

Critical Thinking in Tactical Decision Games-training

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ABSTRACT

Training tactical command needs to address two components: (a) expansion and refinement of tactical schemas, and (b) practice in the process of handling complex and unfamiliar tactical problems. Using Tactical Decision Games (TDG) for training helps students in the build-up of mental tactical patterns. The method of Critical Thinking (CT) training enhances students' abilities to handle complex and unfamiliar tactical problems. A pilot study shows that a combined CT/TDG training leads to the achievement of the training objectives. Instructors and students consider the in-depth processing of this training essential for developing tactical command skills.

KEYWORDS

Tactical command, Training, Critical Thinking, Tactical Decision Games, TDG

INTRODUCTION

Recent studies have shown that experts in military tactical command treat decision making as a problem-solving process [4]. Experts have large collections of schemas, enabling them to recognise a large number of situations as familiar. When faced with an unfamiliar tactical problem, experts collect and critically evaluate the available evidence, seek for consistency, and test assumptions underlying an assessment. They then integrate results in a comprehensive, plausible, and consistent story that can explain the actual problem situation.

If we want novices to become experts, training tactical command therefore needs to address two components: (a) expansion and refinement of tactical schemas, and (b) practice in the process of handling complex and unfamiliar tactical problems.

To achieve these objectives, we propose to integrate the workform of Tactical Decision Games and the training concept of Critical Thinking. A pilot study for the Royal Netherlands Navy is presented.

ACQUIRING TACTICAL PATTERNS

Experienced decision makers can quickly and accurately achieve situation awareness in critical situations thanks to their large knowledge base of tactical patterns. Their experience enable them to make fine discriminations between cues and to detect anomalies in 'prototypical' cases [7], [9].

Acquiring expertise in a high-level complex skill like command and control is a matter of intensive, deliberate and reflective practice over time [6]. It requires active engagement in situation assessment and decision making in representative and relevant cases. Studying such cases from different angles, acknowledging the relevance of its cues and their intercontingencies helps students in the build-up of mental tactical patterns.

Exposure to command and control situations can take place in operational and in training settings.

Although the value of experiencing operational missions is undisputed, such missions are seldom ideal for learning tactical patterns. For one, commanders participate in only a small number of missions. Second, the emphasis of current military missions is on peace-enforcing, only rarely involving combat situations. Third, the course of such missions is normally too uncontrolled and unstructured for effective learning.

In a training setting, the variety and difficulty of presented cases in live and simulation exercises can be controlled. However, organising such exercises require high logistic efforts, and are therefore costly. As a result, commanders receive tactical exercises infrequently and irregularly. Because of the high efforts involved, exercises are often designed to achieve multiple goals, of which the training of a commanders' assessment and decision making skills is only one.

In sum, current operational and training practice provide commanders insufficient opportunities to build up a framework of mental tactical patterns.

Acknowledging this problem, the US Marines have adopted a low fidelity training technique to present

tactical problems to trainees: Tactical Decision Games (TDGs) [8]. These TDGs consist of a written description of a tactical problem accompanied by a schematic map. TDGs can be administered individually or to groups. They can be static, requiring trainees to develop a detailed and founded plan. TDGs can also be dynamic through the use of role players, who introduce events upon which trainees must respond. TDGs have been used successfully to present a wide variety of relevant tactical situations to trainees, and to enable them to practise situation assessment and tactical decision making.

The use of TDGs has been further developed and refined for civil emergency management training [5]. Case studies show that TDG-training enhances planning, communication and decision making [5].

TRAINING TACTICAL PROBLEMS SOLVING SKILLS

The approach of expert decision makers when handling difficult, unfamiliar and new situations has been used to develop a new training concept: critical thinking (CT) [3], [4]. The aim of critical thinking training is to keep trainees from assessing tactical situations solely on isolated events. Instead, trainees are taught when to collect additional information, and how they can integrate the available information into its context, which may include elements as: the history of events leading to the current situation, the presumed goals and capacities of the enemy, the opportunities of the enemy, etc. Trainees are instructed how to identify (in)consistency and uncertainty, and how to adjust or refine their story by deliberate testing and evaluation. CT training also includes a procedure for handling time constraints.

Field studies showed positive effects of CT-training on the process of tactical command (i.e. better argumentation for situation assessment) as well as on the outcomes (i.e. more and better contingency plans) [3], [1], [2].

CT/TDG: A NAVY APPLICATION

An integrated application of critical thinking and TDGs was developed for the OPERational School of the Royal Netherlands Navy. The theoretical tactical lessons emphasised tactical procedures and weapon system capacities. Instruction consisted primarily of lectures and self-study. The relevance of the presented information to tactical situation assessment

and the implications for decision making often remained implicit. When, later in the training course, students were required to bring this knowledge into use during exercises in the tactical simulator, they often failed to do so.

The school was looking for redesigning the theoretical lessons in such a fashion that students can develop a satisfactory repertoire of tactical patterns by practising situation assessment and decision making in representative tactical problems. This should prepare students better for training exercises on the tactical simulator, and for the on-board exercises.

To achieve this goal, a series of four TDG exercises using critical thinking interventions were developed. Exercises were paper-based, consisting of a problem and mission description, accompanied with a tactical map (see Figure 1).

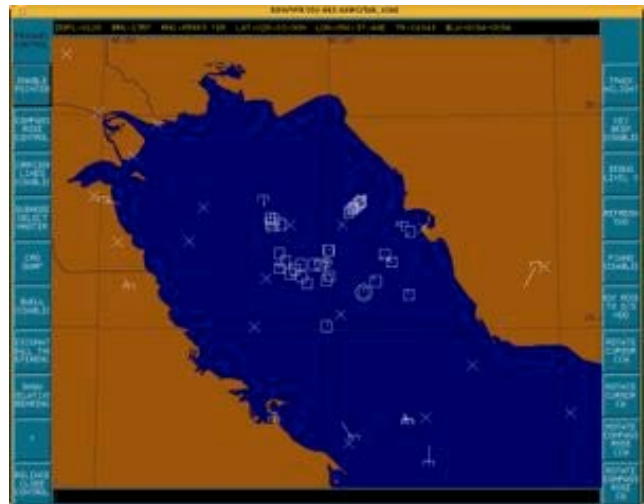


Figure 1: A tactical map

Each TDG took two hours and was introduced and guided by the instructor. The issues in the TDG-exercises corresponded to the exercises in the tactical simulator later in the training course, but were presented in different tactical settings.

Ambiguous, incomplete and inconsistent information was intentionally introduced in the scenarios to stimulate critical thinking, in particular:

- producing different explanations for events
- recognising critical assumptions of situation assessments
- critiquing and adjusting assumptions and explanations
- mentally simulating outcomes of possible decisions



Figure 2: Group performing a TDG

TDGs were administered to groups of four students (see Figure 2). By turns, one of them was assigned the role of observer using a scoring form to evaluate his group on the following dimensions:

- information selection and acquisition
- argumentation and reasoning
- planning and contingency planning

In addition, an experimenter-observer also evaluated the group's performance.

Students were asked to clarify their assessments in their discussions, thus giving observers and the instructor access to the assumptions and reasoning underlying their decisions. In order to enhance critical thinking processes, the instructor guided the session by specific CT-exercises, like “now try to finalise your initial assessment into a story”, or “now test your story upon conflicting, unreliable or incomplete information”, or “identify a critical assumption in your story and apply the advocate-of-the-devil technique”. After completion, each group presented their assessments, plans and contingency plans to the other groups. Tactical key decisions were discussed collectively.

RESULTS AND CONCLUSION

Examination of results reveal that the problems presented in the TDG have enabled students to acquire the training objectives. Instructors and students alike are of the opinion that the in-depth processing through critical thinking exercises combined with carefully constructed scenarios supports the development of a rich mental library of tactical patterns.

The promising findings of this pilot study will be

further investigated in a follow-up study, using more standardised and formal methods of performance evaluation. Furthermore, the effects of CT/TDG training on performance in the simulator exercises will be assessed.

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