Key concepts

Key concepts promote the development of a broad curriculum. They represent big ideas that are both relevant within and across disciplines and subjects. Inquiry into key concepts can facilitate connections between and among:

- courses within the sciences subject group (intra-disciplinary learning)
- other subject groups (interdisciplinary learning).

Table 1 lists the key concepts to be explored across the MYP. The key concepts contributed by the study of sciences are **change**, **relationships** and **systems**.

Aesthetics	Change	Communication	Communities
Connections	Creativity	Culture	Development
Form	Global interactions	Identity	Logic
Perspective	Relationships	Systems	Time, place and space

Table 1
MYP key concepts

These key concepts provide a framework for sciences, informing units of work and helping to organize teaching and learning.

Change

Change is a conversion, transformation or movement from one form, state or value to another. Inquiry into the concept of change involves understanding and evaluating causes, processes and consequences. In sciences, change is viewed as the difference in a system's state when observed at different times. This change could be qualitative (such as differences in structure, behaviour, or level) or quantitative (such as a numerical variable or a rate). Change can be irreversible, reversible or self-perpetuating.

Relationships

Relationships are the connections and associations between properties, objects, people and ideas including the human community's connections with the world in which we live. Any change in relationship brings consequences—some of which may occur on a small scale, while others may be far reaching, affecting large networks and systems such as human societies and the planetary ecosystem.

Relationships in sciences indicate the connections found among variables through observation or experimentation. These relationships also can be tested through experimentation. Scientists often search for the connections between form and function. Modelling is also used to represent relationships where factors such as scale, volume of data, or time make other methods impractical.

Systems

Systems are sets of interacting or interdependent components. Systems provide structure and order in human, natural and built environments. Systems can be static or dynamic, simple or complex. Systems in sciences describe sets of components that function due to their interdependence or complementary nature. Common systems in science are closed systems, where resources are not removed or replaced,

and open systems, where necessary resources are renewed regularly. Modelling often uses closed systems to simplify or limit variables.

Other key concepts can also be important in sciences. For example, development is an important aspect in the continual growth through change that epitomizes scientific knowledge. Science offers important perspectives on the definition, measurement and meaning of time, place and space. Creativity is always important for scientists working together to extend the limits of human understanding.

Related concepts

Related concepts promote deep learning. They are grounded in specific disciplines and are useful for exploring key concepts in greater detail. Inquiry into related concepts helps students develop more complex and sophisticated conceptual understanding. Related concepts may arise from the subject matter of a unit or the craft of a subject—its features and processes.

The following tables list related concepts for the study of sciences. Teachers are not limited to the related concepts listed in this chart and may choose others when planning units, including from other subject groups.

Related concepts in biology		
Balance	Consequences	Energy
Environment	Evidence	Form
Function	Interaction	Models
Movement	Patterns	Transformation

Table 2a
Related concepts in biology

Related concepts in chemistry		
Balance	Conditions	Consequences
Energy	Evidence	Form
Function	Interaction	Models
Movement	Patterns	Transfer

Table 2b
Related concepts in chemistry

Related concepts in physics		
Consequences	Development	Energy
Environment	Evidence	Form
Function	Interaction	Models
Movement	Patterns	Transformation

Table 2c
Related concepts in physics

Related concepts for modular sciences courses		
Balance	Consequences	Energy

Environment	Evidence	Form
Function	Interaction	Models
Movement	Patterns	Transformation

Table 2d
Related concepts for modular sciences courses

The appendix contains a glossary of these related concepts for sciences.