

Science Philosophy

Education in science introduces students to the community of scientists, to the traditions of science, and to scientific exploration. Through the experiences provided in learning science, students become acquainted with the processes by which scientific concepts are created and then explored. Knowledge of these processes and concepts leads to the awareness that science is not a set of findings but rather the search for them. This awareness is accompanied by the understanding that issues created by the advance of science can only be resolved by moral judgment and political choice.

Science education addresses the students' need to deal with science as part of our culture. For some students, the experiences of science education initiate or respond to a personal interest in preparing to enter those courses of study and training that led to participation in the democratic community of pure and applied scientists. In addition, science education prepares all students to respond to scientific information regarding the social and personal issues raised by technology and to be functional members of the society.

Students need to understand the interrelations between science and technology and develop a conceptual understanding of the nature and process of technology. Students will combine their understanding of the nature of technology and science in order to develop their abilities to make predictions, decisions, think critically, and ultimately to problem solve. Science will continue to advance with the knowledge and application of technology.

Students learn science best when they have opportunities to model the methods of science, to learn by doing. This complements students' development as they move from dependence on concrete activities to tentative experiences with abstract thinking. At all grade levels, educators strive to provide guidance and stimulate students' curiosity and interest in science.

The content of science education is selected to meet students' needs. The content provides for the development of science concepts that are encountered and explored using the processes of science. There are opportunities for independent critical thinking through hands-on activities and a discovery-based program. These encourage a healthy skepticism.

Students learning science collect real data in classrooms, laboratories, and the outdoors. They record observations and measurements done on large and small scales, in qualitative and quantitative modes. They manipulate apparatus and follow directions to assemble and disassemble it. They analyze, manipulate, and communicate data using scientific terminology. They use mathematics to find patterns, discover relationships, and generate explanations and employ quick mental estimates for many mathematical operations.

Through the exploration of matter, motion, forces, space, and earth, students will find that science is connected to their everyday lives. Students need to understand the environment

as a system of interdependent components affected by human activity and phenomena. From the study of organisms to how our universe was created, students can see the relationship between their lives and global issues.