Lesson 11 - Solar Crane

Course Objectives	■ Understand the scientific principles of solar crane by observing the model's operation. ■ Develop the ability to communicate and coordinate with others through group discussion. ■ Assemble the solar crane with building blocks and try to demonstrate the principles applied in the model.	Total Time 60 mins
Keywords	Solar Energy. Crane. Photoelectric Effect.	

Teaching Guide	Time (mins)	Teaching Resource	Assessment
1. Increase Students' Motivation (1) A teacher lectures the topic story. Students listen and try to comprehend the lesson. (2) A teacher demonstrates the model of this lesson - Solar Crane. Please ask students to think about how to make it work more smoothly. (3) Brainstorming What things in our everyday lives generate power from light energy? （A：Some watches have a device that converts light energy into electrical energy and stores the energy to make the watches work.）	5	▪ Supplemental slides	Self-awareness

2. Course Activity Related to the Manual (1) Students get the basic materials of this model. (2) A teacher can guide students to assemble the model with the building blocks according to the teaching slide and the student's book. (3) Encourage students to modify the model. If a student finishes the adjustment, he or she can do the "Hands-on Experiment" first. (4) Hands-on Experiment How can we make the crane go down? （A：If the model operation is going up when we turn on the switch, now we want to make the crane go down. We can exchange the two wires that connect the motor so as to make the motor rotate in the other direction.） (5) Hold a contest. Students can discuss and practice during the contest. (6) Hands-on Creativity Design a handle switch that can be used to control the upward and downward movement of the crane. （A：Ask students to modify the model.）	10 20 15	▪ Electronic whiteboard ▪ Projector & Screen ▪ Tablet or computer ▪ Building blocks	Participation
3. Integrated Learning (1) Display all the models of each group. Give the winner group a big hand. (2) A teacher can make a review of the concepts of "Solar Energy. Crane. Photoelectric Effect." Or this teacher can encourage students to share the experience about either the assembly of the model or the reflection of a game. (3) Students' works can be displayed in the classroom. (4) Remind students to clean up the desk, disassemble the model and put the building blocks back to the boxes.	10	▪ Model ▪ Boxes	Oral Presentation
4. Extension Task (1) Encourage students to find out relative things in daily life and try to make an extension of the model. (2) Let students modify the model and see what ideas students can come up with.			
Record & Feedback			