

**Science (S1-3) Teaching Plan Design Award Scheme**  
**Relevant information of the judging criteria**

**Scientific Thinking**

Scientific thinking emphasises how students build scientific understanding through inquiry and reasoning. When designing learning and teaching materials, teachers could consider:

- providing phenomena closely related to daily life or nature to stimulate students' interest in inquiry;
- assisting students in applying scientific concepts to explain observed phenomena;
- guiding students to clearly identify independent, dependent, and controlled variables, and to design fair test;
- arranging repeated testing which allows students to examine the precision and reliability of experimental data;
- arranging activities for students to search and compare information from different sources (e.g. scientific journals, news reports, expert opinions);
- guiding students to determine the reliability and bias of information, and to support claims with data or evidence; and/or
- guiding students to engage in scientific argumentation and to examine fallacies or unreasonable assumptions within arguments.

**Creative Thinking**

Creative thinking emphasises students curating diverse and original ideas, and proposing innovative methods to improve existing solutions. When designing learning and teaching materials, teachers could consider:

- encouraging students to propose diverse and original ideas;
- setting open-ended questions to encourage students to propose new methods or ideas from different perspectives;
- providing more than sufficient materials or conditions to allow students to complete tasks in multiple ways;
- grouping students into small groups to compare different solutions and explore feasibility from multiple perspectives;
- guiding students to analyse the advantages and limitations of different solutions and to improve or combine them; and/or
- requiring students to explain why the improved solution is more effective or reasonable, thereby training critical thinking.

### **Computational Thinking**

Computational thinking is not limited to computer programming, but refers to a systematic, data-driven, and model-based approach in solving scientific problems. When designing learning and teaching materials, teachers could consider:

- systematically guiding students to identify steps, decompose tasks, and design fair testing procedures;
- providing opportunities for students to identify and rectify errors, for example, by checking the reasonableness of collected data or experimental procedures;
- arranging students to organise data, identify patterns or abnormality, and make inferences;
- requiring students to sketch graphs, construct data tables, and perform data analysis;
- guiding students to first propose a hypothesis, then use data to refute or revise the point of view;
- guiding students to build simple scientific models (e.g. mathematical formulae, flowcharts, computer simulations);
- encouraging students to compare models with the real world to understand the models' limitations; and/or
- encouraging students to refine models and use them to make predictions about new scenario.

Science Education Section, Education Bureau

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