

AVALANCHE EDUCATION BASED ON THE INFORMATION-SHARING CONCEPT AT JAPAN AVALANCHE NETWORK

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ABSTRACT: Japan Avalanche Network (JAN) is a non-profit organization founded in 2000 for the purpose of avalanche education and information sharing. In Japan, unlike in Europe and North America, there is no public avalanche information and no avalanche forecaster. And the standards of the mountain guiding and ski patrols, who are supposed to have specialized skills and knowledge, lag behind those in North America due to the problems with the education system. In these situations, JAN has been seeking the way how to educate mountain guides and recreational users engaged in backcountry activities, to share mountain snowpack information and to develop a system helpful for those guides and users. We report JAN's eight-year efforts.

KEYWORDS: avalanche education, avalanche bulletin, backcountry users

1. INTRODUCTION

Japan has about-one-hundred-year history of climbing and ski mountaineering. And in the middle of 1990s, the snowboarding boom marked a turning point in the history. People who sought dynamic riding steeper slopes with deep powder snow left ski resorts and ventured into backcountry. And at the same time, many people started to use fat skis seeking to ski bigger slopes in a new and extreme style. Although these changes triggered the growth of the backcountry industry which should be the leader in raising avalanche safety awareness, the industry is not playing the role yet. It is partly because educational programs are not fully developed and also because backcountry users are not provided with sufficient public avalanche information. We therefore needed to deal with three issues: 1) avalanche education for backcountry users, 2) advanced education for aspiring guides and other professionals, and 3) providing avalanche information. Our intention is not to separate these three issues but to tackle them as one whole issue in order to build a system in which backcountry users who received appropriate education provide information about conditions in mountains and thus contribute to mountain safety. The key to success is to international-standard avalanche education based on information sharing.

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2. GOALS

Our goals are that Japanese backcountry industry will achieve the same or higher standards of avalanche safety compared with the international standards so that it can play a leading role in promoting avalanche safety, and that recreational users will thus have opportunities for receiving appropriate avalanche education. These goals should be unified under the keyword "information," and the final goal is to make sure that information about snow conditions in mountains reach users and that they utilize the information for risk management.

3. CONCEPT AND METHODOLOGY

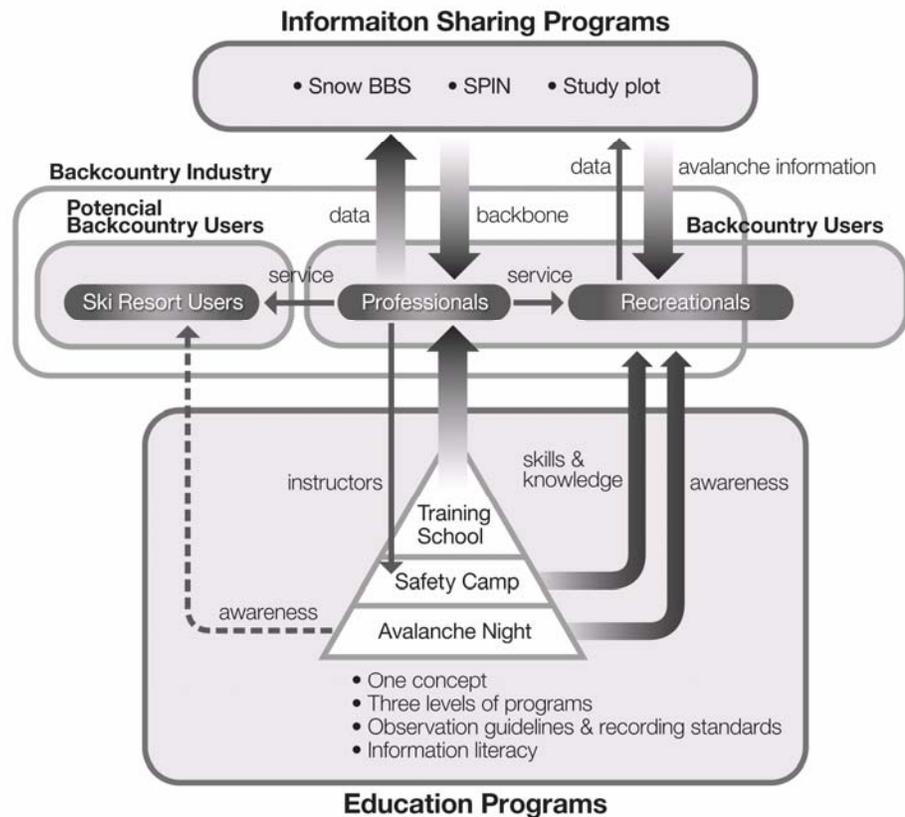
Our fundamental concept is to share basic data of the field conditions. We call this concept "Round Table," a system in which people from various backgrounds gather to share information to help each other. This system is made up of three components related to each other: backcountry users, educational programs and information sharing programs (Figure 1).

While all the educational programs are developed based on the same concept, we designed three different types of programs that should fit different levels of experience and skills. This helps program participants to improve their skills smoothly. And on the Internet, we started Snow Bulletin Board, a website where the educated people working or traveling in the mountains can post data they collect for their own safety. If a lot of reliable data are posted, people will get useful avalanche information. And the

posted data are also to be used in each program, which will help participants enhance information literacy skills.

Starting the project, we needed standardized guidelines for weather / snow / avalanche observation and recording. We therefore sought assistance from Canadian Avalanche Association (CAA) that has abundant experience of basic data sharing and advanced professional education.

Figure 1: Japan Avalanche Network concept diagram



4. EDUCATIONAL PROGRAMS

First of all, we needed international-standard advanced education for professional people involved with backcountry industry. We started the professional avalanche course with CAA's assistance, and then we selected some people who completed the course, required sufficient experience and skills and understood the program concept as instructors for the recreational avalanche course. Though this way of training course instructors takes much time, it was necessary to provide high-quality courses. Now we have a virtuous cycle: people who have increased their skills through our avalanche course become our course instructors and/or data contributors for Snow Bulletin Boards. The following is the outline of the three types of programs:

4.1.1 Training School

This is an advanced education program for aspiring guides, patrols and other professional people. Training school is operated in association with CAA. We are organizing only a basic course,

"Level 1" now, while in the near future we are planning Level 2 course to produce qualified professionals. Through eight-day Level 1 course, students learn avalanche phenomena, characteristics of mountain snow, terrain recognition, weather and snow data collection, stability evaluation, risk management and other elements essential for information sharing, and they take examination on the last two days. At this moment, 80% students are active as or aspiring to be ski guides and the rest are patrols, etc.

4.1.2 Safety Camp

This is an on-the-snow training course for recreational users. We organize two-day course for beginners and five-day course for experienced people. The two-day course is a comprehensive class that covers safe travel using terrain recognition, basic understanding of snow conditions and rescue. This course is so popular that it is almost always full to capacity. At the same time, however, it is difficult to optimize the course contents for students because of their mixed levels of experience, knowledge, physical strength and skiing ability. Five-day course is made up mostly of field sessions, covering more

detailed contents such as travel using terrain recognition and snow stability evaluation. Though this is a good program for people with a certain amount of backcountry experience, the number of participants is leveling off, partly just because of the length.

4.1.3 Avalanche Night

This is a two-hour free event for avalanche awareness. Avalanche Night is made up of two parts: giving a basic lecture about avalanche and the accident summary for the previous season. The basic lecture is more aimed at less experienced people, while the purpose of the accident summary is to give more experienced people and repeaters useful information. Avalanche Nights are organized in the beginning of the season, which is from November to December, mainly in big cities, but recently in more provincial towns close to mountain resorts.

4.2 Educational Program Participants

In Avalanche Nights and Safety Camps, we hand out a brief questionnaire to grasp the characteristics of participants. The following is the outline of a total of 1,340 people (74.8% male and 25.2% female) who came to the programs in 2007 and 2008 seasons:

4.2.1 Participants' Characteristics

Regarding age, people in their early 30s make up the largest percentage, 26.2%, and people in their late 20s and in their 30s make up 61.7% of all participants (Figure 2). Regarding riding gear, ski, snowboard, and telemark make up 43.7%, 36.4% and 19.9% respectively.

Regarding backcountry experience, people with four years or less experience make up 46.1% of the total (Figure 3). Regarding beacon/probe/shovel ownership, 31.3% people with less than a year's experience own them, while people who have a year or more experience and own the equipment make up between 70.5% and 82.1%. The overall ownership rate is 69.6%

68.7% of participants own books on avalanche. 91.3% regularly watch weather forecast on TV, and 62.7% also check specialized websites on weather. 47.8 % of participants have taken awareness lecture, while only 23.8 % has taken on-the-snow courses. On the other hand, 46.5% of participants have dugged snow pits or preformed tests in the backcountry although they have never taken on-the-snow courses.

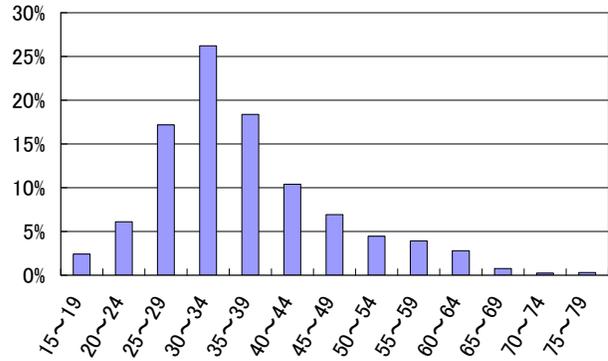


Figure 2: Number of educational program participants by age. 25-39 years old participants make up 61.7% of the total. The youngest participant is 16 years old, the oldest 76. (n=1328)

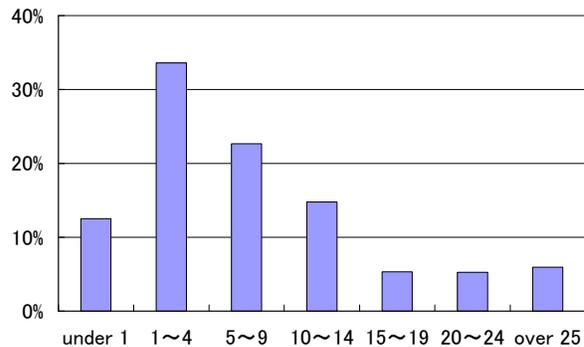


Figure 3: Number of educational program participants by backcountry experience. Participants with four years or less experience make up 46.1% of the total. There are participants with no experience. The longest experience is fifty years. (n=1280)

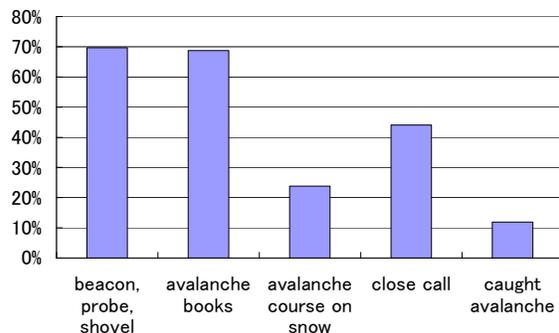


Figure 4: Beacon/book-on-avalanche ownership rate and avalanche-course/avalanche-accident experience rate.

4.2.2 Participants' Avalanche Experience

Risk of being caught in an avalanche is real for the program participants. 44.1% participants have experienced close calls, 11.9% have gotten caught and run down by avalanches (Figure 4). 44.3% of run-down participants have partly buried, 8.2% fully buried, 10.1% injured (Figure 5). 62.7% of participants who have experienced avalanches was skiing when the avalanche occurred, 23.4% traveling, 8.9% taking a rest. Before they experienced the avalanche, 40.5% of them had read books on avalanche, 29.1% had taken on-the-snow training courses. Participants who have friends with avalanche experience make up 34.6% of the total, 23.2% of which have experienced avalanches themselves.

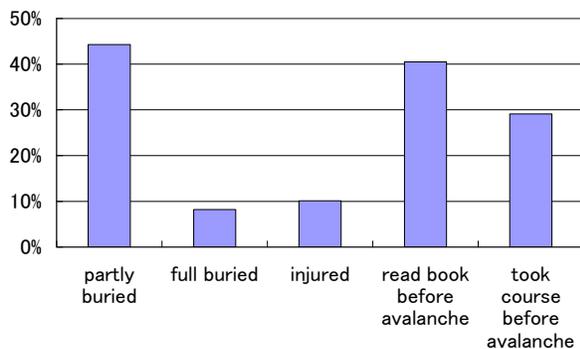


Figure 5: Participants' avalanche experience and learning experience. These are percentages out of all participants who have caught in avalanches (n=158). There are quite a few people who had read avalanche books or taken courses before they caught avalanches.

5. INFORMATION SHARING PROGRAMS

Backcountry information sharing programs has two roles. One is as a tool for sharing information about snow conditions and the other is as an educational tool because data posted on Snow Bulletin Board are used in our educational programs in the purpose of information literacy improvement. Also, for avalanche professionals, posting data serves as a kind of training to improve their skills. In North America, people who have taken basic training such as Level 1 usually gain sufficient experience through working with more experienced people in operations. Such an environment, however, has not been developed in Japan yet. JAN therefore always talk with the person who posted the data by mailing list, telephone, meeting him/her in person, etc., in

order to make sure the posted data are correct. JAN also provides a refreshers course as an opportunity to improve their skills.

5.1 Snow Bulletin Board

5.1.1 System Overview

Snow Bulletin Board is a bulletin board on the Internet where backcountry users can post information about snow conditions on the day when they get the information during their activities. Only registered members can post data and members' profiles are available on the website, including their training history, qualifications they have, whether they are professional or recreational users. Posted data must have been collected according to the observation and recording guidelines. For better understanding of information, we set up a page that shows the definition of symbols and how to read the bulletin board.

5.1.2 Data Contribution

Data fields are as follows: name of the data contributor, date, posting time, mountain where the data was collected, location, altitude, temperature, sky conditions, comment on sky conditions, wind direction, wind force, comment on wind, precipitation type and intensity, comment on precipitation, observation of avalanche and other activities, snowpack structure, stability evaluation (ALP, TL, BTL), general comment. Notable phenomena are mentioned in the comment fields. Detailed snow profiles are posted on SPIN.

90% contributors are guides or patrols who have taken advanced training course at JAN or in Canada or New Zealand. In 2008 season, 37 people made 324 data contributions in total.



Figure 6: Snow Bulletin

5.2 SPIN (Snow Profiling Information Network)

SPIN is a snow profile database available on the Internet. JAN developed this unique database that was published to the web in February 2002. All the data contributors have to have Level-1 or higher skills. All the observation and recording have to be done according to the guidelines. In November 2003, SPIN joined the electronic map promotion project organized by Ministry of Land, Infrastructure, Transport and Tourism, so that you can check the locations of snowpits on the 1/25,000 topographic map available on the Internet. GPS data are used for location. Snow profile data collected in avalanche incident investigations are also available to the public through SPIN.

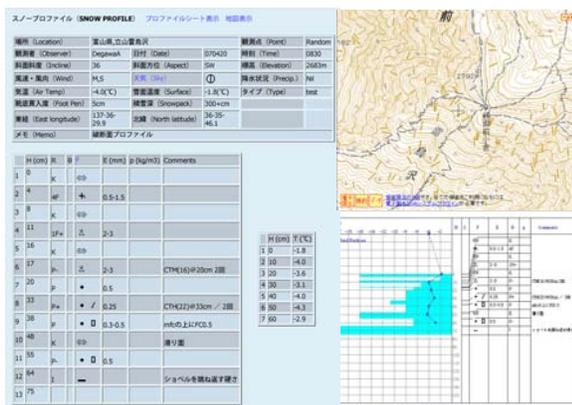


Figure 7: SPIN

6. RESOURCES

There were few Japanese avalanche books that were written from the point of view of frontline avalanche workers, and there were few useful resources in North America that was introduced to Japanese readers. JAN therefore has translated and published the foreign books as follows: "Free Riding in Avalanche Terrain," "Staying Alive in Avalanche Terrain," "The Avalanche Handbook," "Observation Guidelines and Recording Standards for Weather, Snowpack and Avalanches." Also, our original publications include "Field Book." And in November 2008, we will start an avalanche magazine for professionals, "Avalanche Press." Avalanche Press will be available at backcountry shops and other stores as an useful and valuable resource for recreational core users and guides.

7. FUTURE TASKS

7.1 Educational programs

We will start Level-2 course within a few years. We will also revise the whole structure of two-day program of Safety Camp: we are planning to give students homework in advance for the classroom session in order to make the field session longer. And in relation to this plan, we also have to work on the issue of the Internet-based education.

7.2 Information Sharing Programs

At the present moment, information sharing programs serve more as an educational tool than a information tool because the amount of posted information varies from area to area. How much information about an area is available on Snow Bulletin Board depends on how many contributors are there in the area. There is therefore lack of information about some mountains in spite of the fact that they are popular among recreational users. This problem is hard to solve immediately because it has to do with the problem of human resources. We hope to steadily solve this problem with a focus on human resource development. And at the same time, we hope to enhance information availability in areas already well-provided with information, such as Hakuba area, by setting up study plots in the mountains.

7.2 Awareness in the Backcountry Industry

In 2008 season, in cooperation with a Heli-ski company, JAN made a survey of 1,100 clients of the company. Heli-skiing in Japan is COMPLETELY different from that in Canada and other countries. The helicopter only carries skiers up to 2,300m altitude, and they have to ski 750m down to the ski area with no help except of some poles on the way and their own judgment, with no guide with them. Operation season is from March through the holiday weeks in May as weather is stable during that period. Heli-skiing is popular because it is often featured on ski and snowboard magazines.

According to our survey, 26% of their clients have toured backcountry with guides or their friends, and the others usually ski only in ski areas. 69.4% of all the clients came with their friends, 17% with their family. The youngest client is ten years old, the oldest is seventy-seven, and

people in their 20s make up the highest percentage, 30.1%. 61.1% of the total is snowboarders, and skiers including those who use fat skis make up 27%. Those who carry something to drink make up 75.4% and those who carry cell-phones 80.5%, but those who carry beacons and rescue whistles make up only 2.7% and 5.3% respectively. (Figure 8)

To put it briefly, people without even minimum awareness of avalanches are skiing down mountains without any caution. Heli-skiing operation is not the exception. For example, one local tourist association organizes backcountry tours for groups as big as sixty people. Although local guides lead the groups, sixty people move on a terrain almost at a time. Many of them are ski area users, too: they don't carry a beacon and other equipment, and the organizer doesn't require them to either. This is the reality of Japanese backcountry business aimed at the mass market. Though JAN's activities have been aimed at guides working on site and recreational users, now we need to promote awareness in the backcountry industry and among their clients.

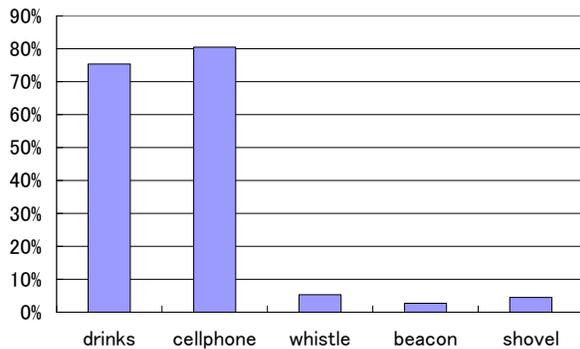


Figure 8: What do Heli-skiing participants carry on.

8. CONCLUSION

For eight years, JAN has worked on the development of both educational programs and information sharing programs based on our fundamental concept of "Round Table": sharing basic data of field conditions. We can say that JAN's Round Table philosophy is embodied as Snow Bulletin Board. As the education based on information sharing concept expands, more people will understand the benefit of Snow Bulletin Board and post a lot of reliable data, which will serve as useful information in actual situations. This cycle will give all the people who are involved proper and deeper understanding of nature, so that they can take better choices in risk management. Though there are still some tasks to work on, JAN hopes to be a roll model for making the most of human resources and their network in countries or areas where neither avalanche education programs in the industry nor public avalanche information service are fully developed.

8. ACKNOWLEDGEMENT

We would like to express our deepest gratitude to Canadian Avalanche Association. This steady progress of our project could not be achieved without CAA's assistance.