCLE Program in Singapore

Unit V
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1. Science lesson

1.1 Objective

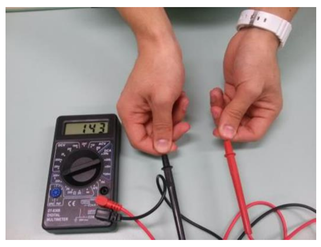
・To make students understand we can visualize by using the electricity

・To get students interested in science

1.2 Improved points

Changed points based on teaching in Singapore

(1)Additional experiment



Measure body's resistance.
⇒To understand our body also has particular resistance value

(2)Sensor model

Cake → Blood vessel

Change sensor model
⇒To understand easily based on the logical flow

1.3 Flow of the lesson

Our science lesson was based on EPT theory. Therefore the lesson was constructed by 5 sections and showed below:

①What is a visualization?

Visualization means visualize invisible things with science technology.

Q. What are the differences between A and B?

EPT is categorized tomography in visualization.

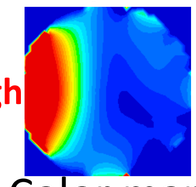
②Share the EPT knowledge

Students were shared EPT basic knowledge which are shown;

・EPT is used electrical property values by measure.

・EPT color map images are reconstructed by measured electrical property values for easy to understand.

・EPT has several strong points against other tomography techniques…etc.



Color map

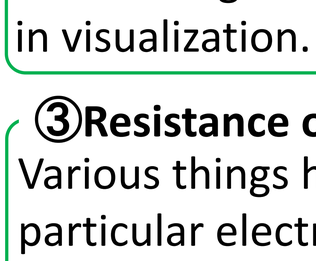
<Strong points>

1. Safety issue
2. Cost
3. Training

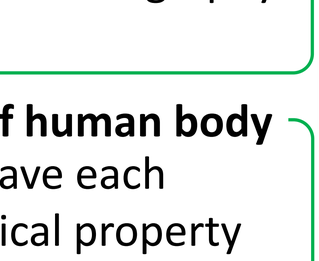
③Resistance of human body

Various things have each particular electrical property values. Then we can expect the thing by the electrical property value. Students were experienced human body also has particular electrical property values through measuring body resistances

Measuring body resistance



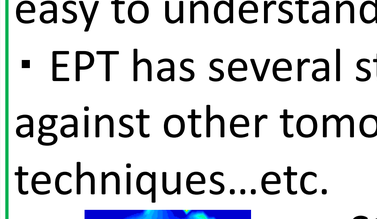
Dry hands



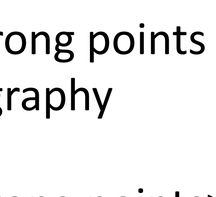
Wet hands

④Where is a blood clot?

Student were shared what is visualization, tomography and EPT. Then students tried to expect blood clot position in blood vessel model using EPT.



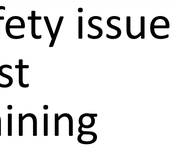
Experimental circuit



Make color map based on resistance value

High resistance⇒Red

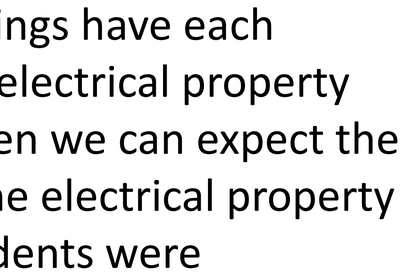
Low resistance ⇒Blue



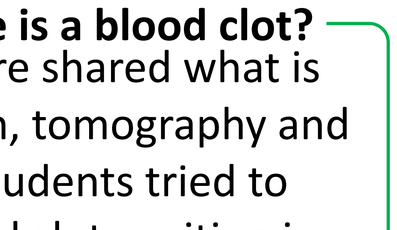
⑤Current research introduction

Finally, we had been shown current research by EPT.

Blood clot detection in flowing blood



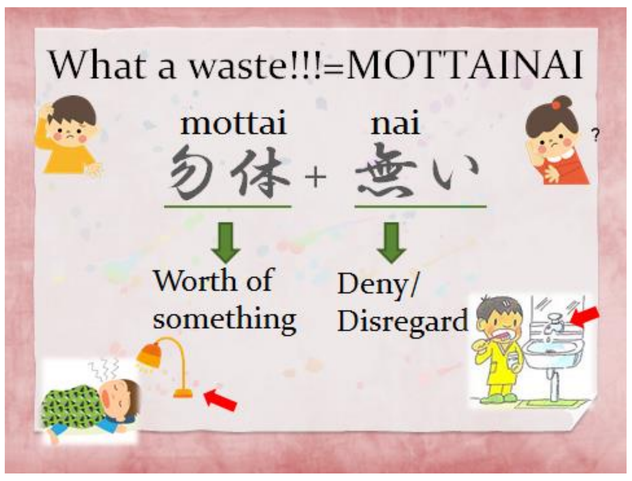
Cell sensing and manipulation in microchannel



2. Japanese culture lesson

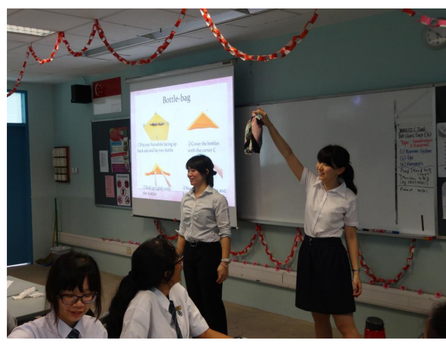
In Japanese culture lesson concept was to share Japanese unique mind "MOTTAINAI".

(1) Introduce MOTTAINAI mind

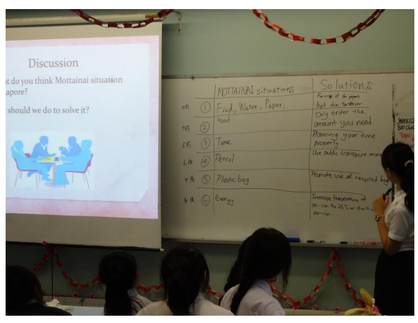


(2) Teaching relationship between Japanese traditional practice and MOTTAINAI through FUROSHIKI activity

Furoshiki



(3) Discussion about MOTTAINAI situations and solutions in Singapore



3. Singapore life

Merlion statue

Marina bay sands

Super tree

China town

Little India

Arab street

4.Review through TWINCLE in Singapore

1. We have been learned and known how do we construct science lesson logically through discussion with NIE students
2. We have been recognized interest of science and difficulty of teaching our knowledge again through TWINCLE program
3. We were surprised Singapore kids are interested in Japanese culture
4. We recognized young Japanese people such as our generation should lead Japanese society through the life of high level economic country Singapore and discuss with NIE students

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