CSI Wildlife Investigation: Teaching Claim, Evidence & Reasoning
CLAIM - EVIDENCE - REASONING

SCIENTIFIC EXPLANATIONS

CLAIM
Statement about the results of an investigation
• A one-sentence answer to the question you investigated.
• It answers, what can you conclude?
• It should not start with yes or no.
• It should describe the relationship between dependent and independent variables.

EVIDENCE
Scientific data used to support the claim
Evidence must be:
• Sufficient — Use enough evidence to support the claim.
• Appropriate — Use data that support your claim. Leave out information that doesn’t support the claim.
• Qualitative — (Using the senses), or Quantitative (numerical), or a combination of both.

REASONING
Ties together the claim and the evidence
• Shows how or why the data count as evidence to support the claim.
• Provides the justification for why this evidence is important to this claim.
• Includes one or more scientific principles that are important to the claim and evidence.

* Remember: Read what you’ve written to be sure it makes sense as a whole explanation.

www.activatelearning.com
CLAIM - EVIDENCE - REASONING (WARRANT)

Common Core State Standards for Literacy in History/Social Studies, Science, & Technical Subjects

Writing - Grades 6-8

CCSS.ELA.Literacy.WHST.6-8.1 - Engage in argument from evidence

CCSS.ELA.Literacy.WHST.6-8.2 - Construct an explanation based on evidence

English Language Arts Common Core Standard

Argument Writing (W.8.1): Write arguments to support claims, organized with clear reasons and relevant evidence, while maintaining a formal style.
CLAIM

Statement about the results of an investigation
● a one-sentence answer to the question you investigated
● it answers, what can you conclude?
● it should not start with yes or no
● it should describe the relationship between the dependent and independent variables

A claim states your position on the issue you have chosen to write about.
● a good claim is engaging. Consider your audience’s attention span and make interesting claims which point out new ideas: teach the reader something new.
● a good claim is logical; it emerges from a reasonable consideration of evidence.
● a good claim is debatable. Claims that are purely factual and claims that are only opinion fail this requirement.
EVIDENCE

Scientific data used to support the claim

Evidence must be:

Sufficient - use enough evidence to support the claim

Appropriate - use data that support your claim. Leave out information that doesn’t support the claim.

Qualitative - (using the senses), or Quantitative (numerical), or a combination of both

Evidence

Definition: the evidence/data which you cite to support your claim. Like a lawyer presenting evidence to a jury, you must support your claim with facts; an unsupported claim is merely an assertion.
REASONING / WARRANT

Ties together the claim and the evidence
- shows how or why the data count as evidence to support the claim
- proves the justification for why this evidence is important to this claim
- includes one or more scientific principles that are important to the claim and evidence.

Warrant

Definition: the warrant interprets the evidence and shows how it supports your claim. The warrant, in other words, explains why the evidence proves the claim. In trials, lawyers for opposing sides often agree on the data but hotly dispute the warrants. A warrant connects your evidence back to the claim. It shows how the evidence fits with your argument. Sometimes we start warrants with “Generally…”

- A good warrant will be a reasonable interpretation of facts.
- A good warrant will not make illogical interpretive leaps.
- A good warrant will not assume more than the evidence supports.
WHAT IS THE CLAIM/EVIDENCE/REASONING (WARRANT)?

[Image: Audi Commercial]
Amy LaTour’s body was found in her bedroom last night, as shown, with her pet canary strangled in its cage. Henry Willy and Joe Wonty, her boyfriends; Louis Spanker, a burglar known to have been in the vicinity; and Celeste, her maid, were questioned by the police.

Wilbur Unisex, who happened to be in the area pursuing the Heliconius charitonius, put down his butterfly net and solved the case. Can you?

Questions to consider in helping you analyze the evidence and find the killer:

- How was Amy apparently killed?
- Is there evidence of a violent struggle?
- Was her murderer strong?
- Was Amy fond of jewelry?
- Was she robbed?
- Do you think she had been on friendly terms with her killer?
- Was the canary strangled before Amy’s death?
- Was this a crime of passion?
- Did Willy have a motive?
- Who killed Amy?
Questions to consider in helping you analyze the evidence and find the killer:

- How was Amy apparently killed? Strangled, with the kerchief still around her neck
- Is there evidence of a violent struggle? no, things in place
- Was her murderer strong? yes, strangled her and bent bird cage
- Was Amy fond of jewelry? yes, wearing it and in case
- Was she robbed? no, jewelry still on her and in box
- Do you think she had been on friendly terms with her killer? yes, no signs of struggle
- Was the canary strangled before Amy’s death? no, she would have objected
- Was this a crime of passion? yes, killer angered enough to kill her and bird
- Did Willy have a motive? yes, jealousy aroused by Joe’s picture and gifts
- Who killed Amy? Henry Willy. Spanker would have stolen, Wonty in good favor, maid no motive
GANG OF FOUR

Burglars broke a window and entered the home of Samuel F. Whippersnapper, a coin collector, and rifled his collection. He grappled with them and was shot and fatally wounded in the course of the struggle. He had time, however, to call the police, who stopped a car with these four suspects in it at 21:15 and brought them to the station house, together with the coat, which had some of the stolen coins in a pocket.

Whippersnapper died clutching the button which is shown. The police were satisfied that the other objects sketched, which were found at Whippersnapper’s, belonged to the burglars. From the above facts and an examination of the evidence and the four suspects, what role did each of the gang members have in this crime? For your conclusion, write who killed Whippersnapper with your evidence and rules or warrants.
GANG OF FOUR
**Gang of Four - Solution**

<table>
<thead>
<tr>
<th>Claim</th>
<th>Evidence</th>
<th>Reasoning or Warrant</th>
</tr>
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</table>
| **Dan Jurous**  
Broke window. | Bandaged hand. | He cut his hand breaking the window so it had to be bandaged. |
| **“Bull” Dozer**  
Struggled with victim. | Lost his broken watch. | The watch found at the scene is his because of the tan line on his wrist. |
| **Helen Wheels**  
Shot the victim. | Missing button comes from her coat.  
Bullet hole in coat pocket. | The coat has to be hers since it buttons on the left and she is the only female. Bullet hole shows gun fired from inside the pocket. |
| **“Brains” B. Heind**  
? | Cigar? | ? |

**Conclusion:** Dan Jurous broke the window, “Bull” Dozer struggled with the victim, Helen Wheels shot him, “Brains” B. Heind stole the coins?
WHY WILDLIFE CRIME SCENES?

- GOOD WAY TO INTRODUCE CLAIM-EVIDENCE-REASONING
- OPPORTUNITY TO INTEGRATE INSTRUCTION WITH ELA
- BUILDS ON THE POPULARITY OF CSI TELEVISION AND THE POPULARITY OF FORENSIC SCIENCE
- MORE SENSITIVE IN THE WAKE OF OUR CURRENT CLIMATE OF VIOLENCE IN SCHOOLS
- ABILITY TO SOLICIT YOUR LOCAL CONSERVATION OFFICER FOR SUPPORT
- PROPS ARE EASY TO LOCATE OR MAKE
- IT’S FUN!!
NOW IT’S YOUR TURN!
Academy of Natural Resources: Classic and North Summer 2018
Academy of Natural Resources (ANR) is.....
A week long camp that brings together educators from Michigan to learn about natural resources and management, and to experience activities that bring that knowledge into the classroom!
ANR History

• DNR began teacher training in 1936
• WPA and CCC constructed the Ralph A. MacMullan Center (named in 1972) as a permanent site for training.
• 1941-1988 DNR’s Information and Outreach Division conducted training (TES)
• 1988-1996 TES was mainly conducted by 6 coordinating universities’ faculty
• 1996-2006 TES was conducted by the DEQ and universities
• 2008 DNR established ANR
• It’s the best kept secret in science PD in the state!
ANR Classic takes place in beautiful Northern Michigan!

Ralph A. MacMullan Conference Center
North Shore of Higgins Lake

July 8-13, 2018
ANR Classic Details:

- **Cost:** $395.00
- Includes 5 nights lodging and 15 meals (so good)!
- $100 scholarships are available
- **3 Program Options**
- Graduate Credit and SCECHS available
- Questions can be directed to Kevin Frailey:
  
  (517) 284-6043
  
  FRAILEYK@MICHIGAN.GOV.
ANR $100 Scholarships
Sponsored by Safari Club International Novi Chapter
To apply visit: www.mi.gov/anr

SCI offers education programs as well!
www.scinovi.com
Graduate Credit and SCECH Hours

**Graduate Credits**
3 University Graduate Credits
Cindy Fitzwilliams-Heck, instructor

**SCECHS**
30+ SCECHs from DNR
Natalie Elkins, DNR Education Specialist
Forests, Fields and Fins

Teachers in the Wild

WEE Ones
Evening Activities: Networking!
EEC-Strand 1 Workshop

Sunday, July 8, 2018
9:00 - 3:30 p.m.
$50

Ralph A. MacMullan Conference Center
("the RAM")
Roscommon, MI

For more information: www.maeoe.com
Academy of Natural Resources - North!
ANR North Details

Dates: August 5-10, 2018

Cost: $450 includes: 5 nights single room lodging, 13 meals, and all materials!

$100 Scholarships Available

To register: Contact Kevin Frailey at (517) 284-6043 or FraileyK@michigan.gov
ANR North Experience...at the Ford Center, Alberta, Michigan
(Michigan Tech University)
Keewenaw Bay Indian Community

Michigan Predator Prey Project

Fisheries Research

Fish and Wildlife Management Week
ANR Themes...

➢ Knowledge of Michigan’s natural resources
➢ Understanding natural resource management
➢ Historical and cultural impacts on natural resources
➢ Understanding current resource issues
➢ Making classroom connections with education trends (NGSS, STEM, etc)
Why You Need to Go to ANR!

• Instructors
• Classroom curriculum and activities you will use!
• Networking
• Northern Michigan and the Upper Peninsula!
• Taking learning outdoors!
Forests, Fields and Fins
Promotional Video: ANR

https://www.youtube.com/watch?v=z5uWEAKI7Kw