

## SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)

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## NORWEGIAN CANSAT COMPETITION

**Abstract**

This paper is about the Norwegian CanSat program for upper secondary school pupils. This year NAROM invited all Norwegian upper secondary schools to take part in the CanSat competition by handing in project proposal reports. This paper focuses on the educational advantages and the practical challenges in arranging a national CanSat competition for pupils and teachers with no prior knowledge in electronics and space technology.

The CanSat concept was first introduced in the late 1990s by the American professor, Robert Twiggs. It provides an affordable way to introduce students to the many challenges in building a satellite. Students design and build a small electronic payload that can fit inside of a soda can. The CanSat is launched and ejected from a rocket or a balloon. By the use of a parachute, the CanSat slowly descends back to earth performing its mission while transmitting telemetry.

Starting January 2009 NAROM launched a competition pilot, in which four upper secondary schools, spread out over Norway, were involved. This year a total of 18 teams from Norwegian upper secondary schools competed in the initial part of the contest by handing in reports describing what kind of experiment they wanted to perform with their CanSat. Six teams were picked out for the finale and were given the opportunity to have their CanSats launched from Andøya in April 2010.

The CanSat project covers most areas in the curriculum of the Norwegian school course Science and Technology. NAROM therefore decided to recruit schools for the contest by inviting teachers in physics and Science and Technology for a training course in sensors and CanSat building prior to the contest. This course provided the teachers with the experience and courage they needed to introduce their pupils to the complex world of electronics through a CanSat project. NAROM also provided each school with a CanSat starter kit and manuals in order to get the pupils started with some basic programming.

The primary mission of the contest is to assemble the kits and program the onboard computer in the CanSat to transmit sensor readings. An extra experiment may be integrated in the CanSat as a secondary mission.

The project is providing pupils with hands on experience in satellite and rocket technology, supporting an increasing interest for Space and Engineering.