WHAT DO AVALANCHE STUDENTS RECALL ONE YEAR POST COURSE?

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ABSTRACT: We wanted to gather data on how well Avalanche Skills Training (AST) 1 students recall what they learned. We understand that "recall" may be differentiated from "knowledge" but we felt this was a good first step. This survey will help us place metrics on what information students retain over time as well as avalanche safety habits they have developed, and thus help assess the effectiveness of the AST program.

KEYWORDS: avalanche education, knowledge retention, good habits, trip planning

1. INTRODUCTION

Recreational avalanche courses in Canada started in the late 1950s, instigated by two members of the Canadian Ski Patrol System (CSPS). In the mid-late 1980s, Bruce Jamieson, along with other experienced avalanche course providers, helped set the standard for curriculum delivered through the Canadian Avalanche Association (CAA). The RAC (recreational avalanche course) program started in the late 1990s and was a joint venture between the CAA and CSPS, standardizing course content and duration. The first formalized recreational avalanche courses (RAC) and advanced recreational avalanche courses (ARAC) started in 1997. Upon its inception in 2003, the Canadian Avalanche Centre took over responsibility for the recreational avalanche course program. In 2006-07, the curriculum for the recreational courses was significantly changed by the introduction of the Avaluator, a decision-making framework and tool for recreationists. At that time, the recreational courses became known as Avalanche Skills Training (AST). In March 2010, an updated version, Avaluator 2.0, was released. The Avaluator 2.0 is an essential component of the AST program.

Previous metrics for the AST (and former RAC) program include only student numbers. From these statistics, we can determine that overall the ***AST*** program has grown 75% in the 8 years that it has been delivered (this includes both AST 1 and AST 2 student numbers). Statistics such as these are important, but we felt that further research into the *effectiveness* of the training was due. This is important information to be able to share with the AST providers and instructors, as well as our stakeholders, sponsors, partners and donors.

The AST program is third party delivery. AST instructors are either CAA Active (AST 1 delivery) or Professional (AST 1 & 2 delivery) members in good standing. In order to conduct this survey, we asked instructors to send the survey link to their AST 1 students from the 2012-13 season. We received 400 responses, which represented 5.5% of the AST 1 students.

2. SURVEY QUESTIONS

There were 20 survey questions. The questions were a combination of knowledge/recall testing as well as current habits (avalanche safety related) that students continue to use. Overall the findings were positive. From this small sector of the 2012-13 AST 1 students, their knowledge or recall was generally excellent. Most have good avalanche safety habits. Obviously, the drawback of this type of survey is that "recall" is different from "knowledge". A student may theoretically "know" the prime slope angles for slab avalanche release but may not be able to recognize this terrain 100% of the time in the field. Our hope is that this survey is simply the first step, and that we may have some

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more in depth studies and surveys conducted in the near future.

Tbl. 1: The following table includes the survey questions and responses

Q1. How many other models of transceivers (other than the one you ride with) are you familiar with enough to turn them on and off?	1 model = 19% 2 models = 33% 3 models = 29% 4 models = 10% 5+ models = 9%
Q2. How many times a season do you practice with your transceiver? (e.g.: have a companion hide 1 or more transceivers and you search for them using your transceiver).	Never = 10% Once = 36% Two to five times = 48% More than five = 6%
Q3. The snowpack consists of layers that are formed by (check all that apply).	Sun = 94% Wind = 96% Temperature changes = 95% Rain = 92% Storm snow = 97%
Q4. Which of the following is NOT a common trigger point?	Convexity = 7% Below a cornice = 7% Rocky summit = 66% Shallow areas of variable snowpack depth = 24% Points of weakness (near trees, rock outcrops, etc. protruding through snow cover) = 6%
Q5. What are examples of a terrain trap.	Depressions = 83% Top of a ridge = 14% Gullies = 92% Concavity at the bottom of a slope = 84% Top of a slide path = 19%
Q6. What does the term “run out zone” refer to?	The top of the avalanche slide path = 0% The middle of the avalanche slide path = 2% The bottom of the avalanche slide path = 98%
Q7. Can avalanches occur in simple terrain?	Yes = 97% No = 3%
Q8. According to the Avalanche Terrain Exposure Scale, what type of terrain does this sentence describe: “Exposure to multiple overlapping avalanche paths or large expanses of steep, open terrain.”	Simple = 0.5% Challenging = 11.5% Complex = 88%
Q9. What important information do you want to check on the CAC avalanche forecast before you head into the backcountry? (Check all that apply).	Danger rating = 100% Avalanche problems = 96% Terrain and travel advice = 97% Time of sunrise and sunset = 56% CAC Facebook page = 21%
Q10. Choose from the following list up to 5 Trip Planning activities that you plan to CONSISTENTLY do before every backcountry trip.	Check the avalanche bulletin = 99% Make sure everyone has proper avalanche safety equipment = 90% Check the weather = 88% Know the type of terrain you are heading into (e.g.: simple, challenging, complex) = 74% Have a first aid/repair/overnight gear = 56% Know the group you are with = 53% Have a map/compass/GPS and know how to

	use them = 40% Carry a radio/sat phone/spot/cell phone = 39% Have emergency contact numbers = 29%
Q11. Which of the following may be included in "Avalanche Problems" in the daily avalanche bulletin? (Check all that apply).	Loose snow = 48% Storm slab = 95% Wind slab = 95% Cornices = 67% Persistent slabs = 94%
Q12. The CAC avalanche forecast gives what information under "Avalanche Problems"? (Check all that apply).	Elevation zone = 80% Aspect = 83% Chance of avalanches = 89% Expected size = 87% Whether you should go riding/skiing or not = 13%
Q13. The Avaluator Trip Planner does the following:	Tells you what slopes to avoid = 3% Tells you the danger rating = 5% Combines the danger rating and the terrain rating = 87% Tells you what your risk tolerance is = 6%
Q14. In your AST 1 class, you should have received a small, weather resistant, Slope Evaluation card, a part of the Avaluator Decision Making system. Have you packed this Slope Evaluation card in your jacket/pack/sled (in order to refer to it when you are in the backcountry)?	Yes = 74% I used to but not any more = 6% Never packed it = 12% Lost the card = 5% Don't remember getting the card = 3%
Q15. Slab avalanches occur most commonly on what slope angle?	45 – 60 degrees = 7% 35 – 40 degrees = 27% 30 – 45 degrees = 61% 20 – 35 degrees = 5%
Q16. When conducting a companion rescue, what is your first step?	Turn your transceiver to "search" = 40% Get out your shovel and probe = 0.5% Choose a leader = 56.5% Call 911 = 3%
Q17. When using the "Conveyor Shovel" method for a buried person that is not a deep burial, you start shoveling:	At the probe on the downhill side of the buried person = 89% Uphill from the buried person, 1-2 times the distance from the buried transceiver = 6% In a circle around the buried person, moving towards the probe = 5%
Q18. Human Factors can affect decisions in the backcountry. What is a good way to avoid negative traps of human factors when in the backcountry? (Check all that apply).	Communicate with your group in advance = 93% Have a Trip Plan that everyone agrees on = 95% Know your level of competence and others in your group = 94% Identify when the risk level is rising (using Slope Evaluation factors) = 84%
Q19. When your primary skiing/riding/boarding group heads out into the backcountry, how many of the following activities do they consistently do? • Everyone's transceiver is on "send" (or "transmit")	We do all five of the above = 62% We do 3 – 4 of the above = 36% We do one – two of the above = 2% We do not do any of the above = 0%

• Everyone has a shovel, probe and transceiver, and know how to use it • Everyone is comfortable with the trip plan for the day • Everyone has checked the avalanche bulletin or acquired local knowledge in an area without a bulletin • The group has necessary safety equipment (shelter, food, water, repair, first aid) for the day	
Q20. What does "low probability/high consequence" refer to?	Low probability of snowfall / high consequence of covering terrain = 0% Low probability of triggering an avalanche / high consequence of covering terrain = 8.5% Low probability of triggering an avalanche / high consequence if you get caught in an avalanche = 91% Low probability of good turns / high consequence of you get caught in an avalanche = 0.5%

4. CONCLUSION

This survey highlights a few points that should be considered by AST Providers/Instructors when instructing future courses:

- 46% of respondents practice their transceiver skills only once, or not at all, each year (Q2).
- 24% of respondents do not realize that shallow areas in the snowpack can be a trigger point for slab avalanches (Q4).
- 33% of respondents do not realize that cornices are an "avalanche problem" (Q11).
- 52% of the respondents do not realize that "loose snow" is an "avalanche problem" (Q11).

And the positive results:

- The majority of respondents have good travel habits, are aware of human factors, utilize the tools available on the Canadian Avalanche Centre (Avalanche Canada) website and utilize the Avaluator 2.0 Slope Evaluation card.

5. NEXT STEPS

a) Avalanche Canada (formerly the Canadian Avalanche Centre) would like to see AST 1 students continue their avalanche education. This can be in the form of a Companion Rescue Skills course: a 1-day, field course that focuses solely on companion rescue skills; or the AST 2 course: a 3-1/2 day course that delves deeper into terrain recognition, travel techniques in avalanche terrain, further utilizing the Avaluator 2.0 and the ATES (Avalanche Terrain Exposure Scale) model.

b) There is a proven need to practice companion rescue skills training. Avalanche Canada and AST Providers should encourage all past students to stay current in this realm.

c) There is a need to further assess "knowledge" retention of AST 1 students via a more in depth study utilizing actual terrain imagery when soliciting responses.

d) In future surveys, care must be taken to succinctly word survey questions to avoid any confusion.

(Q15 & Q16 are examples of questions that required more clarity).

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