

Development of Scientific Thinking Processes

Overview:

In this seminar we will review and discuss some of the literature on the development of scientific thinking processes. The research addressing this issue can be organized into several broad, overlapping categories:

- General views on the psychology of scientific reasoning
- Empirical studies of abstract hypothesis formation and rule induction
- Evaluation of hypotheses
- Design of experiments
- Evaluation of evidence

These issues have been studied with both adults and children, and with both a “basic” and an “applied” focus. We will deal with all four of the possible combinations of these two dichotomies, but we will emphasize the developmental literature. The applied topics will address issues of early science education.

We will discuss and evaluate a wide variety of papers within a general framework that views scientific reasoning as a type of problem solving involving search in multiple problem spaces.