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| Grade & Course: 11th/12th Forensic Science | | Topic: Forms of Communication | Duration: 2 Weeks |
| Teachers: Forensic PLC Teachers | | | |
| <p>Georgia Standards and Content: SFS2. Obtain, evaluate, and communicate information on various scientific techniques to analyze physical, trace, and digital evidence. c. Use models for the evaluation of handwriting and document evidence. d. Analyze and interpret data to evaluate digital sources of evidence.</p> | | | |
| Narrative / Background Information | | | |
| <p>Prior Student Knowledge: (REFLECTION – PRIOR TO TEACHING THE UNIT) Students have knowledge of collecting evidence at a crime scene as well as how to collect and process impression evidence and blood evidence.</p> | | | |
| <p>Year-Long Anchoring Phenomena: (LEARNING PROCESS) An unidentified body was found in an abandoned Connex container in a shipping yard.</p> | | | |
| <p>Unit Phenomena (LEARNING PROCESS) A tourist in Miami was issued a parking ticket which he overpaid. On his \$2 refund check from the city, he changed the amount and deposited \$1.45 million into his account in Argentina.</p> | | | |
| <p>Inquiry Statement: The techniques and tools used in forensic document examinations leverage well-established principles of physics and chemistry.</p> | | | |
| <p>Global Context: Scientific and Technological Innovation</p> | | | |
| <p>Science & Engineering Practices:</p> <ul style="list-style-type: none"> Analyze and Interpret Data Constructing Explanations | <p>Disciplinary Core Ideas: (KNOWLEDGE & SKILLS)</p> <ul style="list-style-type: none"> History of communication evidence Characteristics of communication evidence Collecting communication evidence Forensic analysis of communication evidence | <p>Crosscutting Concepts: (KNOWLEDGE & SKILLS)</p> <ul style="list-style-type: none"> Patterns | <p>Key and Related Concepts:</p> <ul style="list-style-type: none"> Communication Patterns |
| <p>Possible Preconceptions/Misconceptions: (REFLECTION – PRIOR TO TEACHING THE UNIT) -A common misconception is that counterfeiting only has to do with luxury items and money. -Another misconception is that cybercrime doesn't happen as frequently as physical crime. -Some students may believe that a match in handwriting would suffice as enough evidence to prove someone guilty. -In some student's eyes, cybercrime is not as serious of an offense as physical crime. -Students may have preconceptions that cybercrime is growing due to access to better technology. -Students may have experienced or know someone who has been affected by a cybercrime. (phishing, internet fraud, cyber bullying, identity theft)</p> <p>Key Vocabulary: (KNOWLEDGE & SKILLS) -counterfeiting</p> | | | |

- Daubert standard of evidence
- document analysis
- exemplar
- forgery
- fraudulence
- qualitative analysis
- quantitative analysis
- questioned document
- cybercrime
- computer crime
- computer forensics
- digital forensics
- ransomware

Inquiry Questions:

Factual

- What characteristics do handwriting experts look at when examining a piece of evidence that contains handwriting?
- What types of documents are typically forged by criminals?
- What preventative measures are being done by the government to prevent counterfeit currency?
- What are some of the features of money bills that are used to help distinguish genuine money from counterfeit money?
- What is an *exemplar*?
- What are the features of money bills that are used to help distinguish genuine money from counterfeit money?
- What are some of the technologies used by document experts to analyze handwriting?

Conceptual

- How would you describe the three basic steps in handwriting analysis?
- When is it acceptable to confiscate a personal cell phone that might have information related to a crime?
- What are some methods used by criminals to make paper and ink appear old when forging a historic document?
- What type of change occurs when a counterfeit pen’s ink comes into contact with counterfeit money, and why does this reaction not occur when the counterfeit pen is used on genuine money printed in the United States?
- What type of change occurs when a counterfeit pen’s ink comes into contact with counterfeit money, and why does this reaction not occur when the counterfeit pen is used on genuine money printed in the United States?
- We now have handwriting databases of letters and handwriting samples. How can they be analyzed using mathematical methods?

Debatable

- How reliable are handwriting experts?
- Are cyber crimes less serious than physical crimes?

Summative assessment

Unit Objectives:

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| Learning Activities and Experiences | Inquiry & Obtain: (LEARNING PROCESS) | Evaluate: (LEARNING PROCESS) | Communicate: (LEARNING PROCESS) |
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| Week 1: | <p>Phenomenon: A tourist in Miami was issued a parking ticket which he overpaid. On his \$2 refund check from the city, he changed the amount and deposited \$1.45 million into his account in Argentina.</p> <ul style="list-style-type: none"> • Written forms of Communication Notes • Handwriting analysis (Case of Lois McArthur, Ward's Science Kit:https://www.wardsci.com/store/product/8870996/crime-scene-1-the-case-of-lois-mcarthur) DAY 1 | <ul style="list-style-type: none"> • Handwriting analysis (Case of Lois McArthur) DAY 2 | <ul style="list-style-type: none"> • Handwriting analysis (Case of Lois McArthur) DAY 3- Discuss and submit lab • Forgery Notes |
| Week 2: | <ul style="list-style-type: none"> • Examination of U.S. Currency: Is It Authentic or Counterfeit? (Autograde Assessment) <ul style="list-style-type: none"> • Digital Evidence Notes | <ul style="list-style-type: none"> • Discussion Board: Case Studies Digital Evidence (Forensic Science the Basics, 4th Ed.) • Closer Quiz | |

Resources (hyperlink to model lessons and/or resources):

- Textbook Forensic Science Bertino & Bertino, 3rd Edition
- Forensic Science Schoology Course
- Additional resources can be found in the common Schoology group under the Unit 7 folder.

Reflection: Considering the planning, process and impact of the inquiry

| Prior to teaching the unit | During teaching | After teaching the unit |
|---|---------------------|-------------------------|
| <p>-Research cybercrimes more in depth (not in the textbook we adopted) and make it relevant to the students' lives.</p> <p>-Supplemental Resources should be used for this unit as the field of Cyber Crimes is evolving quickly. Use current events in the news for this.</p> | <p>(click here)</p> | <p>(click here)</p> |