Science in Grades 7 and 8

By Cindy Koelsch

The quality of program delivery in the classroom is affected by many variables, but the one systemic "constant" is the curriculum documentation that is published by the Ministry of Education. The quality of these Ministry documents directly affects what happens in our classrooms. Parents and taxpayers should be critically examining the quality of the material that is being produced by the Ministry. Is the scope and depth of the material appropriate? Is it a comprehensive and practical resource for a classroom teacher or a vague philosophical statement? How do Ontario's documents compare internationally?

An Historical Perspective

Lest we be accused of "pushing our children" too fast and too soon, it is worth stepping back in time to examine the science curriculum documents that were published by Ontario over 30 years ago in 1961. Grade seven students studied magnetism along with a lot of other core units that are not offered to them today. An examination of the topics that were covered in grade seven and eight reveal just how far we have "progressed". Notice that in 1961 a total of eight core units was covered each year. The 1987 documents, by contrast, offer only five.

Most recently, Ontarians have funded a document called "The Common Curriculum", the new curriculum document for grades one to nine. This is a particularly fascinating educational phenomenon since this document outlines NO SPECIFIC UNITS OF STUDY. Additionally, the document makes no differentiation among biology, physics and chemistry. The holistic philosophy that underpins this document groups together science, mathematics and technology. Although no one can deny the inextricable links among these subjects, the Ministry has failed to address the realities of classroom implementation. In the absence of very concrete specific units of study, it is questionable whether our children will end up studying any science or technology at all.

"The Common Curriculum" is a document that would never be considered acceptable in the private sector. How can the government produce documentation like this at the expense of taxpayers and our children? Where is the expertise to produce top-quality curriculum guidelines that are subject-specific, as well as holistically-integrated? Isn't that the role of the Ministry? They have the manpower and the financial resources that school boards and individuals do not have.

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1961 Grade Seven Core

1. Plants: Their Structure and Uses
2. Water
3. Heat
4. Magnetism
5. Rocks, Minerals and Fossils
6. (a) Milk (b) Farm Animals
7. Seeds and Seed Germination
8. Forests

1987 Grade Seven Core

1. The Nature of Science
2. Characteristics and Classification of Living Things
3. Properties of Matter
4. Conservation of Energy

Plus one optional unit chosen from the following: Chemicals; Plants in our Lives; Science Project; or a Locally-Designed Unit

1961 Grade Eight Core

1. Flowers, Fruits and Seeds
2. The Animal Kingdom
3. Astronomy
4. Air
5. Weather
6. Plants and Animals
7. Soil
8. Wildlife

1987 Grade Eight Core

1. Solutions
2. Investigating Living Things
3. Force, Work and Energy
4. Soil and Plant Ecology

Plus one optional unit chosen from the following: Heat and Temperature; Adaptations; Science Project; Locally-Designed Unit

Results of a study by Daryle Tilroe were recently published in "International Comparisons in Education". In Germany and Hungary, physics is introduced as a discrete subject in grade six, and chemistry as a discrete subject in grade seven. The data also show that 80% of the concepts taught were introduced one to three years earlier than in Alberta. Since Alberta's results in the 1991 international assessments in science (IAEP II) were better than the other provinces in Canada, the implications for the teaching of science in Ontario are not encouraging. If Ontario's grade seven students have science textbooks, they often sit on

shelves collecting dust. Can we honestly say that our students have the ability to realize their potential when their peers in Hungary are studying the molecular structure of ammonia, for example, and in Germany they are studying optics?

It is indeed an anomaly that, in an age of micro-chip technology, magnetic disc storage and fibre-optics, we do not introduce our children to core units on electricity, magnetism and optics at an early age. That is the kind of quality programming that our children deserve.

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