

SOCRATES PROGRAMME
Education, Audivisual and Culture
Executive Agency
European Commision,
BOUR - B-1049 BRUSSELS



COMPETENCY of Science Teachers _TR

Competency 1: Understanding Nature and Context of Science:

- The science teacher knows the values, beliefs and assumptions inherent to the creation of scientific knowledge within the scientific community, and compares science with other ways of knowing.
- Analyze local, regional, national, or global problems or challenges in which scientific design can be or has been used to design a solution.
- Evaluate the scientific design process used to develop and implement solutions to problems or challenges.
- Evaluate consequences, constraints, and applications of solutions to a problem or challenge.
- Analyze how scientific knowledge and technological advances discovered and developed by individuals and communities in all cultures of the world contribute to changes in societies.
- Analyze how the scientific enterprise and technological advances influence and are influenced by human activity
- Analyze the effects human activities have on Earth's capacity to sustain biological diversity.

Competency 2: Inquiry:

- Understand how to plan and conduct scientific investigations.
- Synthesize a revised scientific explanation using evidence, data, and inferential logic.
- Apply understanding of how to report complex scientific investigations and explanations of objects, events, systems, and processes, and how to evaluate scientific reports.
- Analyze why curiosity, honesty, cooperation, openness, and skepticism are important to scientific explanations and investigations.
- Analyze scientific theories for logic, consistency, historical and current evidence, limitations, and capacity to be investigated and modified.
- Evaluate inconsistent or unexpected results from scientific investigations using scientific explanations.
- Analyze scientific investigations for validity of method and reliability of results.
- Understand how scientific knowledge evolves.

Competency 3: General Skills of Teaching:

- Able to use science teaching actions, strategies, and methodologies.
- Able to establish interactions with students, including questioning techniques, that promote learning and achievement.

- Able to effectively organize classroom, laboratory, and field experiences in different student groupings.
 - Able to use advanced technology to extend and enhance learning.
 - Able to use prior conceptions and student interests to promote new learning.
 - Able to design investigations for science.
 - Able to analyze and present data.
 - Able to prepare laboratory reports.
 - Able to operate science laboratory equipment.
 - Able to prepare materials used in the science laboratory.
 - Able to establish and enforce lab safety (including storage and disposal of hazardous waste) in the science laboratory.
 - Monitor students' understanding of content through a variety of assessment strategies; provide feedback to students to assist learning.
 - Being able to use advanced technology to extend and enhance learning.
 - Design, conduct, and evaluate laboratory activities that target the development of science concepts, using techniques.
 - Being able to use prior conceptions and student interests to promote new learning.
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- Preparation of laboratory reports
 - Operation of equipment
 - Preparation of materials
 - Lab safety (including storage and disposal of hazardous waste)

Competency 4: Curriculum: The science teacher develops and applies a coherent, focused science curriculum that is consistent with the need, abilities, and interests of students. Curriculum refers to:

- Able to develop and apply an extended framework of goals, plans, materials, and resources for instruction.
- Able to develop and apply science principles, both in and out of school.
- Able to plan instruction which promotes problem analysis, critical thinking, creativity, leadership development and decision-making based upon subject matter, organization and integration of content and the relationship of content to education, career and life goals; student learning and motivation, with emphasis on individual differences; the community; and current education standards and practices.

Competency 5: Assessment:

- Knowing the measurement and evaluation of student learning in a variety of assessments.
- Identifying outcomes to be measured.
- Being able to measure and evaluate student learning in a variety of dimensions.
- Being able to use outcome data to guide and change instruction.
- Monitoring and assessing students' understanding of content through a variety of means, providing feedback to students to assist learning and adjusting instructional strategies.

Competency 6: Professional Practice: Science teachers have a knowledge base that prepares them for professional practice. Professional practice refers to:

- Knowledge of science.
- Knowledge of standards of ethical behavior consistent with the interests of students and the community.

- Participate the activities of the professional community to include colleagues, organizations, to improve student learning.
- Reflect on professional practices and continuous efforts to ensure the highest quality of science instruction.
- Willingly work with students and new colleagues as they enter the profession.
- Communicate effectively with parents/guardians, business and industry, and other agencies, and the community at large to support learning by all students.