Science Class Development, October 31 (Thu.) JICA's Class Plan, 3rd Period 1-A, Teacher :Miwa Kouji

1 Goal of this class

· To plan experiments to confirm that plants, when they carry out photosynthesis, absorb carbon dioxide as a raw material and, with the jigsaw learning method, associate the results of the three experiments with different methods with one another to derive a conclusion

2 Development (2 hours 2/2 hours in period)

Flow	○ Pupils' learning activity	· Teachers' involvement
Comprehen-sion	○ Confirming that plants use their chloroplasts to carry out photosynthesis ○ Thinking about what plants absorb as a raw material to produce starch	· Encouraging the pupils to guess what plants absorb and what plants need as a raw material to carry out photosynthesis
(10 minutes)	[Learning task] What do plants absorb to carry out photosynthesis?	
Investigation	○ Presuming that because plants contain starch, they absorb carbon dioxide as raw material ○ Thinking about how to confirm that plants absorb carbon dioxide · Using limewater · Using gas detection tubes · Using BTB solution	· Burning starch in a demonstration experiment to show that starch contains carbon · Teaching that BTB can be used because carbon dioxide, when it dissolve in water, exhibits acidity
(25 minutes)	○ Deciding which experimental method each team member uses and dividing the pupils into groups using different methods <Jigsaw learning method>	· Explaining why and how the jigsaw learning method is used · Teaching the need for control experiments and providing pupils with support to think about how to perform control experiments
(50 minutes)	○ Thinking in groups about what experiment is needed to confirm that plants absorb carbon dioxide and preparing an experiment plan	♦ Confirm if the pupils have planned experiments, including control experiments, to examine that plants, when they carry out photosynthesis.
Investigation	(Prepare for the experiment in the morning.) ○ Working with other group members to confirm the experiment results ○ Exchanging the experimental results with the groups using the same method to summarize findings from the results	· Providing the pupils with support to discuss and summarize what they can find out from comparison in control experiments
(25 minutes)	○ Returning to their own teams to exchange the experiment with the other team members	· Encouraging the pupils to explain the experimental results and findings from the results using actual plants
Association (40 minutes)	○ Thinking about what they can find out from the results of the three experiments Plants absorb carbon dioxide to carry out photosynthesis.	♦ Confirm if the pupils have explained the experimental results of their own groups in comparison with the results of the control experiment.
Gathering (50 minutes)	○ Confirming that plants use carbon dioxide and water as raw material to carry out photosynthesis ○ Having new questions *Where do plants absorb carbon dioxide from? *How do plants carry water to their leaves?	· Encouraging the pupils to review the need for control experiments and the importance of jigsaw learning · Encouraging the pupils to list new questions arising in solving the task and have a vision for the next class

3 Assessing how much the goal of this class has been achieved

· Assessing, by observing and evaluating the jigsaw learning and checking the worksheets, if the pupils have planned experiments to confirm that plants, when they carry out photosynthesis, absorb carbon dioxide and associate the results of the experiments with three different methods with one another to derive a conclusion