

Lesson Objective:

- 1) To help students distinguish between Reasoning and Evidence in Argumentation when making a claim.
- 2) To equip students with tools to help them understand the role of Reasoning in Argumentation and how it connects evidence with the claim
- 3) To enable students to perform written or oral argumentation with the help of the reasoning tool.

Lesson Plan:

1) Students are introduced to the concept of Claim, evidence and reasoning. Definitions from the Argumentation toolkit can be used to help distinguish between evidence and reasoning

“Evidence is information about the natural world that is used to support a claim. In scientific argumentation, evidence includes data, such as observations and measurements about the natural world.”

“Reasoning is the process for making clear how your evidence supports your claim. In scientific argumentation, clear reasoning includes using scientific ideas or principles to make logical connections to show how the evidence supports the claim. Students often have difficulty making their reasoning clear in an argument. For example, they will frequently state a science concept without explaining how it helps explain the link between the claim and evidence. “

2) Students are given an example of a claim, evidence and reasoning:

Fruits are good for you, because they have a high content of vitamins, vitamins are required for reactions in our body and we can not make them hence we need to get them from food. The vitamin content of various fruits can be obtained from published studies... For example <https://www.lennotech.com/fruit-vegetable-vitamin-content.htm>

The CER are highlighted on the board.

3) Students are asked to sit in groups and come up with their own simple example of a claim, evidence and reasoning. Then each group shares with the class.

4) Students are introduced to the reasoning toolkit graphic shown below (taken from the argumentation toolkit)

Evidence	Matters Because....	Therefore

They must be guided to understand that the evidence by itself is not going to support the claim without the scientific reasoning.

5) They must then use the toolkit and write down their CER that they came up with in the group onto their graphic organiser. They can then share this with the class (possibly by pasting on the wall) and the teacher and the rest of the class will critique it.

6) Students can conduct a card sort activity where they are given cards with evidence and reasoning to back up a claim. They must sort the cards into either evidence or reasoning. They can do this with a partner. Then discuss with the teacher. Card sort activity can be taken from the argumentation toolkit resources. Fossil card sort.

6) Now that students understand how reasoning is required they will move on to the assignment below that will help them round out their understanding of reasoning in argumentation.

Assignment

Students are presented with the following article:

<https://www.sciencenewsforstudents.org/article/climate-change-global-warming-food-eating>

Task:

- 1) Students must read through the article
- 2) They must then complete the reasoning toolkit graphic to use as a guide to their eventual written argumentation
- 3) Students must use their graphic organizer to write out an argument supporting or denying the claim using the basics of CER that have been taught to them

Claim: Rising temperatures across the planet are causing a decrease in crop yield which will ultimately affect the food we eat on a daily basis.