

## Modern avalanche education: about rubber gloves and a card game

Rolf Westerhof and Maarten Huisman  
Snow Safety Center, Leek, the Netherlands

**ABSTRACT:** Avalanche educators face a daunting task: they usually have very little time to convey a very complicated matter to an ignorant audience. So what is the best way to do this? Social sciences offer little solutions as most of their research on teaching applies to children. Two extremes however define the range of teaching techniques: on the one hand 'constructivism' (or 'active learning') where students do most of the work themselves by formulating and solving problems and on the other hand the 'teachers run model' (or 'passive learning') where the students are merely passive and 'absorb' the information coming from the teacher (Duffy, T.M., & Cunningham, D.J. 1996). Practicing avalanche educators know from experience they will need a combination of 'passive learning' and 'active learning'. A card game and rubber gloves offer possibilities.

**KEYWORDS:** Avalanche education, active learning, avalanche card game, card game.

### 1 INTRODUCTION

The Dutch Snow Safety Center is a kind of black sheep in the avalanche community: the Netherlands has no mountains, gets hardly any snow and has therefore no traditions in avalanche education. Nonetheless more than a million Dutch go skiing or snowboarding and freeriding is popular among them. So there is a growing need for avalanche lectures. As a result of the lack of a history with avalanches, seven years ago the Snow Safety Center could create an avalanche education program truly from scratch. They didn't have to worry about any national traditions nor outdated (?) opinions from (grand) fathers of students. The students themselves are usually perfect 'tabula rasa'. This offered possibilities and challenges at the same time. What choices did the Snow Safety Center make to structure their curriculum in the passive learning sense? What solutions did they find to offer active learning experiences?

### 2 BUILDING A CURRICULUM

In building their curriculum, the Snow Safety Center opted for a clear structure to present their courses. The same structure is maintained through all levels (the center currently offers 4 levels in avalanche education). This has proven to be a workable approach. The two key components in the structure are a 'triplet of disaster' that implies slab, weak layer and slope-angle above 30 degrees, and the famous 3x3 system by Munter (Munter, 1997). The center opted for a, in Europe very popular, rule based

approach; the so-called Reduction Method (Munter, 1997). This approach has various advantages for teaching in a country without mountains and snow! Furthermore a rule based approach offers very natural possibilities to differentiate between levels in expertise. Different applications of the Reduction Method serve different levels in expertise. The center applies for instance the 'Elementary Reduction Method' (Munter, 1997) for their basic level students and applies the 'Professional Reduction Method' (Munter, 1997) for their top-level students.

### 3 ACTIVE LEARNING

The Snow Safety Center takes care to combine passive and active learning experiences during their different theoretical curricula. Combining the two different approaches is beneficial to both teacher and student. Students don't have to 'sit and listen' all day and the teacher gets a little break every now and then while students do an exercise.

Active learning situations also offer an excellent opportunity to add some fun to the programme. After an idea from Werner Munter (inventor of the Reduction Method; Munter 1992) the authors created in collaboration with Munter, Manuel Genswein, usually known for his extensive knowledge on avalanche rescue, and Huib Wouters, a card game about the Professional Reduction Method (PRM) for their advanced students. This is a good example of an active learning situation. Feedback of the students is very positive: in a short amount of time they acquire insight in the rules and difficulties the PRM throws at them. And it is fun to play along the way! For the educators it is an efficient way to teach this complicated matter with larger groups.

How novices can learn to understand contour lines on alpine maps using rubber gloves is another example of active learning and fun, which

---

*Corresponding author address:* Rolf Westerhof,  
Snow Safety Center, Leek, The Netherlands;  
tel: +31 62 95 46 669;  
email: rolf@snowsafety.nl

can only be fully understood during a demonstration!

#### 4 CONCLUSIONS

Interchanging passive and active learning and thinking how this best can be done, really pays off for avalanche educators. It makes long days in class enjoyable and, most of all, students appreciate it. Feedback from our students learns us they value this interchanging approach between passive and active learning.

#### 5 REFERENCES

- Duffy, T.M., & Cunningham, D.J. (1996).  
Constructivism: Implications for the design and delivery of instruction. In D. Jonassen (Ed.),  
Handbook of Research for Educational Communications and Technology (pp. 170-198). New York:  
Simon & Schuster Macmillan.
- Munter, W. (1992). Neue Lawinekunde. Bern: SAC.
- Munter, W. (1997). 3x3 Lawinen,  
Garmisch-Partenkirchen: Pohl & Schellhammer.