

## The Kenmore-Tonawanda USFD Science Philosophy

The study of science as an intellectual and social endeavor-the application of human intelligence to figuring out how the world works- has a prominent place in any curriculum that has science literacy as one of its aims. Consider the following:

- When people know how scientists go about their work and reach scientific conclusions, and what the limitations of such conclusions are, they are more likely to react thoughtfully to scientific claims and less likely to reject them out of hand or accept them uncritically.
- Once people gain a good sense of how science operates-along with a basic inventory of key science concepts as a basis for learning more later-they can follow the science adventure story as it plays out during their lifetimes.
- The images that many people have of science and how it works are often distorted. The myths and stereotypes that young people have about science are not dispelled when science teaching focuses narrowly on the laws, concepts, and theories of science. Hence, the study of science as a way of knowing needs to be made explicit in the curriculum.

Acquiring scientific knowledge about how the world works does not necessarily lead to an understanding of how science itself works, and neither does knowledge of the philosophy and sociology of science alone lead to a scientific understanding of the world. The challenge for educators is to weave these different aspects of science together so that they reinforce one another.

From their very first day in school, students should be actively engaged in learning to view the world scientifically. That means encouraging them to ask questions about nature and to seek answers, collect things, count and measure things, make qualitative observations, organize collections and observations, discuss findings, etc. Getting into the spirit of science and liking science are what count most. Awareness of the scientific world view can come later.

As children continue to investigate the world, the consistency premise can be strengthened by putting more emphasis on explaining inconsistency. When students observe differences in the way things behave or get different results in repeated investigations, they should suspect that something differs from trial to trial and try to find out what. Sometimes the difference results from methods, sometimes from the way the world is. The point is that different findings can lead to interesting new questions to be investigated.

Aspects of the scientific world view can be illustrated in the upper grades both by the study of historical episodes in science and by reflecting on developments in current science. Case studies provide opportunities to examine such matters as the theoretical and practical limitations of science, the differences in the character of the knowledge the different sciences generate, and the tension between the certainty of accepted science and the breakthroughs that upset this certainty .

The Kenmore-Tonawanda USFD supports project 2061 and its components, seeking through a coherent, relevant and changing curriculum to increase the scientific literacy of all students.

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