Science of Winter Olympics Project

Questions to test through inquiry (experiments):

- *How and why, mathematically, does centripetal acceleration depend on speed and radius?*
- *What is the relationship between the mass of the bobsled and how fast it travels down the track?*
- *Which fabric best reduces friction between objects?*
- *How does the amount of salt added to ice change the melting point or other physical properties of the ice?*

Questions to test through engineering design (building something):

- *What is the best way to launch a model snowboard off a halfpipe in a twisting motion?*
- *What is the best design for a fast, yet safe, bobsled?*
- *What types of coating materials have the best properties for reducing friction between two surfaces?*
- *What is the best way to make ice for _____ (figure skating, hockey, etc..)*

Groups will be 3-4 students. Once your group has chosen a project, you will sign your names and will not be able to change group members from that point on. You will be given a guide of criteria and constraints for your project. Every group member is responsible for turning in a final copy of this guide on the due date given by the teacher. This guide can be computer generated or hand-written but must be free of errors, scribbles, and in FINAL DRAFT form.

Students will present their claims on presentation day. There will be NO late presentations. If group members are absent, the group will still be expected to present on presentation day without the missing members. Groups will conduct a peer review during the presentations to be added to their guide to compare their findings with their classmates' results.

A display board will be created to show all aspects of the project (see rubric). These display board will be on display carousel style for grading and feedback. They will also be kept for exhibition in May. Models will be included. Models can be pictures of the experiment process or the actual engineering design that was built.

Grading:

Group grade for display board using rubric	40%
Peer review from teammates	10%
Individual grade for completeness of guide	50%