Forensic Files: Evidence and Investigation
Lesson Plan 01
Introduction and Preparation

Key Question(s):
• What skills do you need to become a Detective or Forensic Investigator?

Desired Outcome:
• Students understand and demonstrate the crucial investigative skills and concepts of observation, objectivity and using inference and deduction.

Activities and Timelines (35 minutes total)

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Resources
• YLFF Resource 1-1: Selective Attention Test (Video)
• YLFF Resource 1-2: Busy Street
• YLFF Resource 1-3: The Bus
• YLFF Resource 1-4: Objectivity Power Point
• YLFF Resource 1-5: Physical Appearance Worksheets
• YLFF Resource 1-6: Exit Pass
Introduction

- **Say:** We will be taking a trip to YouthLink Calgary Police Interpretive Centre on your scheduled date. I was told that when we arrive, we will be tasked with investigating an elaborate crime and it will be up to us to show them what great detectives we have become with the forensic knowledge we will gain through our evidence and investigation unit. In the next couple of weeks, we are going to explore different skills and techniques that detectives and forensic investigators use in solving a crime to prepare for our visit.

Detective Skills: Activity and Discussion

- **Ask:** How can we use information and evidence to fight crime? (Probe for thoughtful responses)

- **Explain:** You will be using the information available to make conclusions and link suspects to the crime.

- **Say:** Some of this information appears in the form of evidence left at the scene that must be analyzed using scientific techniques to reveal connections between the suspect and the crime.
  - Evidence must be 100% linked to a suspect for it to be true. If there is any inaccuracy or potential for you to be wrong, linking a person cannot be accomplished.
  - Our justice system is based on the principle that an individual is innocent until proven guilty. Thus, investigators’ must gather enough evidence to prove without a doubt that the suspect charged with the crime is guilty in order to put them behind bars.
  - This evidence is presented to a judge during trial by a detective or forensics specialist, so they can make the most informed, just decision.

- **Ask & Brainstorm:**
  - What do you think are important skills or characteristics that a person must possess in order to be an investigator? Or a detective?
  - What are characteristics that would make you a bad forensic investigator or police detective?)

- **Say:** There are three important skills that detectives need to have.

- **Write on board:**
  - Detective Skills:
    - Being Observant
    - Remaining Objective
    - Using Inference and Deduction
**Teacher’s Note:**

- Feel free to utilize examples when explaining each Detective Skill if you believe it will aid in your students understanding of the concepts.

- **Explain:**
  - **Being Observant**
    - **Ask:** What does that mean?
    - **Explain:** Using your eyes and all other senses and recording exactly what you see. Sometimes it is difficult for us to remember every single detail about something, this is why police officers often write down notes in their notebook.
  - **Remaining Objective**
    - **Ask:** What does that mean?
    - **Explain:** Weighing the evidence and not letting pre-existing opinions cloud judgment. Not being influenced by personal feelings or opinions in considering and representing facts. Analysis is fact-based, measurable and observable. Inferences are supported by facts.
  - **Using Inference and Deduction**
    - **Ask:** What does that mean?
    - **Explain:** Determining how the evidence links to the crime. What does it suggest? A **deduction** is taking a lot of information, and distilling it down to one fact.
      - **Example:** “You said you went to medical school, work in a hospital, and you saw a person you referred to as a ‘patient’. I deduce that you are a doctor.”
    - An **inference** is different than a deduction in that someone could take one fact, and extrapolate it out into several inferences.
      - **Example:** “You said you were a doctor, from that I infer that you are intelligent, care about people, and work in a hospital.”
  - **Say:** Now we are going to spend some time practicing these skills – getting us ready to work on our crime!
Teacher’s Note:

- For each detective skill concept there are 3 options of activities for you to do with your students to cement understanding. Pick one for each (or create your own).
- If possible you can set them up in 3 stations and divide students up accordingly into 3 groups and have them rotate through each station (approximately 10 minutes for each.)

Part 1: Being OBSERVANT

- Explain: Witnesses can often provide helpful pieces of evidence. The more a witness is aware of their surroundings, the better they can assist the police.
- Ask: What does the word “witness” mean?
  - Explain: A witness is a person who has observed an event or activity take place.
- Activities to teach “Being Observant”:
  - Option 1- Activity 1-1: Selective Attention Test
  - Option 2 - Activity 1-2: Attention to Detail (in New York)
  - Option 3 - Activity 1-3: Organizing Observation (Junk Pile)

Part 2: Being OBJECTIVE

- Activities to teach “Being Objective”:
  - Option 1- Activity 2-1: The Bus
  - Option 2 - Activity 2-2: Bias Brain Teasers
  - Option 3 - Activity 2-3: Stereotypes

Part 3: Using INFERENCE and DEDUCTION

- Activities to teach “Inference and Deduction”:
  - Option 1- Activity 3-1: New Neighbours
  - Option 2 - Activity 3-2: Read Into It
  - Option 3 - Activity 3-3: Make It A Challenge
Observation Option 1 - Activity 1-1: Selective Attention Test

- **Explain:** Let’s test your skills as a witness. How observant are you?
  - Show students Resource 1-1: Selective Attention Test (Video). YouTube:
    
    [https://www.youtube.com/watch?v=vJG698U2Mvo](https://www.youtube.com/watch?v=vJG698U2Mvo)

  - OR You can watch show the following video - The Monkey Business Illusion:
    
    [https://www.youtube.com/watch?v=IGQmdoK_ZfY](https://www.youtube.com/watch?v=IGQmdoK_ZfY)

- **Instruct:**
  - **Tell** the students that they need to focus and count the number of times the players wearing white catch the ball.
  - **Remind** students that they need to be silent during this activity so that they do not distract others.
  - At the end, **ask** them to share their answers.
  - **Pause** the video when it asks the students to share the number of passes. Once you have shared some answers, continue the video.

- **Teacher's note:** If your students were paying attention, many of them will have missed the gorilla that walked through the circle dancing.

- **Ask:** How many students noticed the gorilla? Why do you think you missed him?

- **Explain:** Often when people are focused too deeply on something, they often miss important information.

- **Ask:** How does it relate to evidence collected from a witness?

- **Explain:** A witness’s observations may not always tell the whole story. When there is a big distraction (such as gun shots or someone screaming) witnesses can easily miss important details of an event. Therefore, a witness statement may not be a true or full representation of an event’s details.

**Materials:**
- Resource 1-1: Selective Attention Test (Video)

**Teacher Prep:**
- Setting up AV to play video.

**Time Required:**
- 10 minutes.

**Objective:**
- To challenge students to be more observant. To help students be aware of how witness observations may miss important details.
Observation Option 2 - Activity 1-2: Attention to Detail (in New York)

- **Show** students Resource 1-2: Busy Street
- **Ask** them to study it for 30 seconds – they should be observant.
- Then **Ask** the students to recall such information as:
  - Number of taxis? (3)
  - The colour of the Kodak sign? (yellow and red)
  - What Broadway show is being advertised? (Rent)
  - What time is it? (3:50)
  - Which taxi had its door open? (middle one)
- **Review** what students observed.

**Materials:**
- Resource 1-2: Busy Street

**Teacher Prep:**
- Printing or projecting images for students

**Time Required:**
- 10 minutes

**Objective:**
- To challenge students to watch for small details and be observant.
**Observation Option 3 - Activity 1-3: Organizing Observation (Junk Pile)**

- **Set up** your extensive junk pile at one end of the classroom and block it from view with a tri-fold or a desk on its side. **Set up** student team stations at the other end of the classroom.

- **Organize** students into teams of 3 or 4 per group and give them a desk station or “home base.” Each team is provided with a pencil and paper / note pad.

- **Tell** students that you have a large pile of junk with many different contents. This “Junk Pile” is protected from general view with a tri-fold or desk on its side.

- **Instructions:** only one student per team at a time can approach the junk pile and make observations (the “runner”). They are not allowed to carry any recording devices or writing utensils to and from the junk pile. They must make observations about what items and how many of each they see, then return to their group and record what they saw (provide each group with a piece of paper and pen). Students take turns going to junk pile and acting as a scribe.

  - **Teacher’s notes:** Students may organically begin developing strategies to make their observations. Some may require subtle direction with organizing their approach and working as a team.

  - **Teacher’s notes:** You can also give student objectives (for bonus points): counting thumbtacks, pennies or items of a particular colour.

- **Give 5 minutes** to compile a list.

- **Ask** students about some specifics:
  - How many yellow thumb tacks were there?
  - How many pennies were there?
  - How many plastic dinosaurs were there?

- **Debrief** the challenge and discuss strategies that could be taken to make more detailed observations.

- **Run** the exercise again (perhaps for a shorter time frame). Ask for some more specifics. See if there was an improvement in the number or detail of the observations.

- **Review** list and assess quality and accuracy of list made by students to the master list.

**Materials:**
- “Junk Pile” with a large variety and number of items.
- Tri-fold display or item to block view of junk pile.
- Pen/pencil.
- Writing pad.

**Teacher Prep:**
- Collecting Junk Pile materials (check your junk drawer in the classroom, at home, or in a colleague’s classroom).
- Create a master list of observations.

**Time Required:**
- 5 minutes to set up junk pile and tri-fold.
- 10 minutes for activity.

**Objective:**
- Students will have an opportunity to practice strategic observations and recording while working in a team.
Objectivity Option 1 - Activity 2-1: The Bus

- **Show** students Resource 1-3: The Bus.

- **Ask** them to study it for 10 seconds – saying nothing to anyone.

- **Ask** the students: *In which direction is the bus pictured traveling?*

- Let students discuss and debate *(in small groups)*.

- **Ask**: Do you know the answer? The only possible answers are “left” or “right.” Still don’t know?

- **Discuss and explain**:
  - When school children are shown this brain teaser, they often answer “left.” Why? “Because you can’t see the door.”
  - This works in countries where you drive on the right side of the road, like the US and continental Europe; it would be the reverse in countries where you drive on the left side, such as the UK or Asia.
  - This teaser illustrates a good concept about how our memory works. Imagine if our memories were absolutely perfect. On the one hand, you might have been able to answer this puzzle correctly, since you could compare this image to all the school bus images you have in your mind, and only the ones going left would match.
  - On the other hand, imagine truly remembering every single detail of every single day of your life. It would be insurmountable to filter through all that data to retrieve useful information…you probably wouldn’t have been able to answer the question in hours or even days, trying to retrieve and process every single bus-related memory.

**Materials:**
- Resource 1-3: The Bus

**Teacher Prep:**
- Printing or projecting images for students

**Time Required:**
- 10 minutes

**Objective:**
- To challenge students to watch for small details and be observant.
Objectivity Option 2 - Activity 2-2: Bias Brain Teasers

- **Read** students one brain-teaser aloud. You could also print or project each respective brain-teaser successively.

- Let students discuss and debate *(in small groups).*

- **Brain Teaser #1:** A boy and a doctor were fishing. The boy is the doctor’s son but the doctor is not the boy’s father. Who is the doctor?
  - **Answer:** His mother

- **Brain Teaser #2:** Mr. Smith and his son, Arthur, were driving in a car. The car crashes. Mr. Smith is killed instantly, and his son Arthur is rushed to a local hospital. The old surgeon says, “I can't operate on him. He’s my son, Arthur.”
  - **Answer:** Mrs. Smith is the surgeon; many people assume based on bias that the surgeon is male and fail to see that the surgeon could indeed be Arthur’s mother!

- **Ask** them to share their thoughts and discussions with the class.

- **Ask** the students to reflect on and discuss how our own biases influence how we look at information or problems before us.
  - **Discuss** themes like sexism, racism, stereotypes, and discrimination and how socially we have lots of work to do to change these biases both personally and in schools and workplaces.

- **Ask** how we might control for bias or change our approach so that our biases don’t interfere with how we make conclusions?

**Materials:**
- N/A

**Teacher Prep:**
- Printing or projecting images for students

**Time Required:**
- 10 minutes

**Objective:**
- To challenge students to be aware of biases and how these biases can interfere with how we look at information, problems and how we might make conclusions.
Objectivity Option 3 - Activity 2-3: Stereotypes

- **Show** students Resource 1-4: Objectivity PowerPoint as a class. Ensure students fully understand the meaning of the term ‘objectivity’.

- **Facilitate** the PowerPoint examples as a class (slides 1-13). These examples will test the student's biases/stereotypes and prepare them for the following activity.

- **Divide** students into small groups.

- **Hand out**: Resource 1-5: Physical Appearance Worksheets. Give each group a different worksheet package (labelled by group numbers).

- Once the students have completed the worksheets, **ask** students to share their scenarios and answers with the class. Once every group has shared their answers, direct them back to the PowerPoint.

- The surprising results of the police comparison worksheet can now be **revealed** to the students (slide 15). They will then begin answering the remaining questions as a class, discussing police biases and objectivity.

**Materials:**
- Resource 1-4: Objectivity PowerPoint
- Print Resource 1-5: Physical Appearance Worksheets

**Teacher Prep:**
- Printing and projecting images for students

**Time Required:**
- 10 minutes

**Objective:**
- To challenge students to be aware of biases and how these biases can interfere with how we look at information, problems and how we make conclusions.
Inference and Deduction Option 1 - Activity 3-1: New Neighbours

- **Present** to the students a bag of "trash" and tell the kids that you need their help.

- **Explain** to them that you have these new neighbours that just moved in next door and that you really want to be a good neighbour and go meet them and get to know them, but that every time you go over there, they are never home.

- **Explain** to the kids that, earlier that morning, you saw that the neighbours’ trash was sitting out beside their driveway. You took a bag of their trash to see if you could find some clues about them, so you can get to know them better...and you need their help!

- **In advance**, decide what kind of family you want the next door neighbours to be. Collect clean "trash" items that would give clues about each member of the family.
  - Example: You could have the family be a mom, dad, older child (6-8 years old), and a baby.
  - Collect empty makeup bottles, hairspray can, women's magazines, etc. for the mom, a shaving cream can, home improvement ads, receipt from a men's store, etc. for the dad, an empty formula container, empty diaper wipe container, etc. for the baby, and a crumpled up piece of homework, a receipt from a toy store, and some other kid type stuff for the older child. You can decide what you want the family's hobbies/interests to be. If you want a family that eats out a lot, save your restaurant receipts or to-go boxes and put those in the trash bag. If you want the family to like shopping, save your store receipts. Save food items containers. You get the idea... you could even put a made-up shopping list in the trash bag so they know what the family eats or buys.

- Then, when you are ready to do the lesson:
  - **Make** an Inference/Evidence chart like the picture shown. Take out each item one at a time from the bag and have students guess what that item says about the family. The "evidence" is what item is in the trash. The "inference" is what the students think that item tells them about the family. It can be fun to see what they come up with!

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**Materials:**
- Garbage Bag
- Garbage contents:
  - Mother’s garbage
  - Father’s garbage
  - Child/adolescent garbage
  - Baby garbage
- Flip-chart Paper or Marker Board

**Teacher Prep:**
- Collecting Trash Contents

**Time Required:**
- 10 minutes

**Objective:**
- Engaging students in looking at evidence and making inferences and deductions
• You could even ask what ethnicity the family is and ask "How do you know that?" This could lead into good discussions about observations, remaining objective and using inference and deduction. This would be a good summative exercise. It may also leave your students wondering about your rummaging through your neighbours trash.

• After we have inferred about all the items in the trash bag, have the kids go back to their seats and write 3 inferences they made and draw a picture of the family based on the evidence and inferences.

![Image of a poster with evidence and inferences]
Inference and Deduction Option 2 - Activity 3-2: Read Into It

- Come to school in a t-shirt from an event, such as a charity run, concert, comic convention etc.

- Ask the students what they can infer from your clothing choice?

- Ask the principal or another administrator to come into your classroom at a time that looks unexpected to your students. Have a short, whispered conversation off to the side, during which you point at the fire alarm in your room and then look at your watch (or any other scenario that makes sense).

- After the administrator leaves, ask the students what they think the two of you discussed?

- Have a student stand in front of the class and ask what the rest of the students could tell about him if they did not already know him, just by looking?
  - For example, his eyesight is not good (he is wearing glasses). He likes the Seahawks (he is wearing a Seahawks t-shirt). He walked in mud on his way to school (there is mud caked on his shoes).

Materials:
- Branded/printed T-shirt from an event
- A colleague to help stage a story/scenario

Teacher Prep:
- Coordinating with a colleague

Time Required:
- 10 minutes

Objective:
- To challenge students to practice using inferences and deductions with immediate examples.
Inference and Deduction Option 3 - Activity 3-3: Make it a Challenge

- **Have** students practice creating inferences as well as identifying them by issuing an Inference Challenge. You could do this orally, but it would make a terrific writing assignment. Basically, an Inference Challenge is another way to teach, “Show, don’t tell.”

- Some examples of Inference Challenges:
  - Create a character that is very smart without actually saying they are smart.
    - To increase the difficulty, you can include a list of taboo words in addition to smart. (ex. clever, intelligent, genius)
  - Write about a very cold afternoon without saying that it is cold.
  - Write about an old car without saying that it is old.
  - Write about somewhere that is scary without saying that it is a scary place.

- **Demonstrate** one example as a class so they understand the exercise.

- **Have** students pick their own inference challenge, selecting something unique or different that they would infer for this exercise. Once they’ve completed their writing piece, have them exchange it with a partner elsewhere in the room and see if they can make the inference provided by the partner.

**Materials:**
- Paper and writing tools OR
- Computer & Word processing program

**Teacher Prep:**
- Printing or projecting images for students

**Time Required:**
- 10 minutes

**Objective:**
- To challenge students understand inferences by creating them
Conclusion

- **Review** the understanding of Observant, Objective and Inference & Deduction.
- **Optional** Resource 1-6: Exit Pass (formative assessment)

*Teacher’s note:* In the forthcoming lessons, students will learn about the steps, process and skills involved in solving a crime.
Curriculum Links

Science: Evidence and Investigation

*General Learner Expectations:*

- 6–8 Apply observation and inference skills to recognize and interpret patterns and to distinguish a specific pattern from a group of similar patterns.

*Specific Learner Expectations:*

- SLE 3: Recognize that evidence found at the scene of an activity may have unique characteristics that allow an investigator to make inferences about the participants and the nature of the activity, and give examples of how specific evidence may be used.

English Language Arts

- General Outcome 1: Explore thoughts, ideas, feelings and experiences
  - 1.1, 1.2
- General Outcome 2: Comprehend and respond personally and critically to oral, print and other media texts
  - 2.1, 2.2, 2.3, 2.4
- General Outcome 3: Manage ideas and information
  - 3.1, 3.2, 3.3, 3.4
- General Outcome 4: Enhance the clarity and artistry of communication
  - 4.1, 4.3
- General Outcome 5: Respect, support and collaborate with others
  - 5.2