

Evaluation of the E-tutor for humanitarian demining tasks managing staff

Andrzej Masłowski*, Igor Ostrowski**, Paweł Musiałik***

Abstract

E-tutor is an e-learning tool for humanitarian demining tasks managing staff. This tool is designed for checking the knowledge and try to solve tasks from area of site preparation. The tool is builded in two parts, one for Instructor and another one for trained . Trained person after 100% correct answered the test can try to solve exercise on map which is prepared by Instructor in his part of the tool. Tool for trained is divided in two parts: checking the knowledge from area of humanitarian demining procedures, knowledge from area of task site preparation and second part which is work on the map. Exercise on the map is designed as graphical tool for dislocation of necessary facilities. Training assessment is performed by comparison of the prepared proposal with the reference values of necessary distances between facilities.

Introduction

Most important part of humanitarian demining task commanders is knowledge about Standard Operation Procedures which are part of every HD handbook. Another very important skill without which commander can not proceed is planning of task site preparation [1],[2]. E-learning will be use for improve this skills, this paper describe a tool designed in Institute of Mathematical Machines for this purpose. Tool consists of two part: checking the knowledge from area of humanitarian demining procedures and knowledge from area of task site preparation and second part which is work on the map.

First Part – Test

In the test correct answers for all questions have to be given to pass the exam. Without passing the test proceeding work on the map is unavailable. Graphical layout of the test is presented in figure 1.

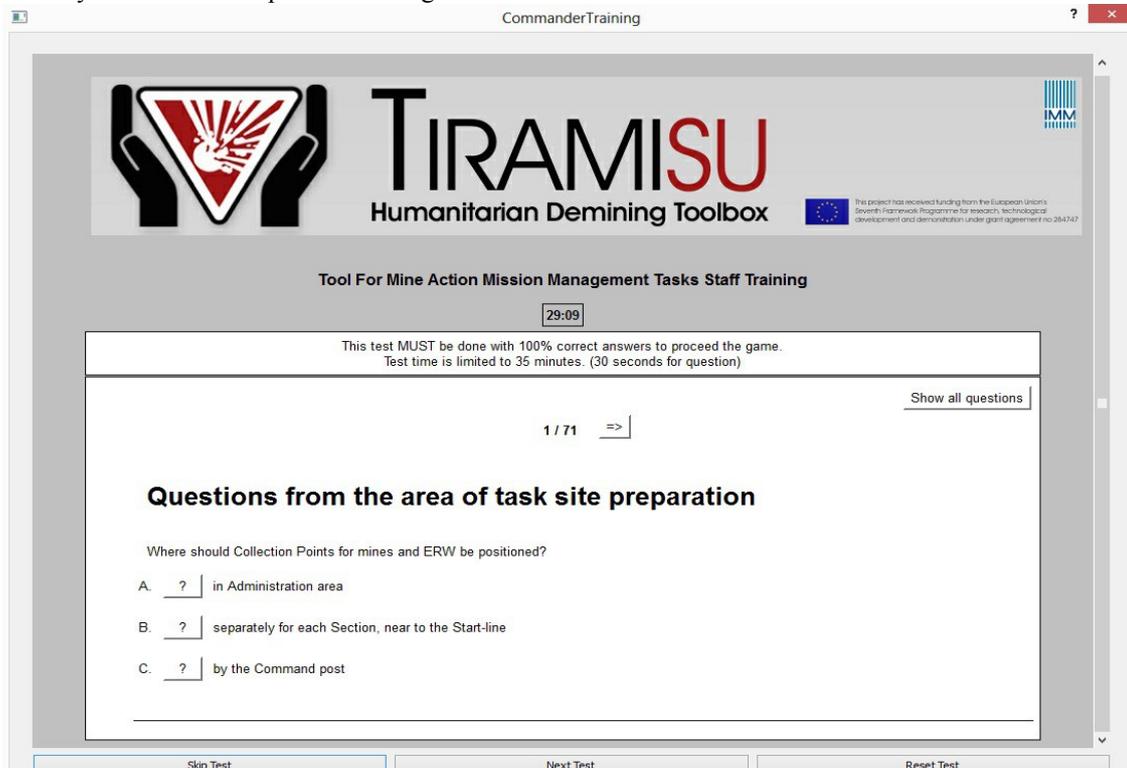


Figure 1 test graphical layout

* Institute of Mathematical Machines ul Krzywickiego 34 Warsaw, Poland a.maslowski@imm.org.pl
** Institute of Mathematical Machines ul Krzywickiego 34 Warsaw, Poland i.ostrowski@imm.org.pl
*** Institute of Mathematical Machines ul Krzywickiego 34 Warsaw, Poland p.musialik@imm.org.pl

Examples of used questions from the area of safety and demining procedures:

(only answers "a" are correct)

The wide of demining line during manual demining is:

- a - 1,2 m including two overlaps on each side of 0,1 m
- b - 0,7 m
- c - from 1 to 2 m depends on used demining method.

The overlap outside the demining line must be:

- a - 10 cm on each sides
- b - at least 10 cm on the right side
- c - at least 0,2 m on the left side.

Efficiency of deminers using manual mine detection is:

- a - 50 m²/day
- b - 500 m²/day
- c - 150 m²/day.

If demining operations can be conducted when it is raining?

- a - no
- b - yes, if the rain intensity is low
- c - it does not matter.

If demining operations can be conducted in low-light conditions, at the dusk?

- a - no
- b - yes, but appropriate lighting equipment must be ensured
- c - it does not matter.

Is it allowed to conduct the demining process at low air temperature?

- a - no, if temperature drops below 0°
- b - yes, it has no influence
- c - yes, but work efficiency decreases

How should deminer proceed after detection an unknown mine?

- a - to call on EOD Operator by Section Leader
- b - to try defuse the mine
- c - to leave the mine on site of detection and to continue demining

Whether have the protection suites to be certified?

- a - yes, must be capable of withstanding the blast effects of 240g TNT detonated at 30cm from the nearest part of the armour and shards within the velocity of 450 m/s
- b - it is sufficient manufacturer's declaration of suitability for this type of work
- c - it is not required

Minimum working distance between demining staff for the AP blast mines and HE containing more than 200g of explosives is:

- a - 15 m in conditions of normal risk and 20 m in increased
- b - 25 m
- c - 60 m

Minimum working distance between demining staff for the AP fragmentation mines is:

- a - 20 m in conditions of normal risk and 25 m in increased
- b - 30 m
- c - 60 m

Which distance to the base-line may rest-areas be placed if not all deminers rest at the same time?

- a - safety distance - defined on the basis of recognized hazards
- b - triple working distance
- c - 100 m

If deminers can take off PPE in rest areas?

- a - yes, because CP should be far enough from the working areas
- b - yes, during the break
- c - no, he should wear PPE

Knowledge test from the area of task site preparation

The purpose of this test is to confirm the acquired knowledge which is necessary to appropriate planning of the demining task and preparation of the technical-administrative facilities supporting demining process.

Confirmation of the knowledge from this area is essential to begin next education level - planning of the demining. First level should enable learning - to acquire all essential information. The question and at least three answers (a, b ,c) should be shown but correct answer (highlighted) is in random place. Acceptance of the highlighted answer is requisite in order to go the next question. The questions are not in thematically related blocks. Trainees can repeat test unlimited times.

Final verification of acquired knowledge will be conducted within qualifying examination. The questions

from whole thematic range are shown randomly and the time for answer limited to 30 s. Correct answers for all questions have to be given to pass the exam.

Examples of used questions from the area of task site preparation:

(only answers "a" are correct)

How wide must Access-lanes be?

- a - at least 2 m
- b - at least 5 m
- c - at least 1 m

Where should Paramedic Post be positioned?

- a - not be further than five minutes walk away from any working deminer by the Access line in safety distance from Working area
- b - in Administration area
- c - by the main access road

What should be provided in Rest area?

- a - plenty of drinking water, latrine (if Administration area is far), simple seating and, when possible, racks to hold PPE and tools above the ground
- b - TV, refrigerator, soft drinks and food preparation space
- c - there are no special requirements defined

Which basic facilities should include Administration area?

- a - a shelter with a table, means of communication and a display board with a Task map
- b - social and office container equipped with fax and computer
- c - basic office facilities and food preparation space

In which way should Access-lines be established?

- a - should be straight whenever possible and use existing communication structures
- b - parallel and perpendicular to the Start-line
- c - existing roads should be avoided

It is necessary to conduct the demining of set out Access-lines

- a - always if there are reasonable doubts
- b - no
- c - yes if there are in Platoon some not involved forces and means . [3]

Second Part – Exercise on map

The purpose of the practice test is to prepare the proposal of dislocation all necessary facilities in Task site and Access-lines, Start-line, areas of responsibility (Worksites) for each Sections. Theoretical knowledge of from the area of task site preparation should be applied. Training assessment will be performed by comparison of the prepared proposal with the reference values. The exercise tasks are prepared by instructor using specially developed tool named "Builder". Instructor prepare map with demining Task using OpenStreetMaps for choose place for exercise. After define DHA instructor can sketch some additional roads, obstacles or informations. Prepared task must have defined some additional information like "Safe distance" for this type of DHA, all of this necessary informations have to be given by instructor. Trainees using application named "Checker" can try to dislocate all necessary facilities in Task site. Trainees can look at the mission help which contains all important informations about task.

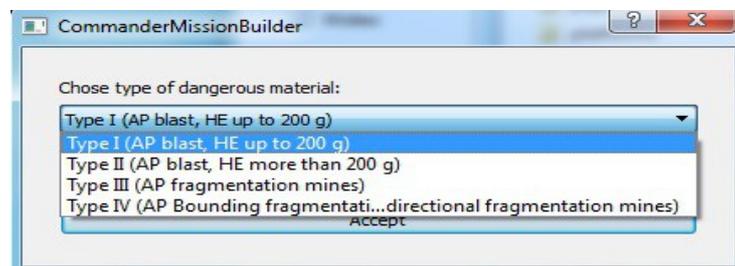


Figure 2 DHA choosing type of DHA window

CommanderTraining	
Mission Type:	Type I (AP blast, HE up to 200 g)
	Max distance from the Administration Area to the farthest point of the Base-line* (m): 1000
	Close distance (m): 50
	Safe distance (m): 200
Limits	Default safe zone between objects (m): 20
	Safe zone from fuel storage (m): 50
	Average ground speed in the mission area (m/min) - used to test the paramedic placement: 50
	Far distance: 300
	Very Close distance: 25
Start-Line	A lane inside the safe-area that should be made up of straight lines and started at a measured bearing from the bench-mark. Existing linear features such as roads, paths or the border of cultivated land may be used as a Start-line. At the start of a Task, the side of the start-line(s) facing the SPA is also the base-line. As the task progresses, the base-line may move forward but the start-line remains throughout the Task.
Base-Line	Line marks the division between Cleared areas and uncleared areas. Marking of the base-line must always be easy to see.
Access-Line	They allow rapid access to the Base-line in an emergency. Access-lanes should be straight whenever possible using existing roads or paths and must be at least two metres wide. If demining machines will use the Access-lanes, they should be made at least two metres wider than the width of the machines. They should be marked with white topped pickets a maximum of three metres interval. When painted stones are used as marking, they should be linked with marking tape held down by the stones.
Administration Area	Is the place where the Task Supervisor, Platoon Supervisor and Platoon Commander are based during demining operations. The area should be far enough from the Base-line for people in the area not to wear PPE but no more away from the base-line than 1000 m (in any part of the Task) and positioned in this way that all arriving Task visitors must pass the Administration Area before entering Access-lanes.
Feeding place	Should be positioned near Administration area.
Latrine	Should be positioned near Administration area. On large sites, pipe-urinals should be installed also close to Rest-areas. When there is only one latrine area, it should be positioned between the Administration area and the Rest-area(s). When field staff include women, or women visitors are anticipated, the Task site must have at least one screened pit latrine designated for female use.
Rubbish Pit	Should be positioned near Administration area.
Parking area	For all vehicles that will be deployed at the Task and for visitors. Generally the Parking area should be close to the Administration area but when that is not possible, it should be close to the Access-road and be at (or beyond) the safety-distance from the Base-line.
Parking and maintenance	Should be close to the Administration area, by the Access-line leading to the Start-line.
Robot Inspection areas	In a safe-area conveniently close to the Base-line, individual for each robot.

Figure 3 example of mission help

Conclusion

Presented tool can be successfully use for improve knowledge and skills trainees for humanitarian demining tasks commander. Trainees will have ability to try solve problems from area of task site preparation using electronic map in convenient way. Instructors can prepare tasks which will be most useful from their point of view.

Acknowledgement

The research leading to these results has received funding from the European Community's Seventh Framework Programme (FP7/2012-2013) under grant agreement n° 284747, project TIRAMISU.

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