

Geoscience Curriculum Change and Learning, A British Columbia Perspective

Erica Williams

We are fortunate in Canada to have an increasing diversity of geoscience outreach sponsored by a variety of organizations for many different audiences. During the time that outreach has been increasing students are still graduating from the K-12 system with an extremely poor understanding of Earth System processes. A number of provinces have upgraded their curricula in the last few years, but has this lead to increased understanding on the part of students? I will use the recent British Columbia curriculum changes from grades 7 through 10 to consider the efficacy of learning about Earth Systems. In British Columbia, Science 7 was revised in 2005, with a new grade included each year to Science 10 in 2008.

Science 7 includes minerals, rocks, time and tectonics, Science 8 focuses on surface processes while Science 9 deals with astronomy. In the new Science 10 curriculum the number of learning outcomes and the scope of the previous earth science component were reduced in this new version. However other areas of the curriculum were changed to give a marked overall increase in content to be delivered and partially assessed through a compulsory government exam. The new course focuses on earthquakes and tectonics with volcanism being reduced and geologic time dropped, while atmosphere and climate were added. The Earth Science 11 curriculum was not significantly changed with the result that there is much more duplication and overlap between the Earth Science units of Grades 7 to 10 and Earth Science 11.

With the coming of the second semester of this school year I will have the opportunity to assess the prior learning of this first group of students from the new Science 7 to 10 programs into Earth Science 11. I have had the luxury of being able to choose average and above students as more students signed up than space available. I will present my assessment data and class observations, limited as they are, to the conference together with a review of the problems with current curriculum development and resources. I believe that curricula at all levels are still focussing on facts rather than processes of learning, often without any understanding of developmental learning and with no piloting or field-testing. In courses subjected to government exams the exam becomes the driver and the focus is then on short-term memory to pass the exam. Yet in this time of rapid technological change it is the ability to learn quickly and adapt to changing circumstances that is becoming more and more important in our society, not the regurgitation of trivial facts. We as a community need to work to improve the foundations of geoscience understanding as well as the outreach.