Lesson Plan: Dissecting Diets

**General Description**
In this activity, students practice making comparisons and evaluating claims regarding different suggested dietary plans. This activity could be done in any of three ways: (1) students do the activity independently, (2) students do the activity independently then create "best responses" with team members that are then reported to the class, or (3) students do the activity in teams. Some or all of the activity could be done outside of class time. Because of the variation in possible administration strategies, no UTI guidelines accompany this activity. General principles for use in a classroom include: students generating answers to peers’ questions, discussion leaders answering a question with a question, student-student and small group interactions, and discussion leaders focusing student attention on evidence.

**Objectives**
1. Students should gain familiarity with three recommended diets and recognize patterns in both similarity and difference.
2. Students will practice identifying claims about scientific principles (in this case, the dietary recommendations).
3. Students will generate multiple reasonable explanations for the same observation.
4. Students will practice evaluation of evidence.

**Concepts**
1. In science, claims should be supported by valid, reliable evidence.
2. Often multiple explanations exist for a single observation. The most acceptable explanation is founded on better evidence.
3. There are general principles of an appropriate diet; the specifics differentiate the recommended plans.

**Time**
50 minutes

**Prerequisite Skills**
None

**Materials**
Students handouts
UTI Instructions: Dissecting Diets

Warm-Up:
Get students into the appropriate frame of mind by having them read and complete question 1. Allow students about three minutes. It is not important for students to fully complete the question, just that they begin to think about diet.

Have students pair up and compare answers. Students should create a “super” answer that they will share with the class. Allow two or three minutes for this interaction, then collect student attention.

Choose a student to share their response to 1b. Accept the student’s answer. Solicit another different response, making note of the evidence that the students choose to use.

Main Event:
Divide students into six groups. Assign the groups one of question 2, 3, or 4 (two groups per question). Have students work their question for eight to ten minutes. While students are working their question, circulate among groups and encourage additional critical thinking by asking questions that lead to further analysis. Near the end of the time period, teams should elect a spokesperson to represent their teams.

For question 2, have the spokesperson read the critique and the team’s analysis. Other students should pay close attention but not record any response. Have the other team’s spokesperson report their answer. Choose a student from a different team to give a synthesis or comparison of the two responses. Have another student give a final response. Allow students one or two minutes to record the final or best answer.

Repeat this process for the other two questions. In each case, make a point to focus on the evidence and assumptions in the critiques.

Cool-Down:
Have students now answer question 5 individually. This question is an opportunity for the students to demonstrate that they can apply their recent learning to a new problem. Collect student responses.
Pre-Activity Worksheet: Dissecting Diets

General Description
In the activity you will do this week during your learning/discussion group, you will be comparing different dietary recommendations and the evidence used to support these recommendations. In order to be prepared for this activity, complete this worksheet.

Reading
Browse the “Animal Nutrition” chapter in your text. Pay particular attention to figures 41.1 and 41.4, and tables 41.1 and 41.2. Carefully read the section on Nutritional Requirements beginning on pg. 850.

Definitions
Write a definition of the following words. Use your text, textbook glossary, and your previous knowledge to create the best definition possible. Remember to connect your definitions to human nutrition.

1) essential nutrient

2) obesity

3) undernourishment v. malnourishment

4) US RDA

Questions
Answer the following questions. You will explore your answers to these questions in-depth during learning/discussion group.

1) Describe a situation in which a person is malnourished but not undernourished.

2) What is a calorie? Describe in both specific terms (mathematically or chemically) and in common usage of the word.

3) Examine the nutritional label for your favorite food/drink item. What is the most important piece of information contained on this label? Defend your answer.

4) One of the primary functions of vitamins are as coenzymes. What would be the consequences to a person malnourished for niacin? Describe in cellular terms and in overall health terms.
Dissecting Diets

In 2001, a research team from the Harvard School of Public Health released new dietary recommendations based on several comprehensive studies of diet and health\(^1\). Their recommendations, called the Healthy Eating Pyramid, have received both praise and criticism. In this activity, you’ll examine a number of different sets of dietary recommendations as well as some critiques of these recommendations. Your job is to identify the assumptions, arguments, and evidence in these critiques.

Below are figures that represent three different dietary recommendations: the USDA Pyramid (1992), the Healthy Eating Pyramid (2001), and the Mediterranean Diet Pyramid (1994). Also included is a pyramid representing the typical American diet. Examine these figures and then answer the questions below.

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Choose two characteristics and compare the three recommendations using those characteristics.

Comparison 1:

Comparison 2:

Which set of recommendations does the typical American diet most resemble? What evidence supports your determination?


Gifford critiques the USDA Pyramid. Does he make a claim about the pyramid or support his claim with evidence? If so, identify both the claim and the evidence in his statement.

Claim:

Evidence:

Do you think his claim is sufficiently supported? Why or why not?

What assumptions does Gifford make in his critique of the USDA Pyramid?

Provide three alternative explanations for the “American epidemic of obesity” and describe how your alternatives could result in an obesity epidemic.

Professor Nathan Shier of Indiana University says “USDA is simple. The one problem with dietary guidelines is that it gets too complicated for the public, so people say, ‘Oh forget it.’ It’s written for the masses, for all education levels. It’s made for people who need something simple. Therefore, it isn’t as in-depth as it should be.” (IDS February 12, 2003).

Shier critiques the USDA pyramid. Does he make a claim about the pyramid or support his claim with evidence? If so, identify both the claim and the evidence in his statement.

Claim:

Evidence:

Do you think his claim is sufficiently supported? Why or why not?

What assumptions does Shier make in his critique of the USDA Pyramid?

Provide two alternative methods of describing dietary guidelines that would convey MORE information than the USDA Pyramid and so satisfy one of Shier’s criticisms.

In his critique of the Healthy Eating Pyramid, Dr. John McDougall says “You can’t condemn white rice when more than a billion people live on it and maintain superior health.” (Newsweek January 20, 2003).

McDougall critiques the Healthy Eating Pyramid. Does he make a claim about the pyramid or support his claim with evidence? If so, identify both the claim and the evidence in his statement.

Claim:

Evidence:

Do you think his claim is sufficiently supported? Why or why not?

What assumptions does McDougall make in his critique of the Healthy Eating Pyramid?
Provide three alternative reasons why people with high intake of white rice may have “superior health”.

Newsweek reports: “The Healthy Eating Pyramid may still need refinement, but as a guide to good health it clearly trumps the USDA pyramid. [In Willett’s professional studies] women adhering most closely to the USDA guidelines suffer just 14% less heart disease than those who flout them. But those scoring highest on Willett’s scale suffer 28% less than those scoring the lowest. In every sample analyzed, the same pattern has held.” (Newsweek January 20, 2003)

What claim does Newsweek make?

What evidence does the author use to support this claim?

What assumptions does the author make?

What further comparisons would strengthen Newsweek’s claim?

Does the writing lead you to accept or reject the claim?
Individual Accountability: Dissecting Diets

Demonstrate your new understanding of dietary recommendations by answering the following question:

The dietary recommendations you examined today are constrained by influences other than nutritional. For example, dietary recommendations have to be understandable to the general public. In your opinion, what are the most important criteria to use when creating dietary recommendations? Defend your answer in four or five sentences.