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Dewey and Chemistry: The Water Cycle Revisited

Guide for Curriculum Unit 95.05.02
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The best lessons in life are given to us by experience. Experience is the best teacher. The implications for chemistry of this common-sense notion are discussed in terms of the philosophy of John Dewey, in particular his epistemology, nondualism and nonauthoritarian metaphysics. The discussion recontextualizes constructivism to give it a firmer footing as a pedagogy. Chemistry is reconceived as a philosophy of the elements. A series of chemistry classes have been designed to be consistent with these ideas and in the manner appropriate for the 1990s.

Each class has three parts to it, those essential to the scientific method: hypothesis, experiment and conclusion. The central event is the experiment or simulated experience to which students put questions and suggest hypotheses. After devising the experiment themselves with the teacher as guide, the students come up with their own conclusion, i.e. lessons from life.

Experience is often thought of as learning the hard way, but it is the contention of this teaching unit that in the context of the classroom, it is the easiest way to motivate and turn bored students into active learners. The typical approach of teaching theory first and then doing occasional lab work as illustrations of theory is a mistake because cognition is dogma unless it acts from within an immediate experience.

The idea is presented to teachers to test for themselves. The unit builds upon the nine lessons that follow an imaginary journey of some water molecules through the hydrological cycle, as originally described in the 1994 unit, but reworked in light of in-depth reading in Dewey's philosophy.

(Recommended for Chemistry, grade 10)