



## COMPUTER TESTS – HARMLESS OR NOT?

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### ABSTRACT

Almost everyone knows computer method of control over the knowledge when the monitor shows a question and several answers. A student has to choose the correct answer and push the key. The next question with answers appears. In the end of the test computer puts the corresponding mark.

This type of testing has certain advantages as compared to traditional oral inquest: the test teacher saves much time at the inquest of large groups of students. These advantages have made this type of test wide spread in different knowledge fields.

But is the type of test harmless?

Lets turn to the answers to questions: one of them is correct and the rest are false. It means that false answer should be concealed and looks very much like the correct one. That's where the problem is.

During the test mental activity is intensified and the person is thinking intensively over each answer trying to choose the correct one. Can we assure that he or she will remember the correct answer and will get rid of false ones for good? No, we can't assure it. On the contrary the brain of the tested person will automatically fix all the answers which he or she was thinking over.

In some time under the real working conditions and in case of emergency when urgent solution is required the person may remember false answer.

The present paper suggests solution of the above problem.

### COMPUTER TESTS - HARMLESS OR NOT?

Almost everyone knows computer method of control over the knowledge when the monitor shows a question and several answers. A student has to choose the correct answer and push the key. The next question with answers appears. In the end of the test computer puts the corresponding mark.

This type of testing can also be carried out in a written form when the questions and written on the sheet of paper and the task for the student is to mark the numbers of correct answers. Teacher has the table with numbers of questions and numbers of correct answers.

This type of testing has certain advantages as compared to traditional oral inquest:

1. Even in written variant of the test teacher saves much time at the inquest of large groups of students.
2. In computer variant teacher does not spend any time at all, as he or she gets the ready computer made marks.

These advantages have made this type of test wide spread in different knowledge fields.

But is the type of test harmless? Lets turn to the answers to questions: one of them is correct and the rest are false. How must a false answer look like? If false answer is made if obviously wrong form it can be easily recognized by a student who has just finished a course of certain subject or by a specialist who is retrained in this field.

It means that false answer should be concealed and look very much like correct one. That's where the problem is.

One of the university teachers confessed in a private conversation that he spends much time to think of false answers in theory and structure of vessel.

It is known that human brain has certain ability to choose different pieces of information including knowledge and its subsequent reproduction. Some persons can better remember oral information (lectures), other - written information (textbooks), some people can better remember drawings (posters, illustrations, screen versions).

Emotionally valuable events can be better remembered, for instance the beginning and the end of a story, an object on the background etc.

What can be better understood, preserved and reproduced? Something, which is pondered over, repeated for several times and emotionally experienced. These processes we can find during a test.

What does a person feel when being tested? It is obvious that the mental activity is intensified and the person is thinking intensively over each answer trying to choose the correct one. Can we assure that he or she will remember the correct answer and will get rid of false ones for good?

No, we can't assure it. On the contrary the brain of the tested person will automatically fix all the answers which he or she was thinking over.

In some time under the real working conditions and in case of emergency when urgent solution is required - which answer will the person remember.

In case of emergency surgeons say 'We are loosing a patient'. A surgeon has just come back from retraining. There are thirty variants of reaction in case patient's heart breaks down, twenty of which are false. Would you like to be operated on by the surgeon?

A plane is landing and there is a break down in the system. The pilot has twenty variants of action at his disposal, fifteen of which are false. Would you like to be one of the passengers?

In storm vessel suddenly loses its stability. Captain has recently been tested, and there are fifteen answers in his memory, thirteen of which are false. Would you like to find yourself on board the vessel?

Spot check shows that a percentage of "remembering" false answers is rather high. Some time after testing students often give wrong answers i.e. show the non-existing knowledge which were not given by text book or by a teacher.

For example tests are composed so that student has to choose one concealed incorrect answer from ten correct ones. This answer will be remembered better than all the correct answers as it is accompanied by positive emotion of success. Memory will preserve all this 'informational garbage'. Memorizing of correct answers will be weak.

Usually tests are composed so that a person has to choose one or two correct answers disguised among several incorrect. In this case individual features of memory will prove to be most important.

Much will depend on how a person works over control tests, how intensively he thinks and how many times he repeats the lesson. The memory will preserve both correct and incorrect answers. Incorrect answers are also valuable for brain as they have to be found, recognized and separated from correct ones. This is accompanied by positive emotion.

During a test a person suffers a kind of nervous break down, anxiety and fear of failed exam. Even if a person does not confess in these feelings they still exist. These are negative emotions.

Every case of emergency can also cause such emotions.

Memory should find safe decisions both under the conditions of exam and in case of emergency. In stress situation that is better reproduced what was perceived in the like circumstances. Remembrances will by any means contain false answers.

A person will have to waste his or her time to analyze memory and repeated search of correct answers.

Creating false answers, which look very much like the correct ones we give our students so called knowledge, which do not exist and don't have any right for existence.

Thus, tests as they are present factories, which produce, distribute and implement false knowledge, information which was specially created in order to obscure brains and which manages to do it.

In case of real emergency the stress is multiplied. We can not exclude the possibility of wrong choice at the existing type of testing.

In winter 1983 a rescue vessel was tugging to the shore refrigerating trawler damaged by ice with its two departments filled by water. The sea was rough. At some moment the vessel lost its stability and took about 30 degrees list.

Captain of the tugged trawler on the motion put the helm over and took the full speed trying to correct the heel. As a result of this manoeuvre the vessel took a 45 degree list on another side, the heel was never corrected and the vessel sank.

It is known that such manoeuvre is prohibited for the vessel, which has lost its stability. The rules of seafaring practice can read this. It is also said by teachers during lectures. Nevertheless we are sorry to hear from time to time about captains trying to do it.

If the question on heel correction is included into a test, among false answers we would certainly find this dangerous prohibited manoeuvre. Many navigators will remember it. Then, in emergency we would have higher level of wrong operations.

Seafarers know that a serious danger is offered to a small vessel by sailing in a storm at overtaking sea. If length of a vessel and wave length are approximately equal and their speeds are almost equal this can be very dangerous. The vessel can suddenly lose its stability upset and sink. In order to avoid danger it is necessary to reduce speed and change the track.

Many years ago when I was a captain of fishing vessel my ship was a flagship and headed 15 similar vessels. We were coming back home to Vladivostok port from Northern part of the sea of Okhotsk through the strait between Sakhalin and the continent. Having passed through narrow fairways we entered the Tatar Strait. I allowed the vessels to follow independently as their speed range permitted. The column extended. There was fair storm wind, but sea was not rough because there was not enough space for the waves' speeding up. As we continued motion the space astern grew, and the height of wave increased.

At one moment the ship appeared on the crest, she was carried on by the wave but in some seconds the wave retrieved. I went up to the bridge. The length of wave was close to the

length of the vessel and its speed was higher than that of the vessel. The height of the wave was not very big so I did not notice any danger.

In a quarter of an hour a wave (probably ninth one) raised the vessel up. We were again on the crest, which was located around middle.

The wave carried the vessel forward turning it to the left. Suddenly the vessel fell down on its left side with about 45 degrees list. Helmsman was thrown from the helm, broke the deck house door and stuck in the bridge wing guard. I was staying between the control pillar and telegraph pillar, so I stayed on my feet. I changed into low speed but the speed was not reduced. (It occurred that watch-keeping mechanic who was in the engine room was thrown to aside and could not get to the speed regulator.) Finally the propeller's speed reduced sharply, the wave passed by and the heel was corrected.

I immediately informed the rest vessels of the accident over the radio and asked them for reports. It proved that two more vessels suffered the same situation but to a less degree. None of the captains reduced the speed. I ordered every vessel to change for half-speed and we safely continued the motion.

If we include to a test the question of captains actions at lost stability while sailing on strong fair wind we will certainly find among false answers the order 'Full ahead'. In this case you won't have to listen to my report now.

I know the case when fishing vessel moved in the Barents Sea in a storm its side to the wave which was very bad for about twelve hours. The vessel was rolling but its stability preserved under the normal level.

While entering its native harbour the vessel had to be turned ahead. Almost at once the vessel took the list of 40 degrees but managed to balance. The captain turned the vessel and mover at a low speed for several hours.

Relatives of crew-members made fires ashore waiting for the coming back from a voyage.

In the evening the captain took the second attempt to enter the harbour. At first the vessel moved ahead then suddenly upset and sank in sight of the seeing in.

There was no testing at that time. If this question is included into today's tests we should expect increase in the amount of the accidents.

While I was working on my report Vladivostok newspaper informed about two cases of loose of stability by vessels. On may 15<sup>th</sup> 15 miles off Somali coast a 120 meters long cargo vessel got a strong list. The vessel lost its stability because of the cargo shift and began listing. The crew was saved by Russian container vessel *Alexander Fadeev*, which approached the emergency signal. The list was about 25 degrees.

On the same day 4 mile off the shore transport *Skrypev* began listing starboard and sank. The crew was rescued by fishing vessel.

May be captains of the vessel have passed computer tests and thoroughly studies false answers to the question of operations in case of lost stability of a vessel?

What can we do?

1. I believe that first off all it is necessary to conduct research on 'obstruction of memory by false knowledge' after computer testing on various subjects.

2. It is necessary to mark out operators which are required to quickly react and make decisions, who's incorrect acting can result in serious consequences or accidents. They are pilots, navigators, cosmonauts, surgeons, nuclear power station operators, locomotive drivers and many others.

3. During training and knowledge control of the operators it is essential to prohibit tests with false answers.

4. Simulators used for training the said operators including computer simulators should be prepared not to read texts but to imitate operations and incorrect operations as well under different conditions.

After each incorrect operation there should be a red flashing light with inscription 'Wrong operation! Be aware of emergency!'

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