Identity on Trial

The Visitor Education Center includes five exhibits featuring the use of science in courtrooms. Students will track the impact of scientific advances from eyewitness accounts to photography, fingerprints, DNA and even brain scans. Past court decisions provide examples of how science furthered justice but also raised questions about legal issues and civil liberties.

SUGGESTED PRE-TOUR AND POST-TOUR ACTIVITIES:

The following five areas of scientific discovery are presented in the Identity on Trial exhibit. The majority of these suggested activities are geared towards elementary students, however middle and high school students may benefit from a quick review of the five topic areas prior to their visit.

EYEWITNESS TESTIMONY

Can we always trust what we see? Students will view six seemingly obvious and everyday items and see if they can identify the real thing.

THE CASE:

Costly Mistakes: Robert McClendon was convicted of kidnapping a 10-year old Columbus girl in 1991. The evidence against him was the testimony of the girl and the state's allegation that he failed a polygraph test. After nearly 18 years in prison, McClendon was released when lab tests showed that his DNA profile did match evidence from the crime scene.

PRE-TOUR ACTIVITIES:

Before there was science there was eyewitness testimony. An eyewitness is a person who sees or has seen something happen, such as an accident or crime and is called to recount the experience in a court of law. Explain this concept to your students.

POST-TOUR ACTIVITIES:

Ask a student to leave the classroom. While the student is absent, ask the class to describe what the student is wearing. Questions such as what color was his or her shirt? Did she have on jewelry? Was he wearing tennis shoes? Was she wearing a skirt or pants? Did she have on earrings? Was he or she wearing a team jersey?

Ask another student to take notes on the chalkboard during this discussion. Invite the student who left the class back into the classroom and see how many items were correctly identified. How difficult was it to accurately remember details about the missing student? Emphasize that any errors were not intentional, simply based on a general lack of awareness. What are the consequences of mistaken identity under oath? Refer back to the case for discussion purposes.

Variation: Work in partnership with another teacher and create a classroom incident – such as interrupting your class and pretending to be angry about something such as failing to return a borrowed book. A few hours later (or days later) ask your students to recall the event. This better simulates the true role of an eyewitness, often being asked to recount details of a stressful situation days or weeks after the fact.

PHOTOGRAPHY

Photographs and videos set the scene and establish in the minds of the judge and/or jury details of the accident or crime. For example, in the case of an automobile accident, were there skid marks? How long were they? Were they straight or swerved? This is all valuable information when determining what actually happened. In certain instances, a judge must weigh if photographs contain too much detail that might sway a jury. (see case below)

THE CASE:

Telltale Pictures: Kenneth Biros was convicted and sentenced to death for the brutal murder of Tami Engstrom. Biros asked the Supreme Court of Ohio to overturn his sentence, in part, because the photographs of the victim's wounds were used at trial only "to inflame the passions of the jury." At trial, Biros claimed that he had accidently killed Engstrom. The Supreme Court ruling disagreed, stating that "the wounds depicted in the slides…confirmed the victim had been beaten." The Court held that the gruesome images "clearly outweighed the dangers of unfair prejudice"

PRE-TOUR ACTIVITY:

Discuss with your students how they or their families use photography in their everyday lives to tell stories or capture important moments. Look at the photo panel provided in this packet – these are photographs that your students will see on display in the *Identity on Trial* exhibit. Ask them to "read the pictures" and create stories about the images. Which ones are the most difficult to interpret? Is a color photo more effective in capturing a scene than a black and white photo? Why?

POST-TOUR ACTIVITY:

Use Google Images or another online source to identify some random photos. Ask students to write a short paragraph constructing the scene *five minutes prior* to what they see in the image. Also ask them what other types of evidence might be useful to establish that their version of events is in fact what happened.

FINGERPRINTING

Fingerprinting is a method of identification based on the impressions on fingers and thumbs. The prints contain designs formed by small ridges on the skin. The Year 2010 marks the 100th anniversary of the use of fingerprints as evidence in American courtrooms.

THE CASE:

Telltale Evidence: On the night of September 19, 1910 someone broke into the home of Clarence Hiller. Hiller confronted the prowler, was shot twice and died. Police later discovered the imprint of four fingers in fresh paint near the home's kitchen window. Hours later, police spotted Thomas Jennings carrying a revolver and he was arrested. At trial, officials testified his prints matched those found on the painted railing. This marks the first time fingerprint evidence was introduced during a trial. Jennings was convicted and sentenced to hang.

PRE-TOUR ACTIVITY:

Students should examine their own fingerprints. The following patterns may be observed:

The Plain Arch

The Double-Loop

The Whorl

The Tented Arch

*Variation: Making your own fingerprint card can be done using everyday supplies. You'll need index cards, a pen, a No. 2 pencil, scissors and transparent tape. Rub a sharpened No. 2 pencil on your fingertip, covering the entire area. Use a piece of transparent tape to "lift" this shaded area from your fingertip. Ask a classmate to assist in this process. Place the tape onto an index card and label it. You can repeat the process for all ten fingers and create your own "ten-print" fingerprint set.**

POST TOUR ACTIVITY:

The FBI maintains the Integrated Automated Fingerprint Identification System (AFIS) – a national database of criminal and civilian fingerprints. States voluntarily submit criminal prints as well as print taken for civilian purposes, such as a pre-employment background check or firearm purchases. These prints are then stored for comparison purposes. Discuss the implications of maintaining a system that includes non-criminal prints. Is there the possibility of mistaken identity? Research the case of Brandon Mayfield and the 2004 Madrid train bombings.

DNA

A well-known abbreviation for *deoxyribonucleic acid*, DNA is the essence of life. It is the blueprint that determines how cells – life's building blocks – live and function. No two beings have the same DNA (other than identical twins) making it a useful identifier that has been used in courts of law for over 20 years.

THE CASE:

The Hair of the Dog: A black cocker spaniel, Jazz, was lost in the wake of Hurricane Katrina. The dog's owner, Shalanda Augillard, learned that her beloved pet had been rescued and taken to Texas, where she was adopted out to another family. The Texas family refused to return Jazz to Shalanda, who then went to court to prove ownership. Through the use of DNA material gathered from an old dog brush, Shalanda's attorney was able to present evidence to the trial court showing a perfect DNA match. Unfortunately, the trial court judge ruled that the DNA evidence was not authenticated, "indicating a high potential for tampering" and ruled for the Texas family. The Texas Court of Appeals overturned this decision, citing that there was no indication that the dog DNA evidence was not authentic.

PRE-TOUR ACTIVITY:

Explain to your students what DNA is and that it is a unique identifier. If you have already completed a science unit on DNA, conduct a review of that lesson and explain to your students that we will discuss the use of DNA in a real courtroom situation.

POST-TOUR ACTIVITY:

The Supreme Court of Ohio recently heard arguments in the case *State of Ohio v. Tyrone Lee Noling*. This case involves the retesting of biological evidence when scientific advances could disclose new information. You can read about this case here:
http://www.supremecourt.ohio.gov/PIO/oralArguments/13/0108/0108.asp#OA110778

Brain Scans

Doctors have used brain scan technology for about 25 years to diagnose brain injuries and illness, but can this science be used to explain and predict behavior? Students will be introduced to this relatively new trend in scientific courtroom evidence.

Different types of brain scans:

PET Scan: Positron Emission Topography. In this type of scan, patients ingest a radioactive substance that emits biologic images that help doctors evaluate human functions. It is used to diagnose many types of cancers, heart disease and other abnormalities.

MRI: Magnetic Resonance Imaging. First used in the early 1970's, this type of imaging relies on a powerful magnetic field to create visuals of body structure and function. It is especially useful in neurological and cardiovascular imaging.

CAT Scan (or CT Scan): Computed Tomography. This is the oldest form of scanning technology. It involves creating a three-dimensional image from a series of two-dimensional X-rays.

THE CASE:

Case of the Telltale Brain: Aditi Sharma was convicted of murder based on the results of a scan that produces images of the human mind in action. It allegedly showed intense activity in the areas of the brain where memories are stored. In a courtroom in India, a judge said this was proof she had "experiential knowledge" of having committed a crime and sentenced her to life in prison.

PRE-TOUR ACTIVITY

Review the above case. Ask your students if they think that the courts in India made a good decision.

Post-tour ACTIVITY

Your students have visited the Supreme Court of Ohio and experienced the Identity on Trial exhibit. After getting a taste for the history of scientific evidence in the courtroom, lead a discussion on the future of courtroom evidence. Why do courts typically lag behind the scientific community when it comes to adopting certain science-based evidence? Should the courts look more seriously at brain scan technology? Twenty-five years ago the idea of convicting – or exonerating- a suspect using DNA evidence was unheard of. Encourage your students to do their own independent research on this topic.

Additional discussion questions:

1. Do you think that advancing technology can make things more confusing for the court system…or does it provide more clear answers when pursuing fair outcomes when a dispute arises?
2. What privacy rights should we as individuals be concerned with when it comes to literally "getting inside our heads" and retrieving information? How does this stack up against the ideals presented in the 4th amendment of the Constitution?

*****Fingerprint activity adapted from the book *Fingerprint: Crime Solving Science Experiments* by Kenneth G. Rainis. Enslow Publishing, 2006