**Characteristics of the nature of science**

Science education has defined tenets (characteristics) of the nature of science that are understandable by students and important for all citizens to know. William McComas and Joanne Olson analyzed recent science education curriculum documents worldwide and identified 14 statements about the nature of science that are common to most curricula:

* Science is an attempt to explain natural phenomena.
* People from all cultures contribute to science.
* Scientific knowledge, while durable, has a tentative character.
* Scientific knowledge relies heavily, but not entirely, on observation, experimental evidence, rational arguments and skepticism.
* There is no one way to do science – therefore, there is no universal step-by-step scientific method
* New knowledge must be reported clearly and openly.
* Scientists require accurate record-keeping, peer review and reproducibility.
* Observations are theory laden.
* Scientists are creative.
* Over the centuries, science builds in both an evolutionary and a revolutionary way.
* Science is part of social and cultural traditions.
* Science and technology impact each other.
* Scientific ideas are affected by the social and historical setting.
* Laws and theories serve different roles in science – therefore, students should note that theories do not become laws even with additional evidence.

**Simpler still**

Some researchers have refined this list to the following five tenets:

* Scientific knowledge is tentative (subject to change).
* Science is empirically based (based on or derived from observation of the natural world).
* Science is inferential, imaginative and creative.
* Science is subjective and theory laden.
* Science is socially and culturally embedded.