

Social Context

Alberta has a population of approximately 3 million. All children are required to attend school from the ages of 6 to 16.

The Minister of Learning defines the curriculum and standards for student achievement in consultation with employers, parents, school authorities, teachers, and other stakeholders. Schools, school authorities, and the Ministry of Learning assess and report yearly to the public on a range of learner outcomes.

Organization of the School System

Nearly all (99.0%) of the 43,696 13-year-old students in Alberta are enrolled in junior high school. Only one science course is offered at each of grades 7, 8, and 9. The distribution of students by grade is shown below.

	<i>1995-96</i>	<i>1998-99</i>		<i>1995-96</i>	<i>1998-99</i>
Grade 7	9.6	6.5	French Immersion	5.7	4.9
Grade 8	63.2	66.0	Francophone	0.6	0.6
Grade 9	24.6	26.5			

Of the 40,602 16-year-old students in the province, nearly all (98.6%) are enrolled in senior high school. The senior high school science program has six course sequences: Science 10-20-30; Science 10, Biology 20-30; Science 10, Chemistry 20-30; Science 10, Physics 20-30; Science 14-24; Science 16-26. The 10-30 sequences are designed for students in academically focussed programs contemplating postsecondary study; the 14-24 sequence is for general program students, some of whom are not planning postsecondary studies; and the 16-26 sequence is for students enrolled in the Integrated Occupational Program. The following table shows the proportion of 16-year-old students taking science.

	<i>1995-96</i>	<i>1998-99</i>
Number of 16-year-old-students in the province	36,458	40,602
Number of 16-year-old students taking a science course	30,402	33,203
Percentage of 16-year-old students taking a science course	83.4	81.8

The following table summarizes course completions of 16-year-old students as a percentage of the population:

<i>Grade 10</i>			<i>Grade 11</i>			<i>Grade 12</i>		
	<i>1995-96</i>	<i>1998-99</i>		<i>1995-96</i>	<i>1998-99</i>		<i>1995-96</i>	<i>1998-99</i>
Number and % in grade		5,160 (12.7%)			25,313 (62.3%)			9,526 (23.5%)
Science 10	11%	9%	Science 20	3%	5%	Science 30	1%	1%
Science 14	9%	8%	Biology 20	29%	27%	Biology 30	15%	13%
Science 16	1%	1%	Chemistry 20	29%	28%	Chemistry 30	14%	12%
			Physics 20	18%	19%	Physics 30	7%	7%
			Science 24	22%	11%			
			Science 26	1%	1%			

Curriculum

Alberta Learning reviews and revises science curriculum in a ten-year cycle. As core programs, science programs provide opportunities for students to develop the knowledge, skills, and attitudes they need for responsible citizenship, and at the same time, to explore interests and prepare for further education and careers.

To become scientifically literate, students must develop a thorough knowledge of science and its relationship to technologies and society. Students must also develop the skills needed to identify and analyse problems, to explore and test solutions, and to seek, interpret, and evaluate information. To ensure that a science program is relevant to students as well as to societal needs, the program must present science in a meaningful context — it must provide opportunities for students to explore the process of science, its applications and implications, and related technological problems and issues. By doing so, students become aware of the role of science in responding to social and cultural change and in meeting needs for a sustainable environment, economy, and society. The secondary science program is guided by the vision that all students should have the opportunity to develop scientific literacy.

The following goals for Canadian science education are addressed through the Alberta science program. Science education will

- encourage students at all grade levels to develop a critical sense of wonder and curiosity about scientific and technological endeavours
- enable students to use science and technology to acquire new knowledge and solve problems, so that they may improve the quality of their own lives and the lives of others
- prepare students to critically address science-related societal, economic, ethical, and environmental issues
- provide students with a foundation in science that enables them to pursue progressively higher levels of study, prepares them for science-related occupations, and engages them in science-related hobbies appropriate to their interests and abilities
- develop in students of varying aptitudes and interests a knowledge of the wide spectrum of careers related to science, technology, and the environment

Science Testing

Since 1982, data about student performance in science has been collected through a provincial student evaluation program for grades 6 and 9. Since 1995 these achievement tests have been administered annually. As well, since 1984, provincial diploma examinations have counted for 50% of a student's final mark in Biology 30, Chemistry 30, and Physics 30. A diploma examination in Science 30 has been offered since 1996. All diploma examinations include a written component that emphasizes the connections among science, technology, and society. The province has also developed classroom assessment materials (CAMP) for use by teachers in grades 1, 2, 4, 5, 7, 8, 10, and 11. This award-winning program provides examples of student work that illustrates provincial standards.

Provincial tests are based on Alberta's Program of Study. The tests help communicate provincial standards and provide information on the degree to which students in the province have met these standards.

Alberta students in both age groups performed significantly better than Canadian students as a whole at all levels.

The performance of 13-year-old Alberta students showed significant improvement between 1996 and 1999 at level 3, while the performance of Alberta 16-year-old students was significantly better in 1999 at levels 3 and 4.

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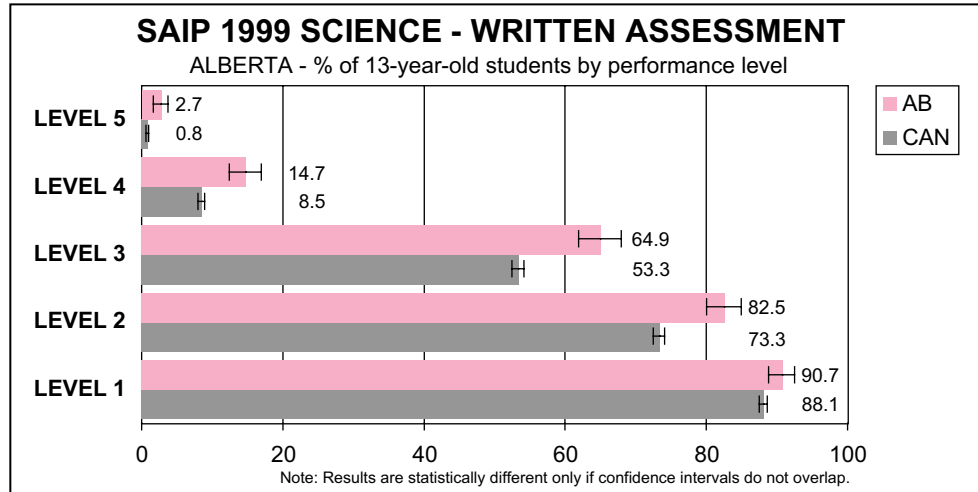


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