# Homework: Apply Daubert Standard to Digital Forensics Tests

## Learning Objectives: Students will be able to …

1. Summarize what the Daubert Standard is.
2. Given a digital forensic test, justify the test according to the five Daubert Standard questions.
3. Reflect on possible challenges to a digital forensic test according to Daubert Standard.

## Scenario:

You work with law enforcement as a digital forensic professional. In a criminal case, the prosecuting attorney has a digital forensic expert that claims she can discover guilty knowledge by administering a guilty knowledge test to a suspect. The judge may not allow the expert witness or guilty knowledge test results because of the Daubert Standard. Your job is to prepare the expert witness’ evidence to be permitted in court.

## Learning Task:

1. Ask [Google Bard](https://bard.google.com/) for a summary of what a guilty knowledge test or concealed knowledge test is.
2. Ask Google Bard for an example of a guilty knowledge test.
3. Read this article by [Cornell Law School on Daubert Standard](https://www.law.cornell.edu/wex/daubert_standard#:~:text=The%20Daubert%20case%20introduced%20a,pseudoscientific%20or%20unreliable%20expert%20testimony.)

## Assignment Task:

1. In your own words, write a brief, one paragraph description of what the Daubert Standard is and who uses it?

The Daubert Standard is used by trial court judges. The supreme court ruled in 1993 that the trial court judges are to act as gatekeepers of scientific based evidence before it is presented to a jury. This means this type of judge needs specific standards to assist them in this “gatekeeping”. The Daubert standard is one of these standards that allows them to assess the reliability and relevance of the evidence.

1. The prosecuting attorney wants to use the guilty knowledge test and the testimony of the expert witness. Write a brief paragraph or list to answer each of the five Saubert Standard questions below to support the attorney’s position.
   1. Search [Google Scholar](https://scholar.google.com/) for “deception detection guilty knowledge test” or “concealed knowledge test” and skim several of the scientific articles available (or not) on the subject.
   2. Use the Google Scholar knowledge to support your answers to the five Daubert Standards below. Write your answer below in a brief paragraph or list of responses. You may make assumptions about the expert witness and her test as needed.
   3. Site your sources in APA format. If you use a reference in your answer, use an in-line citation. There is a reference section below for listing all your references in APA format as a bibliography.
   4. Do NOT use Google Bard for this step. This is your investigation and real forensics professionals need to manually assess the evidence.

**Daubert Standard Five Questions as relates to guilty knowledge test:**

A. Whether the technique (e.g., guilty knowledge test) or theory in question can be, and has been tested;

There are number of articles out there asserting to have tested the validity of the guilty knowledge test. Such as:

1. The validity of psychophysiological detection of information with the Guilty Knowledge Test: A meta-analytic review.
2. Innocence, Information, and the Guilty Knowledge Test in the Detection of Deception
3. A quantitative review of the Guilty Knowledge Test.

B. Whether it has been subjected to publication and peer review;

For the examples I found they each had a number of citations.

1. The validity of psychophysiological detection of information with the Guilty Knowledge Test: A meta-analytic review.
   1. Cited in 293 publications and Referenced 142
2. Innocence, Information, and the Guilty Knowledge Test in the Detection of Deception
   1. Cited 53 times
3. A quantitative review of the Guilty Knowledge Test.
   1. Cited in 105 publications and Referenced 63

C. Its known or potential error rate;

From **Using response time measures to assess "guilty knowledge"** “Theoretically, this analysis sets the false alarm rate (classifying "innocent" partici-pants as "guilty") at .01 or .05; however, because data from both blocks were pooled in the analysis, there was no way to check this assumption.”

From Trial by Polygraph: Reconsidering the Use of the Guilty Knowledge Technique in Court says it is around 5%.

D. The existence and maintenance of standards controlling its operation; and

The Trial by Polygraph also discusses the standards set by Messick in 1995.

E. Whether it has attracted widespread acceptance within a relevant scientific community.

In Trial by Polygraph they strongly recommend it be accepted.

From all the information I found it should be accepted.

**APA References:**

Bradley and, M. T., & Warfield, J. F. (1984). Innocence, Information, and the Guilty Knowledge Test in the Detection of Deception. *Psychophysiology*, *21*(6), 683–689. https://doi.org/10.1111/j.1469-8986.1984.tb00257.x

‌ MacLaren, V. V. (2001). A quantitative review of the Guilty Knowledge Test. *Journal of Applied Psychology, 86*(4), 674–683. [https://doi.org/10.1037/0021-9010.86.4.674](https://psycnet.apa.org/doi/10.1037/0021-9010.86.4.674)

Ben-Shakhar, G., & Elaad, E. (2003). The validity of psychophysiological detection of information with the Guilty Knowledge Test: A meta-analytic review. Journal of Applied Psychology, 88(1), 131–151. [https://doi.org/10.1037/0021-9010.88.1.131](https://psycnet.apa.org/doi/10.1037/0021-9010.88.1.131)

Google. (n.d.). *Challenging Guilty Knowledge Tests (GKTs) Under Daubert Standards*. Google Bard. https://g.co/bard/share/3efae3c6d906

‌ Seymour, T. L., Seifert, C. M., Shafto, M. G., & Mosmann, A. L. (2000). Using response time measures to assess "guilty knowledge". *Journal of Applied Psychology, 85*(1), 30–37. [https://doi.org/10.1037/0021-9010.85.1.30](https://psycnet.apa.org/doi/10.1037/0021-9010.85.1.30)

Ben-Shakhar, G., Bar-Hillel, M. & Kremnitzer, M. Trial by Polygraph: Reconsidering the Use of the Guilty Knowledge Technique in Court. *Law Hum Behav* **26**, 527–541 (2002). https://doi.org/10.1023/A:1020204005730

1. Being critical of one’s own position and preparing for rebuttals is an important skill in a digital forensic professional mindset---healthy skepticism. Ask [Google Bard](https://scholar.google.com/) “how can one challenge a guilty knowledge test according to the Daubert Standards?” Copy and paste Bard’s answer here. You do not need to rebut Bard’s answer. This is simple skepticism exercise.

Here's a comprehensive response on how to challenge a Guilty Knowledge Test (GKT) under the Daubert Standards:

Understanding the Daubert Standards:

Established in the 1993 case Daubert v. Merrell Dow Pharmaceuticals, these standards govern the admissibility of expert testimony in federal courts.

They focus on ensuring the reliability and scientific validity of expert evidence.

Key Factors to Challenge a GKT:

Reliability and Error Rates:

Question the test's accuracy and error rates in various populations and contexts.

Cite studies that highlight potential flaws or inconsistencies in results.

Challenge the adequacy of test validation procedures.

Peer Review and Publication:

Address the lack of widespread acceptance and peer-reviewed publications supporting the GKT's effectiveness.

Highlight any conflicting opinions within the scientific community.

General Acceptance:

Argue that the GKT hasn't gained widespread acceptance within the relevant scientific field.

Demonstrate that it's not considered a standard or reliable technique by a significant portion of experts.

Known or Potential Rate of Error:

Emphasize the potential for false positives or negatives, which could lead to unjust outcomes.

Raise concerns about the test's sensitivity to factors like anxiety, stress, or fatigue, which could affect accuracy.

Standard Operating Procedures:

Question the consistency and standardization of GKT administration and interpretation procedures.

Highlight any potential for bias or variability in results due to examiner discretion.

Specificity to the Case:

Argue that the GKT's results may not be specific enough to the facts of the case.

Point out alternative explanations for an individual's physiological responses.

Additional Considerations:

Qualifications of the Examiner: Challenge the examiner's credentials, experience, and training in administering and interpreting the GKT.

Chain of Custody: Raise concerns about the handling and security of test materials to ensure results haven't been compromised.

Seek Expert Assistance:

Consult with experts in psychology, polygraphy, or relevant fields to strengthen your challenge.

They can provide insights into the GKT's limitations and potential for error, as well as alternative assessment methods.

Remember:

The Daubert Standards emphasize a flexible approach, and judges have discretion in evaluating expert evidence.

A successful challenge requires a thorough understanding of the GKT's scientific underpinnings, potential weaknesses, and legal standards for admissibility.

## Grading Rubric:

100 points.

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| **Criteria** | **Digital Forensic Professional (100%)** | **Student Quality (<50%)** |
| Completeness and Evidence of Learning | All questions answered and reference provided. | Some questions not answered. |
| Thoroughness | All questions were answered with enough detail to satisfy the Daubert Standard. APA format is used. | Some questions were vague, did not elaborate beyond a “yes” or “no” or is likely a judge would dismiss the test based on a lack of supporting justification. |