South Dakota State University

ECE 478: Integrated Curriculum in Birth-to-Age-8 Education

Concepts addressed:
Developmentally appropriate practice in the design, implementation, and evaluation of lessons that develop each child’s innate curiosity about the world and broaden each child’s procedural and thinking skills for investigating the world, solving problems, and making decisions; and general principles of scientific inquiry, including but not limited to: cause and effect, systems, scale, models, change, variations, and structure and function

Review lecture notes from science session, including the following topics:
- Science attitudes, beliefs, and skills
- Scientific process: what does it mean in the primary grades?
- **Basic skills** in primary grades
  - Observation
  - Classification
  - Communication
  - Measurement
  - Estimation
  - Prediction
  - Inference
- Science knowledge
  - Products: knowledge base of science
  - Facts: verifiable, observe & measure
  - Concepts: abstract, generalized from facts
  - Principles: complex ideas based on related concepts
  - Theories: broadly related principles, explain phenomena
- Realize importance of children’s misconceptions and preconceptions about science concepts
- **Constructivist** approach to science: children build knowledge from own experiences and perceptions of those experiences
- Good part of the curriculum in which to use KWHL charts and integrate curriculum
- The “4-E” inquiry science lesson:
  - Exploration
  - Explanation
  - Expansion
  - Evaluation
- **National Science Education Standards**: 4 components of science:
  - Science as inquiry
  - Science & technology
  - Science in personal & social perspectives
  - History & nature of science
- **Authentic assessment**
  - Flexibility & variety in learning activities
  - Multiple opportunities to demonstrate what they learned
  - Ongoing and cumulative rather than summative (end of each chapter)
Embedded

Assess:

- How well children demonstrate understanding of science ideas
- How well children use science processing skills
- What types of scientific attitudes children demonstrate

Helpful websites:
- http://www.nap.edu/readingroom/books/nses/html/