



Connections to Curriculum

- ✓ Information Management
- ✓ Decision Making
- ✓ Group Work
- ✓ Personal Perspectives/Reflection
- ✓ B11-4-08 Investigate and describe issues related to kidney failure and treatment options available.

Senior Years Science Teachers' Handbook

Chapter 4: Science-Technology-Society-Environment Connections

- ✓ 4.14 Case Studies of STSE Issues
- ✓ 4.18 Role-Playing Scenarios
- ✓ 4.19 Debates

Chapter 11: Developing Scientific Concepts Using Graphic Displays

- ✓ 11.30 Article Analysis Frames

Unit 4

Excretion and Waste Management

The Kidney Dilemma Lesson Plan

Objectives

Students will

- recognize the kidney's importance in the body
- recognize and critically assess controversial issues that may surround kidney transplantation
- show responsibility while working in a group and reporting findings

Materials

- The Kidney Dilemma: Think-Pair-Share (BLM 4.1) (one per student)
- Access to the following articles:
 - Kingsbury, Kathleen. "A Gated Community for Organ Donors." *Time*. 4 June 2007: n.p. Available online at www.time.com/time/magazine/article/0,9171,1633084,00.html
 - Ritter, Peter. "Legalizing the Organ Trade?" *Time*. 19 Aug. 2008: n.p. Available online at www.time.com/time/world/article/0,8599,1833858,00.html
 - Robinson, Simon. "India's Black Market Organ Scandal." *Time*. 1 Feb. 2008: n.p. Available online at www.time.com/time/world/article/0,8599,1709006,00.html.
- The Kidney Dilemma: Donation Debate Organizer (BLM 4.2)
- large sheets of chart paper
- markers
- Optional: copies of Name Tags and Group Roles (BLM 4.3) (one per student)

Anticipatory Set

What do you already know about the kidney?

Hand out The Kidney Dilemma: Think-Pair-Share and ask students to complete their answers individually (about 3 to 5 minutes), and then share their answers with a partner (5 minutes). Upon completion, students should record any new information learned from their partner in the column provided. Brief discussion could follow this warm-up activity.

(continued)

Article Analysis

There are three articles cited at the outset of this section of the resource. One (“India’s Black Market Organ Scandal”) is intended to be an icebreaker to the topic that the teacher should read aloud together with contributions from students as readers. The other two are to be accessed (online or in print) by the class (after students have been assigned to opposing groups).

Divide the class into two groups (e.g., left side of class—right side of class) and assign “A Gated Community for Organ Donors” to in one group and “Legalizing the Organ Trade?” to the other group. The group assigned to “A Gated Community...” will be labelled as **against** organ trade whereas the group assigned to “Legalizing the Organ Trade?” will be labelled as **for** organ trade. It may be useful to write these labels on the front board.

Allow approximately 10 to 15 minutes for reading the article.

Hand out the Donation Debate Organizer (BLM 4.2) and allow students time to fill in their arguments based on the readings and their own opinion.

When most students have completed their organizers, arrange students in large groups based on their articles.

Groups will need to delegate (or have the teacher delegate) the following roles:

- Team Leader: will lead the discussion and ask for input from each member
- Recorder: will record the group’s topic, position, and arguments on chart paper
- Reporter: will present the arguments to the class
- Member at Large: will contribute ideas

Name tags with responsibilities are provided (BLM 4.3) and can be passed out to students for management purposes (may require teacher to photocopy more Member at Large name tags).

Instruct students to discuss their ideas with their group and choose the three best arguments from the entire group. Record these arguments on large chart paper.

Assessment/Closure

The reporters from each group report findings to the class.

If there is time, allow groups to respond to each others’ arguments.

The Kidney Dilemma: Think-Pair-Share

	My Answer	What I Learned From my Partner
Approximately how large is the human kidney?		
Where in the body are the kidneys located?		
Briefly list the tasks the kidney is responsible for.		
What options are available to a person if their kidneys malfunction or stop working altogether?		
When a kidney transplant is performed, where is the new kidney placed?		
Approximately how long is the wait for a kidney transplant in Manitoba?		

The Kidney Dilemma: Think-Pair-Share

	My Answer	What I Learned From my Partner
Approximately how large is the human kidney?	In an average adult human, the kidney is approximately 10 to 15 centimetres long, about the size of a computer mouse. It weighs approximately 150 grams and makes up about 0.5 percent of a person's body weight.	
Where in the body are the kidneys located?	In most people, the kidney is located towards the back of the abdominal cavity, just above the waist. One kidney is normally positioned directly below the liver, making it slightly lower in the body. The other is just below the spleen on the left side and is positioned slightly higher.	
Briefly list the tasks the kidney is responsible for.	The kidney is responsible for the separation of wastes from body fluid (blood) as part of the urinary system. The wastes are then excreted from the body as urine. Approximately 180 litres of blood pass through the kidneys each day to get filtered.	
What options are available to a person if their kidneys malfunction or stop working altogether?	Dialysis, transplant. All kidney transplants in Manitoba are performed at the Health Sciences Centre in Winnipeg. In 2009, Manitoba performed 46 kidney transplants (20 came from living donors).	
When a kidney transplant is performed, where is the new kidney placed?	The new kidney is usually placed by the groin; this is the only transplant where the organ is placed in a different spot from the original one. Old kidneys are rarely removed; they shrivel up to the size of a walnut over time.	
Approximately how long is the wait for a kidney transplant in Manitoba?	In Canada, there are over 4000 people waiting for a life-saving or life-enhancing transplant. In Manitoba, there are approximately 170 people ready and waiting for a kidney transplant at any one time and approximately another 300 people in the process of being evaluated for transplant. On average, Manitobans are waiting four to six years for a kidney transplant if they do not have a living donor.	

The Kidney Dilemma: Donation Debate Organizer

Title of Article:

I believe that:

Three reasons I support this position are

1. _____

2. _____

3. _____

People who disagree with this position would probably argue that

1. _____

2. _____

3. _____

I would respond to these arguments by saying

1. _____

2. _____

3. _____

Name Tags and Group Roles

TEAM LEADER

will lead the discussion and ask for input from each member

RECORDER

will record the group's topic, position, and arguments on chart paper

REPORTER

will present the arguments to the class

MEMBER AT LARGE

will contribute ideas

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