

Can courts trust the polygraph?

Developers: D. Katchevich and N. Arenst. The activity is taken from the textbook: "Police in the service of society"

Institute: The Weizmann Institute of Science, Rehovot.

Country: Israel.

Subject: Science for all, Biology

Grade level: 9-10 graders

Curriculum content: Voluntary and involuntary muscles

Kind of activity: Critical reading and group activity

Anticipated time: 4 lessons of 45 hours

Objectives/Competences

Subject matter objectives: learning about the voluntary and involuntary muscles systems.

Group activity: group self learning and presenting the main ideas to the class.

Argumentations: Scientific justification of claims.

Task description

This module presents the subject of voluntary and involuntary muscles and connected it to a real life dilemma regarding the use of polygraph in court. The activity supplies the students with the opportunity to justify their point of view with scientific evidence, and to self asses their own performances.

Teaching guide

Step 1:

The teacher presents an article from a newspaper regarding the use of polygraph, followed by class discussion raising the question "Can court trust polygraph?"

Students are expected to express their opinion regarding the above question and explain why they think this way. After the discussion, each student should write a reasoned opinion. We suggest 45 minutes for this stage.

Step 2:

The teacher should explain about impulsive reactions and voluntary reactions

And say that the polygraph is based on five signals:

- The person's pulse
- The person's blood pressure
- The person's perspiration
- The person's respiration rate
- The conductivity of the skin

This step is only a brief introduction to step 3, in which students learn in small groups.

Step3 - Group work:

A. The class will be divided into five groups. Each group will be concentrated in one of the changes that are measured during the polygraph test or the body system that in which the changes are expressed. Each of the groups should explain the whole class about its own subject.

Group 1: The heart and the blood system

Group 2: The heart and heartbeats

Group 3: The heart and blood pressure

Group 4: respiration rate

Group 5: The conductivity of the skin. This group will build an instrument that measures the conductivity of the skin.

B. Every group has to learn its subject, using materials that are supplied by the teacher. The materials include books, internet sites and worksheets. Example of such worksheets is attached (perspiration).

Some interior resources:

For blood pressure and heartbeats animations:

<http://www.innerbody.com/anim/heart.html>, <http://www.medtropolis.com/VBody.asp>

For the respiration system:

<http://www.innerbody.com/anim/lungs.html>,

How polygraph works: <http://people.howstuffworks.com/lie-detector.htm>

The groups prepare a 5 minutes presentation.

Usually this stage ends the third lesson, and the presentations are given on the last lesson.

C. Every group present its subject in front of the class for 5 minutes, and group no. 5 will demonstrate the instruments they prepared to measure the skin conductivity.

Step4:

On the end of the activity, students should read what they have written in step 1, and are invited to change their opinion and to justify it, they should base their changes upon the scientific knowledge they acquire in the activity. We suggest finishing the module with a class discussion, if time allows.

Teachers notes

An example for an article from a newspaper (see attached example), regarding the use of polygraph,:

Terrorism Suspect Alleges 'Mental Torture'

By [Eric Rich](#)

Washington Post Staff Writer

Wednesday, May 16, 2007; Page A02

A suspected terrorist who once lived in [Maryland](#) told a military tribunal that he was "mentally tortured" at the U.S. detention facility at [Guantanamo Bay, Cuba](#), and was driven to twice attempt suicide by chewing through his own arteries, according to a transcript of a hearing released yesterday by [the Pentagon](#).

Majid Khan, 27, one of 14 "high-value" suspects held for years by the CIA at secret foreign prisons before their transfer to Guantanamo Bay, also said he lost 30 pounds in 27 days during a hunger strike, according to the transcript. In a statement redacted in places by government censors, he complained of mistreatment that ranged from having his beard forcibly shaved and spending weeks without sunlight to the poor quality of the camp's weekly newsletter, it says.

"I swear to God this place in some sense worst than CIA jails," Khan is quoted as telling the Combatant Status Review Tribunal on April 15 as it considered whether to designate him an enemy combatant.

Cmdr. J.D. Gordon, a Pentagon spokesman, said yesterday that Khan has been "treated humanely" in the custody of the Defense Department.

According to the transcript, Khan, who graduated from public high school in suburban [Baltimore](#) in 1999, denied being a terrorist and twice volunteered to submit to a polygraph test. He told the tribunal that he helped the [FBI](#) take an illegal Pakistani immigrant into custody in 2002 -- a claim an FBI spokesman declined to comment on yesterday.

U.S. officials allege that Khan, a Pakistani national, took orders from [Khalid Sheik Mohammed](#), who is accused of orchestrating the Sept. 11, 2001, attacks and is also a high-value detainee at Guantanamo Bay. Khan was allegedly asked to research how to poison U.S. reservoirs and to blow up U.S. gas stations, and was considered for an effort to assassinate the Pakistani president.

At the hearing, the government cited statements it said were made by two of Khan's family members in 2003. A brother of Khan's allegedly said that Khan was "involved with a group that he believed to be [al-Qaeda](#)," and his father allegedly said that Khan had been "influenced by anti-American thoughts."

The government also cited statements it said were made by Iyman Faris, an [Ohio](#) truck driver who pleaded guilty in 2003 to supporting a plot to destroy the [Brooklyn Bridge](#) and to launch a simultaneous attack on Washington. Faris said Khan referred to Mohammed as his uncle, according to the documents, and told the government that Khan once spoke of his desire to martyr himself by detonating an explosives vest to assassinate Pakistani President [Pervez Musharraf](#).

But Faris disavowed those earlier claims in a statement provided to the tribunal at Khan's request. "That is an absolute lie," Faris wrote of his earlier statements, saying he was coerced or deceived into making them.

Khan's father, Ali S. Khan, also provided the tribunal with a statement disavowing his and his son's earlier statements. "Anything we may have said about Majid Khan was simply out of shock because we only knew that Majid had disappeared and was pure speculation based on what FBI agents in the [United States](#) told us and pressured us to say," he wrote.

Majid Khan was detained in March 2003 while staying with a brother in [Pakistan](#). His whereabouts were not officially disclosed until September, when [President Bush](#) named him as one of the 14 high-value detainees transferred to Guantanamo Bay.

Gitanjali Gutierrez, Khan's attorney at the Center for Constitutional Rights in [New York](#), said that Khan's response to the conditions of his confinement show how formidable they are. "He's definitely under a great deal of mental stress," she said. "The idea of indefinite detention is something that the [Red Cross](#) identified years ago as being tantamount to torture."

Some of Khan's complaints were less serious than others, including his allegation that he and other detainees are given "cheap branded, unscented soap" and must suffer with a loud fan that "drives us all crazy." He also complained about the condition of athletic equipment.

Damaging information about Khan came from Saifullah Paracha, a Guantanamo Bay detainee who provided a statement to the tribunal at Khan's request. Paracha said that, while in [Karachi](#), he and a man later identified to him as Khan were introduced by Ammar al-Baluchi, a nephew of Mohammed's who is accused of helping finance the Sept. 11 attackers.

Staff researcher Julie Tate contributed to this report.