

SAIP Science III Questions and Answers

Why assess reading, writing, science, and mathematics and not other subject areas?

Proficiency in communications skills is essential to a well-rounded, educated population. Proficiency in science and mathematics is considered essential in the face of the technological changes occurring today. Therefore, ministers of education determined that in these times of major changes, where a well-educated and informed population is necessary to cope with the challenges of the new millennium, student performance in these particular subjects should be examined more carefully.

How are the results of these assessments used by various jurisdictions? When SAIP was first established, it was determined that jurisdictions needed reliable data with which to plan and establish important policy decisions according to their needs. The results of the SAIP assessments are one piece of the picture relative to student performance in various subjects. Used in conjunction with other information gathered by jurisdictions, they permit the establishment of policy concerning curriculum needs and priorities for each department or ministry.

Does SAIP reflect the science curriculum of all participating jurisdictions? School curricula differ from one part of the country to another, so comparing test data resulting from these diverse curricula is a complex and delicate task. Young Canadians in different jurisdictions do, however, learn many similar skills in reading, writing, mathematics, and science. Throughout the history of SAIP assessments, development teams composed of representatives from various jurisdictions have consulted with all provinces and territories to establish a common framework and set of criteria for each subject area. These are intended to be representative of the commonly accepted knowledge and skills that students should acquire during their elementary and secondary education. To a large extent, this SAIP Science assessment reflects the student learning outcomes described in the *Common Framework of Science Learning Outcomes* published by the Council on Ministers of Education, Canada, in 1997. Moreover, in this SAIP assessment, the administration procedures, test questions, and scoring criteria are deemed to be representative of current pedagogical assessment practices across Canadian jurisdictions regarding the large-scale assessment of science.

How did jurisdictions perform? For 13-year-old students, jurisdictions performing better than or about the same as Canada include Alberta, British Columbia, Manitoba (English), Ontario (English), Quebec (English), and Quebec (French).

For 16-year-old students, jurisdictions performing better than or about the same as Canada include Alberta, British Columbia, Newfoundland and Labrador, Ontario (English), Quebec (French), and Yukon.

Are comparisons possible between the performance of Canadian students on this Science III assessment and the performance of students on previous SAIP Science assessments? An important factor to be considered is the impact of changes in curriculum and in teaching practice over time as a result of both developments in educational research and changing public understanding of the role of education in society. Generally, SAIP assessments in all subject areas are designed to retain sufficient elements from one administration to the next to allow longitudinal comparisons of student achievement while making enough modifications to

reflect changes in educational policies and practices. In the case of this science assessment, a minimum number of changes were made to the assessment criteria and to the test questions to reflect changes in the field of science and science education since the last administration. As a result, readers can be relatively confident that comparisons made between results from SAIP 2004 and previous SAIP assessments conducted in 1999 and 1996 are appropriate.

Can French- and English-language results be compared? This assessment was developed by anglophone and francophone educators working together for the purpose of minimizing any linguistic bias. Whether they wrote in French or in English, students were asked to respond to the same questions. Great care was taken during marking, and comparative statistical analyses were implemented to ensure that results are comparable across languages.

Why weren't all provinces sampled separately by language group? To be able to draw conclusions on student performance about a specific language group in a province or territory, it is necessary to have a significant number of students assessed. In five of the provinces, more than 10% of the population is part of the minority-language group. As a result, it is possible to sample these populations separately and have reliable data.

Can SAIP results be compared to the TIMSS and PISA results? Canada participated in the science component of the Programme for International Student Assessment (PISA) in 2000 and in 2003. Some provinces also participated in the science component of the Trends in International Mathematics and Science Study (TIMSS) in 2003. These assessments provide complementary pieces of information about the knowledge and skills acquired by populations of students of different age groups in different subject areas. The SAIP Science III assessment was based on pan-Canadian level descriptors. These descriptors are deemed more closely related to provincial and territorial learning outcomes than international assessments. However, because of the many similarities between the assessment frameworks used for SAIP, PISA, and TIMSS, results have been generally consistent across the three assessments. PISA results suggested that achievement in science may have decreased slightly between 2000 and 2003. SAIP 2004 results suggest that achievement for 13-year-olds decreased slightly over time at level 2, whereas it decreased markedly for 16-year-olds at level 3.

Are comparisons between the performance of Canadian students and the performance of students from other countries possible with SAIP? SAIP is a pan-Canadian assessment program intended to provide useful information on student performance at the pan-Canadian level only. SAIP does not involve the participation of other countries, and therefore comparisons across countries are not appropriate.

Were certain students exempted from the test? Yes. The school principal could consider exempting a student if it was not possible for that student to respond to the assessment because of limited language ability or if participation would be detrimental to the student. Decisions concerning exemptions were made in consultation with the student and the student's parents or guardians. It should be noted that some students were exempted by the school principal because of their very limited science ability; these students were assigned "the below level 1" proficiency level.

What can educators and parents learn from this assessment? Some interesting findings for educators and parents are as follows:

- This SAIP Science III 2004 assessment reveals that there is generally no significant difference in science achievement between boys and girls. It would appear that efforts to make science education more relevant to, and more inclusive of, young women continue to have a positive influence on science achievement.
- Students who are less interested in science and those who perceive science as one of the most difficult subjects showed lower results.
- As is the case for most measures of academic achievement, students spending more time reading for enjoyment performed better on this science assessment than students reading less.
- Francophone students in minority settings did not perform as well on this assessment as anglophone students in the same jurisdictions. More analysis is required to determine the extent to which language ability interferes with science achievement.

When will the next SAIP assessment be administered? This 2004 Science assessment was the last SAIP test administered. Starting in 2007, a new Pan-Canadian Assessment Program (PCAP) will be introduced.