

Science Education in Canada

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The Canadian Context

- Education is under provincial jurisdiction
- No national curriculum
- Each province sets out mandatory curriculum for each subject
- Each province prescribes/authorizes materials for use in classrooms

The Alberta Context

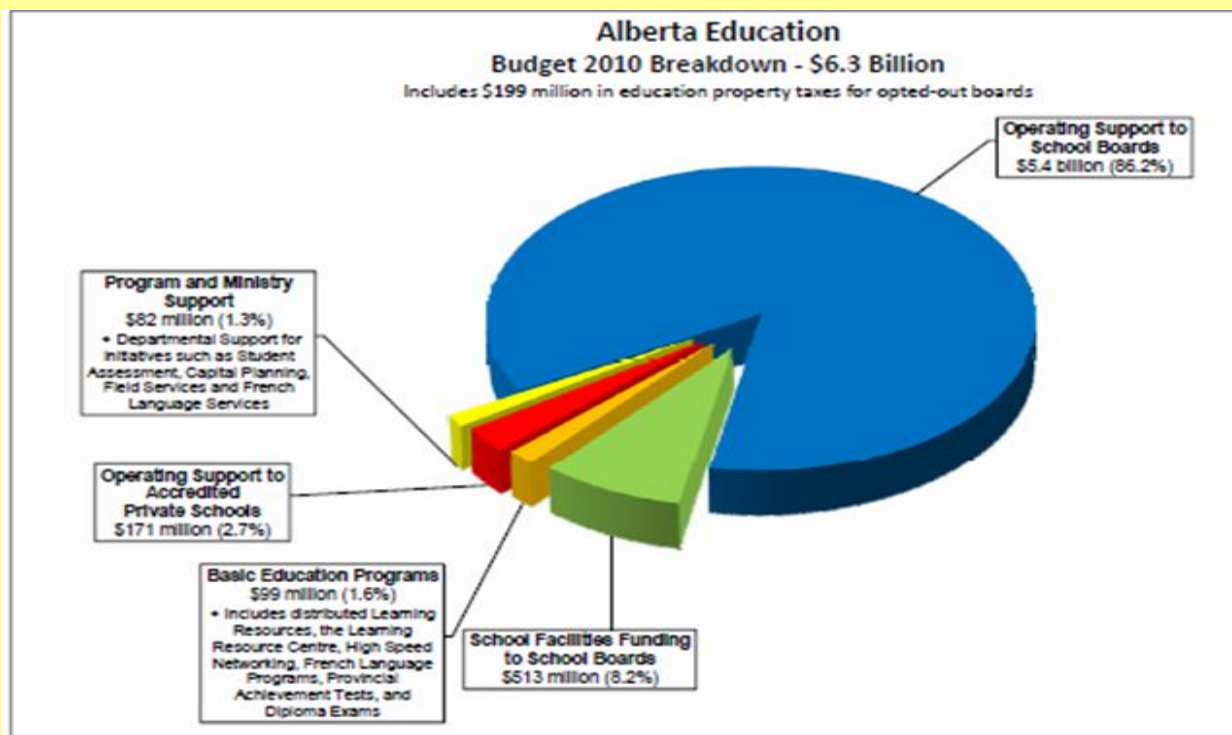
- 555,00 students
- 96% students in government funded schools
- Primary (K-6)
- Junior secondary (7-9)
- Senior secondary (10-12)

Structure of Alberta Education

5 Divisions in the Ministry:

- Education Program Standards and Assessment
- Learning Supports and Information Management
- People and Research
- Strategic Services
- Communications

Alberta Education Budget 2010 - 11



Government Testing in Alberta Provincial Achievement Tests

Grade 3 - English Language, Mathematics

Grade 6 - English Language, Mathematics, **Science**, Social
Studies

Grade 9 - English Language, Mathematics, **Science**, Social
Studies

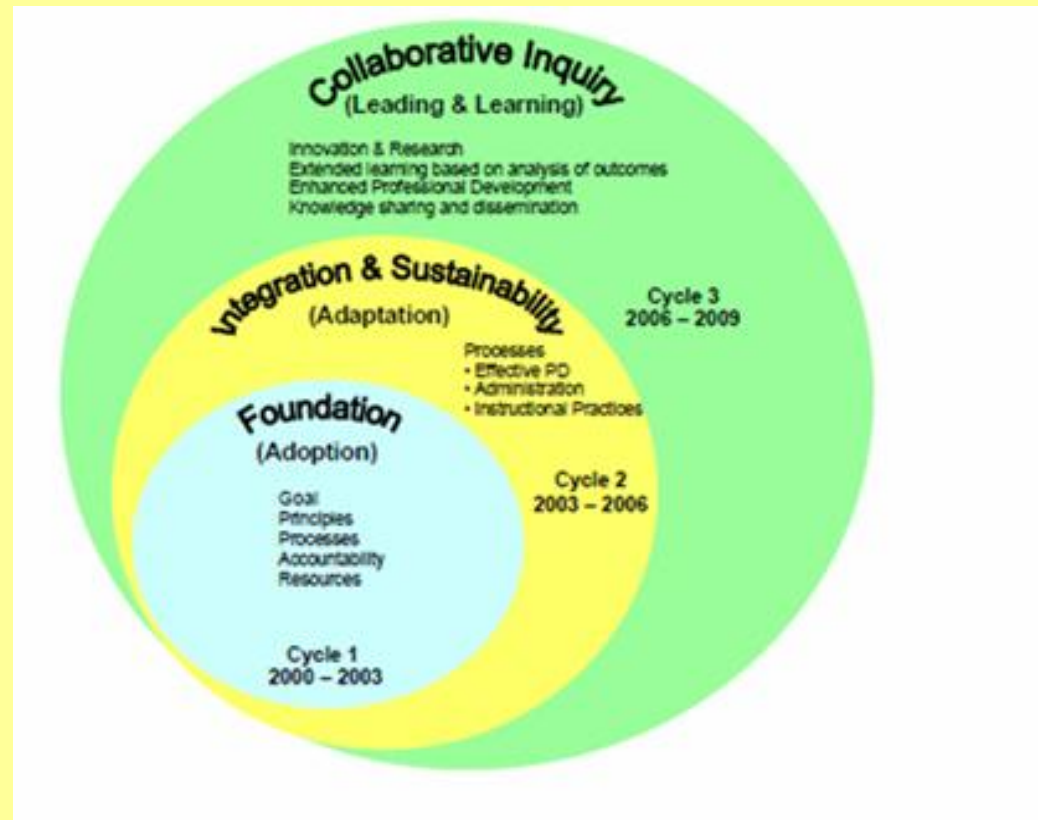
Alberta Initiative for School Improvement AISI

\$500 million to
school districts
since 1999



- Targeted funding for research-based projects initiated by school districts
- To encourage “teachers, parents, and the community to work collaboratively....” to improve student learning

Integrating learning with student performance



AISI and Science Education

In Cycle 2, 36 projects identified *Science* as a project theme.

In Cycle 3, 18 projects identified *Science* as a project theme.

In Cycle 3, 40% AISI projects identified *Assessment* as a project theme.

AISI projects focus on:

- Professional development for teachers about inquiry-based pedagogy
- Assessment *for* learning, and
- Assessment *as* learning

Alberta Teachers' Association (ATA)

Membership (mandatory)

ATA Science Council (optional)

- Annual Conference
- Instructional resources
- Research Journal and Newsletter

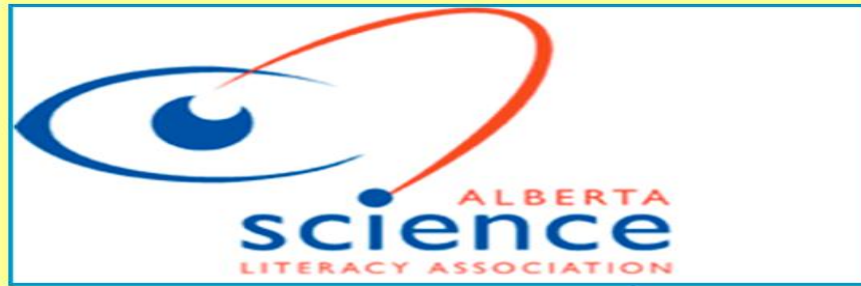


Centres for Research in Youth, Science Teaching and Learning (CRYSTAL)

Initiative of National Science and Engineering Council of Canada (NSERC)

- Pilot program, 2005-10
- 5 centres across Canada (\$200,000/yr)
- Not renewed after 2009 budget





Established 1998

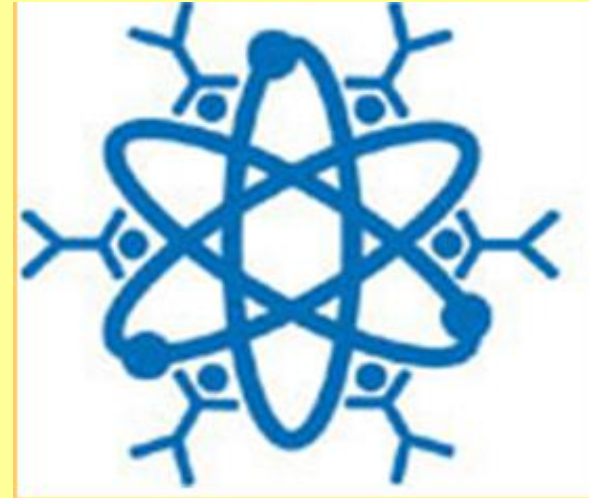
- *Comprises 5 networks:*
- *Edmonton Science Outreach Network*
- *Calgary Science Network*
- *Central Alberta Science Network*
- *The Science and Technology Hotline*
- *Grande Prairie and Area Environmental Sciences Education Society*

Edmonton Science Outreach Network *Programs*

- Scientists and Engineers-in the-Classroom
- Ask a Scientist
- Professional development workshops
- Classroom resource kits
- Links to Online Resources for teachers (17)

Scientists and Engineers- in -the -Classroom

- Is merger of two existing outreach programs
- Managed by Calgary Science Network and Edmonton Science Outreach Network
- 150 volunteer scientists and engineers
- Supported by corporate funding



Museums and Science Centres Programs for Schools

Field trips to a science centre or museum complement the formal curriculum:

- Offered in classrooms, auditorium, or open spaces
- May be demonstrations, hands-on workshops, and *occasionally* inquiry-based
- May be 45 minutes, 1/2 day, whole day, all week
- Nearly always curriculum-linked and grade-specific



Challenges for the Academy in Canada

1. Engaging students

- Stimulating student interest is valuable, but not enough
- Need for long-term programs fostering student engagement
- Partner support to educators

Challenges for the Academy in Canada

2. **Modelling science inquiry**

- Science is not just experimentation
- Science entails constructing explanations for natural phenomena
- Science requires a discourse of inquiry

Challenges for the Academy in Canada

3. Focus on 'Big Ideas'

- The formal school curriculum is top heavy
- 'Big ideas' not focus of curriculum
- Teachers not oriented to 'big ideas'