YOUTH AVALANCHE EDUCATION PROGRAM

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ABSTRACT

The mountains of BC and western Alberta offer world-class winter recreation opportunities. However, many popular destinations involve uncontrolled avalanche terrain. Improved equipment and an increase in the amount of “extreme” imagery are just two of the reasons why younger people are getting into avalanche terrain at an earlier age. A recent survey of 319 high schools students in Revelstoke, Golden and Calgary revealed that 20\% of the respondents had ventured outside ski area boundaries and 27\% said they snowmobiled in the backcountry.

We are concerned that many of these students may not be aware of the risks inherent with travelling in avalanche terrain. For the past two winter seasons, we have gone into elementary and high school classrooms to talk to students about avalanche safety. Through this experience we have developed effective teaching tools, lesson plans and materials for various age groups. We hope to reduce the occurrence of avalanche-related incidents among school students through effective education. This paper describes the programs that the Canadian Avalanche Centre (CAC) ran in the 2007-2008 school year.

KEYWORDS: avalanche education, youth, school programs

INTRODUCTION

The CAC’s Avalanche Education Program was a success in its second year. Verena Blasy was program coordinator and educator. Joining her in some of the presentations were Ken Gibson, a volunteer ski patroller, and National Park Wardens Danyelle Magnan and Anna Brown.

Last year grades 6 and 10 students in Revelstoke received an in-class program. This year, grades 6, 7, 8 and 10 students in Revelstoke and Golden received presentations. The grade 11/12 Physical Education classes in Revelstoke did outdoor beacon searches as well. In addition the program was presented to three outdoor education classes (55 students) in Calgary. A total of 668 students were reached between December 2007 and February 2008. Please see the tables below for a breakdown of students by grade and location. Overall feedback from teachers was very positive. All teachers who filled out an evaluation form "strongly agreed" that the program was worthwhile.

Table 1: Number of students who received the program in the 2007-2008 school year.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Revelstoke No. of Students</th>
<th>Golden Grade</th>
<th>No. of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-7</td>
<td>140</td>
<td>5-7</td>
<td>90</td>
</tr>
<tr>
<td>8</td>
<td>50</td>
<td>8</td>
<td>104</td>
</tr>
<tr>
<td>9</td>
<td>13</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>70</td>
<td>10</td>
<td>107</td>
</tr>
<tr>
<td>11/12</td>
<td>24</td>
<td>11/12</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>297</td>
<td>Total</td>
<td>316</td>
</tr>
</tbody>
</table>

STUDENT SURVEY

Julie Timmins and Pascal Haegeli worked together to create a winter-recreation survey for high school student. I altered this survey slightly to include more questions for snowmobilers. One hundred and twenty students from Revelstoke Secondary School and 52 students from Calgary completed this survey. In Golden, where class-times were shorter, I did a quick verbal survey at the beginning of each program (asking students to put up there hand if they ski, board, snowmobile, etc). I did this verbal survey with 147 Golden Secondary School students as well as with 107 Revelstoke and Golden elementary students. Pascal Haegeli has received all of this data and will be working with it at a future date. A preliminary look at the data is displayed in the following graphs.

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Figure 1: Percentage of students who were surveyed who said they skied/snowboarded out-of-bounds or in the backcountry. GSS: 147 grade 8-12 Golden Secondary School students, RSS: 120 grade 9-12 Revelstoke Secondary School students, Calgary: 52 grade 9 Outdoor Education Students. Please note that the students at GSS were verbally surveyed while the students at RSS and in Calgary filled out an anonymous written survey.

Figure 2: Percentage of students who said they snowmobiled or said their primary winter activity was snowmobiling. GSS, RSS and Calgary refer to same data as in Figure 1. Elementary refers to grade 5-7 students in Revelstoke (17 students) and Golden (90 students). Please note that students in Golden and at the Elementary level were verbally surveyed and could raise their hand if they snowmobiled at all, while students in Calgary and Revelstoke filled in a survey which asked them to choose only their primary winter activity.

REVELSTOE MOUNTAIN RESORT PRESENTATION

A new ski hill opened in Revelstoke on December 22, 2007. A ski hill existed on Mount Mackenzie before but this year it grew a lot—from 300 vertical metres (1000 ft) to 1445 (4735 ft), from 68 ha (170 acres) to 607 ha (1500 acres), and from no alpine terrain to over 10 runs in the alpine. This extra terrain meant there would also be more hazards to skiers and boarders including more tree-skiing, in-bounds avalanche terrain, avalanche control and easy access to out-of-bounds terrain. Because of this concern and because the hill was opening on the first day of the school Christmas holidays, there was a need to do some education in Revelstoke’s schools before opening day.

HIGH SCHOOL PROGRAM

Sylvain Herbert, head of mountain patrol at Revelstoke Mountain Resort (RMR) approached volunteer ski patroller Ken Gibson to do a presentation at Revelstoke Secondary School (RSS). I teamed up with Ken to create a high-impact presentation that could be presented to a large group. RMR and the CAC provided us with prizes for the students. Ken and I presented a slideshow to approximately 200 students in the RSS gym on December 5, 2007. The presentation was optional for students and occurred over the lunch-hour. Ken and I succeeded in making the presentation as interactive as possible by offering prizes to students who answered or asked questions.

The main points we tried to get across in this presentation were:

- Ski with a buddy (especially when tree skiing)
- Never go into a closed area
- Out-of-bounds = Avalanche terrain

GRADE 6/7 RMR PROGRAM

The RMR high school presentation was then adapted for grade 6/7 students as we felt that these student would be old enough to be skiing without adult supervision. The presentation was offered to all grade 6 and 7 classes in Revelstoke. It was presented to seven classes (123 students) at three out of four of the elementary schools before opening day at the ski hill. The fourth school received the regular grade 6 program (see below) at a later date.

GRADE 6 SCHOOL PROGRAM

The grade 6 school program was presented to the grade 6 class at Mount Begbie Elementary School in Revelstoke and to all four grade 6
classes at Golden’s two elementary schools (Lady Grey Elementary and Nicholson Elementary). A total of 107 students saw this program. Six other grade 5, 6 and 7 classes in Revelstoke received the RMR presentation described above.

The program is divided into two lessons, each just over an hour in length. The first lesson is focused on ski-hill safety (the Alpine Responsibility Code, helmets, tree skiing, tree wells, etc.). The second program is focused on being out-of-bounds and in the backcountry. It covers how avalanches work, the hazards of the backcountry, what to bring in your pack, and how a transceiver works.

Both of these programs have a mixture of videos, student activities, photographs and a lot of interaction in order to keep students engaged. The second presentation also has a slideshow which goes along with it. Although the core of the grade 6 program did not change from last year, several improvements were made. They are as follows:

- Several video clips of avalanches and people getting caught in avalanches have been added to the slideshow.
- I have a student do a beacon search in the classroom, rather than demonstrating it myself (more interaction for students).
- We had a prop built out of wood that allows us to demonstrate how an avalanche works using flour and Lego skiers and snowboarders.
- New photographs of Revelstoke Mountain Resort (in-bounds and out-of-bounds areas) have been added to the Revelstoke slideshow.
- New photographs of the Golden area (including Kicking Horse Mountain Resort) have been added to the Golden slideshow.
- We acquired our own materials and display for the in-bounds presentation.
- I have collected stories (my own and others) to share with students during presentations.

Students seem to really enjoy this program. I have found them to be very interactive, attentive, actively involved and they seem to be having fun. This age group seems very receptive to safety messages, because of this I believe it is very important to begin teaching students in the elementary years.

GRADE 8 PROGRAM

The grade 8 program was presented to all grade 8 PE classes in Revelstoke and Golden to a total of 154 students. Last year’s grade 10 program was adapted to suit grade 8 students and it proved to work much better at this grade level.

The program focuses only on out-of-bounds and backcountry travel and goes over many of the key points mentioned above for the grade 6 program. As with the grade 6 program, the core of the program did not change too much, however some improvements were made. Improvements were similar to the improvements made to the grade 6 program, listed above.

GRADE 10 PROGRAM

This program was presented to all grade 10 students in Revelstoke and Golden as well as one class of grade 11/12 students in each town. A total of 216 students saw this program. Students in Revelstoke had this program as part of their Planning 10 course, while Golden students had it through their PE classes.

The Grade 10 program is focused around the movie “A Dozen More Turns” the true story of five guys who go into the backcountry on a three-day trip and trigger an avalanche. One person dies and his friend breaks and eventually loses his leg. Overall I found grade 10 students to be very receptive to this movie.

Before showing the movie I review backcountry and out-of-bounds areas that students may be familiar with, as well as reviewing the basic gear needed to travel safely in the backcountry. During the movie, students are given a worksheet to fill out. The students are asked to look for the things the group does right (Are they carrying the right equipment? Do they know how to use it? Have they taken a course? Did they check the forecast? etc). I also have them pinpoint the group’s mistakes and suggest what they could have done differently. After the movie is over, I go over the above questions with the students and share stories when appropriate. If there is enough time I also introduce the Avaluator to them.

In 2007 the current grade 8 program was used with grade 10s, however I found that many students were not very receptive to it and many did not interact. I feel that grade 10, 11 and 12 students who watched “A Dozen More Turns” were very engaged by the film’s story. Students did a great job at pinpointing mistakes and making suggestions for what this group could have done differently and some were often visibly moved by the story.

GRADE 11/12 PROGRAM

The grade 11/12 program consisted of avalanche transceiver searches done outside
during PE classes. This was a trial program done at the request of several teachers at Revelstoke Secondary School (RSS) as well as from comments on evaluation forms. This program was done with both grade 11/12 PE classes at RSS to a total of approximately 30 students participated in this program.

Terry Beitel, a PE teacher at the RSS, already does beacon searches with his grade 11/12 class. RSS owns 10 analogue transceivers (Ortovox F1s). Park Warden Danyelle Magnan and I joined Terry for this lesson. Anna Brown, also a Park Warden, and I then taught the second 11/12 PE classes this lesson. Each student had an opportunity to find one buried transceiver during the class period.

Overall, Anna Brown and I felt that this lesson would work much better with more volunteers experienced in avalanche transceiver use. Groups of 4-5 students per adult would be ideal. Using a beacon basin, such as the one located at RMR or at Rogers Pass Visitor's centre would be very beneficial as well.

OTHER EVENTS AND PROGRAMS

In addition to the above programs, we also ran three other one-time programs: a poster contest for Avalanche Awareness Days at Revelstoke Mountain Resort; a grade 9 presentation for 55 students in an outdoor education class in Calgary; and a field trip and presentation for the Adult Literacy Program at Okanagan College in Revelstoke.

Poster Contest

Grade 5-7 students who had seen the RMR presentation in December were invited to enter a poster contest for Avalanche Awareness Days, which occurred on January 12, 2008. A total of 75 students entered the contest and all posters were put up on display at the day lodge at RMR on Saturday, January 12. At the end of the day the posters were judged by a panel of four experts and a winner was chosen from each of the three grades. The posters were fun, creative and clearly reflected the messages that students had learned.

Three students appeared in Revelstoke’s local paper with their posters the week following Avalanche Awareness Days. A selection of approximately 20 posters were laminated and given to the ski hill to be put on display while others were posted in the front windows of the Canadian Avalanche Centre in Revelstoke.

EVALUATION OF THE PROGRAMS

Evaluation forms were emailed or personally given or emailed to most of the teachers whose class the program was presented to. Nine teachers have responded. The following table and paragraphs summarise the feedback received.
Table 2: The teacher survey and average results. Numbered Ratings: 1- strongly agree, 2- agree, 3- somewhat agree, 4- disagree, 5- strongly disagree.

<table>
<thead>
<tr>
<th>Question</th>
<th>Average Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>The presentation was an appropriate length of time.</td>
<td>1.2</td>
</tr>
<tr>
<td>The videos shown were appropriate for the students’ level.</td>
<td>1.0</td>
</tr>
<tr>
<td>The content of the presentation was clear and appropriate for the students’ level.</td>
<td>1.1</td>
</tr>
<tr>
<td>The students’ questions were acknowledged and answered well.</td>
<td>1.0</td>
</tr>
<tr>
<td>The students were challenged to answer questions during the presentation.</td>
<td>1.1</td>
</tr>
<tr>
<td>There was a good balance of student participation to student “sitting and listening”.</td>
<td>1.3</td>
</tr>
<tr>
<td>The presenter was good at classroom management.</td>
<td>1.1</td>
</tr>
<tr>
<td>The students were engaged throughout the program.</td>
<td>1.3</td>
</tr>
<tr>
<td>This was a worthwhile program.</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Overall feedback was very positive and all teachers “strongly agreed” that this was a worthwhile program. Lori Milmine, a planning 10 teacher at RSS who is also a backcountry skier commented:

“This was an excellent presentation. The students were engaged and interested; the topic relevant and important. Students really need to know this information and this gave them the basics. Thank you so much!”

AREAS FOR IMPROVEMENT

Based on teacher evaluations, ongoing student feedback during presentations, conversations with other educators and co-presenter and the preliminary results of the surveys, the following improvements are suggested.

- Avoid mixing age groups up whenever possible. The presentations in Golden were done in the school gym and during one presentation there were grade 8 and grade 11/12 students mixed together. The grade 8 program seems to be much more effective with the younger age group and the content of the grade 10 program (specifically the movie, A Dozen More Turns) would not be appropriate to show to grade 8 students. In addition, if younger students (eg: grade 5) see a grade 6 program this year, then it will possibly be repeated to them the following year.

- Do presentations in a classroom rather than a gym or library. This year the Revelstoke grade 10 program was offered to Planning 10 classes rather than PE 10 classes. This worked well as it did not take physical activity time away from the students, a classroom was already available and the content of the program fit into the Planning 10 Risk unit well. The Golden Secondary School programs all occurred in the school gym and this was not as effective as using a classroom. Students don’t have access to a desk to write at or a writing utensil to fill out surveys and worksheets; the smaller space of a classroom seems to be more conducive to interacting with students; and students don’t have the expectation of doing usual physical gym activities when in a classroom. At RSS PE classes have booked a classroom for presentations and this would be ideal for all presentations.

- Develop a collection of interactive activities for students to do when they are getting restless. For example, Monica Nissen has suggested covering one (non-claustrophobic) student with a white sheet and have other students stand around the edge of the sheet to simulate what it feels like to be trapped in an avalanche.

- Work with Julie Timmins to create a grade 9 Jeopardy game. Julie had success with this program this year. This would be a great way to review material in a very interactive manner.

- Target snowmobilers better. The preliminary look at the survey numbers showed that 42% of Golden students said they snowmobile and 18% of Revelstoke students listed it as their top winter activity. The program has strived to include photographs and video clips of sledgers and to mention sledgers whenever possible. However, because the program has been taught by backcountry skiers, it would be beneficial to have it viewed by someone who is both a snowmobiler and an educator for suggestions.

- Have more experienced volunteers to teach grade 11/12 classes how to use an avalanche transceiver. This is a difficult thing to teach in large groups. Groups of 4-5 students per teacher would be ideal. It would also be helpful to use a
beacon basin such as the one at RMR or Rogers Pass for this activity.

• Improve the wording of the student survey and the manner in which it is delivered. The student survey has the ability to give us an excellent idea of who our audience is. However the survey questions and manner in which it is delivered need to be adapted. Students rarely read questions carefully and many surveys ended up with conflicting data. It would be beneficial to read each question to students as they do the survey. The survey also takes 5-10 minutes of class time, which can be challenging especially at schools with shorter blocks.

FUTURE PLANS FOR THE PROGRAMS

• Continue to use new and up-to-date materials (such as photographs and videos) in the program. Rocky Mountain Sherpas (www.rockymountainsherpas.com) are expected to begin releasing avalanche education movies for youth in the fall of 2008. Although the trailer to this movie looks fantastic, it should be noted that it contains very little snowmobiling content.

• Continue to work with Julie Timmins and others who are teaching avalanche education to exchange ideas, experiences and teaching materials. Work with stakeholders to develop a best practice template for age appropriate avalanche education.

• Create a grade 9 program.

• Work on improving the grade 11/12 avalanche transceiver program (see suggestions above). Contact manufacturers to obtain beacons for demonstrations.

• Introduce a career planning component for grade 12.

• Create programs or work with other existing programs to reach grades 1-5. For example work with Wildsight (Monica Nissen and Debbie Robinson in Revelstoke) to add a small amount of information on avalanches into their primary winter-wonder program.

• Add new content into the grade 8 program. Students who saw the grade 6 program in Revelstoke last year will be in grade 8 next year. Currently the grade 6 and 8 programs are quite similar and it would be beneficial to alter the grade 8 program again so that it is not too repetitive.

• Initiate a scoping project to determine where existing programs are underway in other mountain towns, develop network and provide active support for existing programs.

• Expand to other mountain towns that do not have avalanche education.

• Work with local ski hills to set up AST courses that youth can participate in (in-bounds). Let high school students know where and when they can take these courses.

• Parks Canada would like to expand their avalanche education program from the Bow Valley to Revelstoke and Golden. Danyelle Magnan, a park warden in Glacier National Park, has witnessed and helped teach the grade 6, 8 and 10 programs. The CAC needs to work with Parks to establish the best way to combine their resources.

• Start going into schools in November, before winter season has started.

• This program could do with a catchier name. It might be possible to have a name-our-program competition among students.

CONCLUSION

Overall this program was a success in its second year. 670 students were reached between December 2007 and March 2008 and all of the teachers surveyed “strongly agreed” that the program was worthwhile. Many of these students are already spending time out-of-bounds or snowmobiling in the backcountry. In addition, the larger ski hill in Revelstoke has suddenly dramatically increased student’s access to avalanche terrain in this town. Many of these students may not have any awareness or understanding of the risks inherent with being in avalanche terrain without education programs such as this one.

ACKNOWLEDGEMENTS

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