Unit Plan of S1 Science

Topic: Closed circuit
Number of lesson(s): One (50 mins)
Inquiry questions: Which circuit is more effective?

Remarks：( ) Stands for the number of lesson, but it would be amended by teachers if necessary
WS stands for worksheet；TB stands for textbook; Ex stands for extended task; Diff stands for tasks for differentiation

Prior knowledge: Use of electricity in daily life, electric conductor, insulator

Objectives

Concepts and knowledge:
1. Understand closed circuit in series
2. Understand parallel closed circuit

Skills:
1. Collaboration skills
2. Problem-solving skills

Values and attitudes:
1. Develop students' interest in exploring science and technology

Key dimension of the differentiated curriculum: Fundamental → Transformational

Strategies designed for gifted students:

Homogeneous grouping: 1-2 groups for gifted/high-ability students

**Anchor activity (Appendix 1)

Chinese and English books with vivid and interesting descriptions about "electricity" (from higher primary school to senior high school) **and** a flexible and changeable circuit board model are put in the resources corner.

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Learning Objectives			Learning and Teaching Strategies		Assessment
Concepts and knowledge	**Skills**	**Values and attitudes**	**Classroom (core curriculum) activities**	**Ex / Diff activities**	
Closed circuit in series	Collaborat-ion skills 1. Collaborat-ion skills 2. Problem-solving skills	Develop students' interest in exploring science and technology	1. Introduce closed circuit (personification): (5 mins) 1.1 Ask 4 students to act as components in the closed circuit (bulb; battery x2; switch; wires acted by arms of students holding together tightly) so as to demonstrate to students the features of closed circuit in series. 1.2 Explain to students the meaning of closed circuit: It is a route for current flow, which forms a loop. 2. Group activity: Make "series closed circuit": (10 mins) 2.1 Let students make series circuit in groups. Materials for each group: bulb; battery x2; battery pack; wires; switch (Remind students that all the components must be connected with wires rather than fixed with hands.) 2.2 Let students draw a physical representation of the series closed circuit on the WS (an example in Appendix 2)	Diff (1): Teachers may ask the group finishing the series circuit diagram earlier to read the circuit diagram marks (Appendix 3) aside, and find out the difference between the circuit diagram and the physical representation as well as try to draw a series circuit diagram. Then explain to students in Part 4 of the lesson.	Formative assessment: Observation

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Parallel closed circuit	Problem-solving skills	Develop students' interest in exploring science and technology	3. Design a "parallel closed circuit": (20 mins) 3.1 Ask students: "What are the defects of series closed circuit in design?" (remove a battery in the circuit to let students see the light turn off) 3.2 Ask students to redesign closed circuit in groups, so as to understand parallel closed circuit. (Teachers may prompt students to think: How to increase a path for current flow; are there other methods to connect wires?) 3.3 Let students draw a physical representation of closed circuit in series on the WS (as exemplified in Appendix 4)	Diff (1): Same as above Students who have completed Diff (1) → Diff (2): Teachers may ask the group finishing the parallel closed circuit earlier to read the books or design a circuit board model in the	

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Draw a circuit diagram	Collaborat-ion skills Critical thinking skills		4. Learn to draw a circuit diagram: (10 mins) 4.1 Ask the students who have finished Diff (1) to present the difference between the circuit diagram and the physical representation, and share their experience and demonstrate how to draw a circuit diagram 4.2 Let students draw a circuit diagram on WS 5. Conclusion: a. closed circuit in series (5 mins) b. parallel closed circuit "Which closed circuit is better and why?"	resources corner. Ex: Enhancement activity after class: Books in the General Studies Corner and relevant websites	Formative assessment: Question Summative assessment: WS1.1

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