[52 minute lesson]

Japan Public Release Lesson 1 Lesson Graph [8th grade]

3½ minutes

Whole-Class Seatwork: Class reviews previous lesson

The lesson starts with a formalized greeting where all the students bow to the teacher. Students go over yesterday's handout about electrolysis of water.

1½ minutes

Whole-Class Seatwork: Teacher poses question about combination reactions

The teacher introduces today's lesson by asking the class, "Is it possible to make water?" They have learned about electrolysis, which is a decomposition reaction. The teacher is now having students consider the opposite reaction without first identifying the term (combination reaction).

7 minutes

Independent Seatwork: Students write in notebooks

Students discuss with their neighbors whether water can be made out of hydrogen and oxygen. They write their ideas in their individual notebooks. The teacher instructs them to summarize using their own words rather than providing a textbook's response.

4½ minutes

Whole-Class Seatwork: Students share their ideas

Students believe that water can be made; however, there is some variance in the process in which this can be done (e.g., cooling versus heating). The teacher says there are many ways, but heating is "the closest." The teacher prepares the class for a demonstration.

1 minute

Science Organization: Students gather in front of classroom

The teacher asks students to gather around the front table where a group of students are already sitting. She is preparing to demonstrate a combination reaction.

15½ minutes

Whole-Class Practical Work: Teacher demonstrates combination reaction

The teacher shows the class the materials she will be using in the demonstration involving oxygen and hydrogen. She collects oxygen from a can of compressed air, and hydrogen by generating it from diluted hydrochloric acid. Both gases are collected in a closed column partially filled with water. The teacher connects electrodes to the column and then runs a current through the gases. Students are startled with the "boom" that resulted from the reaction. They perform the same demonstration a second time for better observations. This time, students set up and perform the demonstration. The teacher asks for their observations. She directs their attention to the water level of the column, before and after the reaction. The water level increased, which means the gas was used up because "there's nowhere for it to go." Students claim it turned into water, but to test this assumption, they would have to use cobalt chloride paper. However, in this case, that would be difficult because there is already water in the column.

1 minute

Science Organization: Students return to their seats

The teacher puts away the demonstration materials with the help of some students. The rest of the class returns to their seats.

4½ minutes

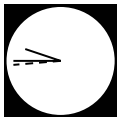
Whole-Class Seatwork: Class compares demonstration to textbook diagram

The teacher instructs the class to turn to their textbooks (page 81). The class compares the diagram in the textbook (Diagram 7) to what they just did in the demonstration. The teacher then instructs students to write what they learned today, calling on three students to be ready to write their responses on the chalkboard.

5 minutes

Independent Seatwork: Students write in notebooks

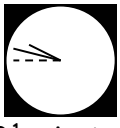
Students write what they learned in today's lesson. The teacher calls on three students to write their responses on the chalkboard.



1 minute

Whole-Class Seatwork: Class revisits question about combination reactions

The teacher goes over students' responses on the chalkboard and connects it to the original question, "Can water be made out of hydrogen and oxygen?" She instructs students to write a one-sentence summary, using arrows like the ones drawn on the board.



2½ minutes

Independent Seatwork: Students write in notebooks

Students continue writing in their notebooks. The teacher walks around to the different groups checking what they wrote. She corrects one students' use of equal signs versus arrows.

3 minutes

Whole-Class Seatwork: Class discusses combination and decomposition reactions

In a previous lesson, students learned about electrolysis. The teacher connects this information with what they did today. She points to the chalkboard and states, "In this case over here, you are making one thing from something and something." This is called a chemical combination, which is the opposite of a decomposition reaction (e.g., electrolysis of water). She instructs students to look at their textbook pages 80-81 to introduce what chemical combination experiment they will be conducting in their next class.

2 minutes

Science Organization: Students prepare to leave

Students bow to the teacher and thank her. Group leaders collect yesterday's handout to submit to the teacher.