

1.1 development in chemistry field and its importance in daily life



Chemistry

- Chemistry is a field of science that studies the structures, properties, compositions and interactions between matters.
- Learning of chemistry is not limited to chemicals found in the laboratory but also substances commonly found in daily life such as salt and soap.
- Chemistry helps us to understand matter around us.
- The word chemistry originated from the Arabic word 'al-kimiya'.



Chemicals in Daily Life

FOOD	AGRICULTURE	MEDICINE	INDUSTRY
<ul style="list-style-type: none"> • Preservative • Colouring • Flavouring • Antioxidant • Stabiliser 	<ul style="list-style-type: none"> • Herbicide • Pesticide • Fungicide • Fertiliser • Hormone 	<ul style="list-style-type: none"> • Antibiotic • Antiseptic • Vitamin • Chemotherapy • Analgesic 	<ul style="list-style-type: none"> • Paint • Polymer • Glass • Ceramic • Detergent • Colouring • Alloy

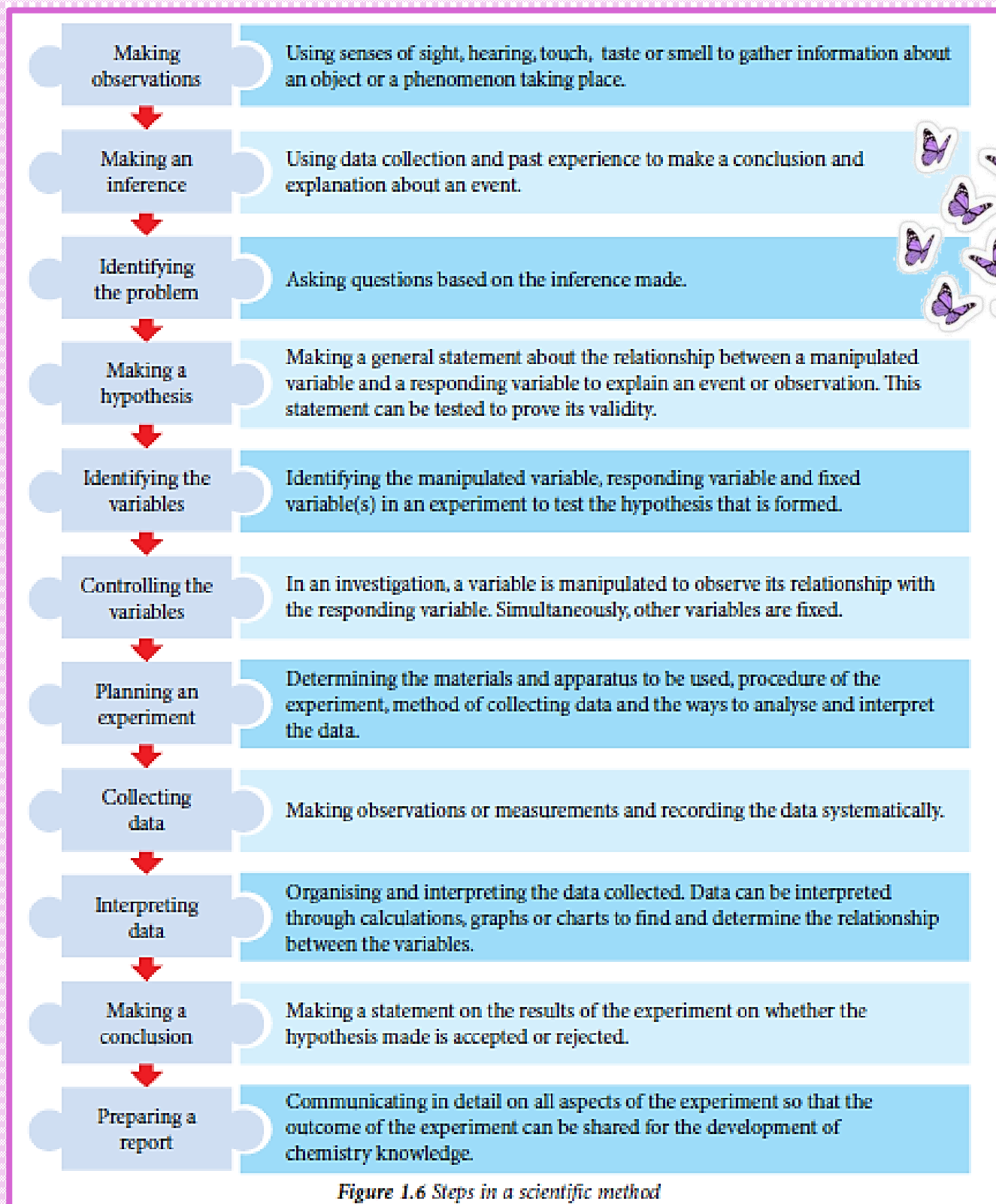
Careers Related to Chemistry

BIOTECHNOLOGY	PHARMACEUTICAL	NANOTECHNOLOGY	COSMETICS	GREEN TECHNOLOGY
<ul style="list-style-type: none"> • Biotechnology researcher • Biomedical Engineer 	<ul style="list-style-type: none"> • Doctor • Pharmacist 	<ul style="list-style-type: none"> • Nanotechnology engineer • Food scientist 	<ul style="list-style-type: none"> • Cosmetic chemist • Cosmetic Consultant 	<ul style="list-style-type: none"> • Green technology chemist • Engineer



1.2 SCIENTIFIC INVESTIGATION IN CHEMISTRY

Steps in a scientific method



1.3 USAGE, MANAGEMENT AND HANDLING OF APPARATUS AND MATERIALS

PERSONAL PROTECTIVE EQUIPMENT ≡



FUME CHAMBER

Alat direka khas untuk menjalankan eksperimen yang membebaskan wasap beracun, mudah terbakar atau berbau sengit.



Safety shower

- Is used to wash and clean the body when a chemical accident occurs on parts of the body.
- This equipment is also used to extinguish fire on clothings.



EYEWASH

Used for washing and cleaning the eye when accidents occur on parts of the eye.



FIRE EXTINGUISHER

Used for extinguishing fire in the laboratory.



HAND WASH

Used for removing chemical substances, oil, dirt and microorganisms from the hands.



STORAGE OF CHEMICALS ≡

REACTIVE SUBSTANCES

Stored in paraffin oil



HYDROCARBONS AND ORGANIC SOLVENTS

Stored in shady areas far from sunlight and heat source.

SUBSTANCES THAT DECOMPOSE EASILY

stored in dark bottles.

SUBSTANCES WITH $\text{PH} < 5$ AND $\text{PH} > 9$

stored in special storage cabinets that are kept locked.

HEAVY METALS AND TOXIC SUBSTANCES

be kept in special labelled containers and kept in a locked room which is heat free.

DISPOSAL OF CHEMICALS ≡

HYDROGEN PEROXIDE

- a low concentration can be poured directly into the laboratory's sink.
- a high concentration has to be diluted with water and added with sodium sulphite for the decomposition process to take place before being poured into the sink.

SOLID WASTES

disposed into special containers.



ORGANIC SOLVENTS AND HYDROCARBONS

kept in special containers made of glass or plastic.

VOLATILE SUBSTANCES

be stored in closed containers and kept away from sun and heat.

EMERGENCY MANAGEMENT PROCEDURE IN THE LABORATORY ≡

- 1 Inform your teacher or the laboratory assistant about the accident immediately.
- 2 Prohibit other students from entering the accident site.
- 3 Stop the spill from spreading to other areas by using sand to border it.
- 4 Clean the chemical spill.
- 5 Dispose of the chemical spill by following the correct procedures.

Steps to be taken the moment mercury spill occurs.

- 1 Inform your teacher or the laboratory assistant about the accident.
- 2 Make the spill site as the prohibited area.
- 3 Sprinkle sulphur powder to cover up the spill.
- 4 Contact the Fire and Rescue Department for further action.

