

PRACTICAL EDUCATION KIT FOR AVALANCHE TRAINING WITH GROUPS

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ABSTRACT: «Learning by doing» is an obvious credo for every instructor. In avalanche education, however, trying out everything yourself can be dangerous. Furthermore, learning about avalanches requires some theoretical background, which has to be taught. Avalanche instructors tend to explain a lot without the participants having to deal seriously with the topic. Using cooperative ways of learning, the learning attention and the learning success can be increased distinctly. The idea behind this form of learning consists of the following: a) Give tasks and stimulate participants to think; b) Discuss in different forms of groups and exchange knowledge and ideas, and c) Present answers and results to understand the content. Based on the content of the leaflet «Caution Avalanches», we put together a training-kit for cooperative learning. The kit is especially designed for teaching in the field and includes topics such as interpreting the avalanche danger scale, typical avalanche situations, graphical reduction method, trip planning, decision making, human factors. Guides and instructors of avalanche courses as well as participants have had good experience of working with this kit and appreciate the diverse way of learning.

KEYWORDS: avalanche prevention, backcountry touring, education, training kit

1. INTRODUCTION

It is well known that new knowledge can better be acquired by hands-on experience. Further, having to explain issues and exchanging knowledge with others increases the learning success. In avalanche education, however, trial and error can be dangerous. Furthermore, learning about avalanches requires some theoretical background, which has to be taught. Often this leads to rather passive learning situation where instructors tend to explain a lot without the participants having to deal seriously with the topic. Using cooperative ways of learning, the learning attention and the learning success can be increased distinctly. Several studies proposed this active form of learning (e.g. Lyman, 1987 or Slavin, 1990). Other studies, e.g. Rempfler et al. (2010) or Schnydrig (2014), investigated how far avalanche knowledge is understood and showed that the understanding of complex interactions in the context of snow avalanches is often poor among winter backcountry recreationists. This knowledge gap may be filled with cooperative teaching techniques which can be described by the «Think-pair-share»-strategy (Lymann, 1987) and can be characterized as follows:

Think: Give tasks and stimulate participants to think.

Pair: Discuss and exchange knowledge and ideas in small groups.

Share: Present solutions and results to better understand the content.

To foster cooperative learning in avalanche education we put together a training kit to teach relevant avalanche knowledge which is condensed in the established leaflet «Caution avalanches» (Harvey et al., 2016).

2. OBJECTIVE OF EDUCATION KIT

The training kit consists of cards with different topics. Each card contains a certain content of the leaflet «Caution avalanches». The aim of the didactic training set is to work and discuss in small groups, and to convert knowledge into competence by presenting the findings (Fig. 1).

The instructor can distribute selected cards to the participants and set a task. The tasks are adapted to the level of knowledge of the participants. After the participants have thought about the task (**think**), the question is then discussed in small groups or with a partner and solutions are searched for (**pair**). Afterwards the results of the group will be presented e.g. in the plenum (**share**). To present solutions and explain facts a topic has to be understood. It quickly becomes obvious where there still are knowledge gaps.

In order to further increase the learning attention, the presenting person is chosen randomly, e.g.

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by throwing a dice. Group compositions should be changed often.



Fig. 1: The training kit can be applied for education in groups indoors.

A task can also consist of assigning the cards to a certain topic or term. Moreover, some cards represent puzzle pieces whereby a group can put together a scheme from the leaflet «Caution avalanches» (Fig. 2).



Fig. 2: During a break on a tour participants put together a puzzle with parts of the training kit.

The objective of the training kit is to involve participants in avalanche courses as much as possible. It is especially designed for teaching in the field but can also be used indoors.

3. CONTENT AND POSSIBLE APPLICATION

The training kit consists of 10 avalanche topics, including human factors and is available in German, French, Italian and English. The leaflet «Caution avalanches» serves as a basis. In the following we give an overview of the content and provide some possible tasks or applications.

1. **Interpreting the avalanche danger scale:** Which statements go with which danger level? This topic is well suited for class formation, or as a small course in the field where the cards have to be handed in at the right stop along the way.
2. **Typical avalanche problems:** Which statements go with which avalanche situation? This is good for teaching small groups. The topic of typical avalanche problems can be taken up in detail in the field.
3. **Graphical reduction method (GRM):** The GRM is put together as a puzzle, e.g. by participants who have to wait (e.g. transceivers search exercise), or in competition between groups, etc.
4. **Risk factors:** Which factors reduce the risk, and which increase it (simple task)? Convey the factors associated with the tool 'Decision making for individual slopes' (slightly harder task).
5. **Recognise typical avalanche problems:** Define the criteria that influence typical avalanche problems and find them in the field. Use typical avalanche problems in the field to assess the situation, discuss the consequences and appropriate behaviour.
6. **Snow properties of weak layer and slab:** How does a typical weak layer look like? What are typical properties of slab layers? The participants look for the respective types of snow, explain their properties and possibly their formation and relevance in the current situation.
7. **Important considerations during trip planning:** By finding the right order, the topic can be covered according to the participants' level of knowledge.
8. **Decision-making procedure:** By finding the right order, the topic can be covered according to the participants' level of knowledge.
9. **Human factors:** Which factors go with which topic (pressure, heuristic traps, illusion)? Examples are important! Discuss examples in the group (e.g. in connection with current behaviour), find examples, be provocative, etc.
10. **Decision making for individual slopes (A5 format, laminated/writeable):** Introduce the topic and then apply in the field. Compare different slopes. Harvey et al. (2018) describe the application of this tool in more detail.



Fig. 3: Avalanche education kit with leaflet «Caution avalanches». The kit and the leaflet are available in German, French, Italian and English.

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