

Organ testing collaborative inquiry

In this collaborative inquiry activity, students will work together to increase their understanding of various techniques and technologies used by healthcare professionals to assess organ health prior to transplantation.

BC Transplant coordinates the recovery and transplant of the following organs:

- Heart
- Lungs
- Liver
- Pancreas (including islet cells)
- Kidneys

In addition, BC Transplant works closely with the Eye Bank of British Columbia to recover corneas and sclera (components of the human eye).

After informed consent for organ donation has been obtained from the patient's legal next of kin (LNO^K) BC Transplant starts working with many different healthcare professionals to determine which organs are suitable for transplant. They need to consider a lot of different information to determine which organs are functioning properly and are able to be transplanted to save another person's life..

An important part of this system is ***individual organ testing***, a process where the function of individual organs is investigated using a variety of medical tests. This allows healthcare professionals to ensure that a specific organ will benefit the recipient.

Warm-up questions:

- Why is it important to test the function of each organ before it is transplanted?
- What might happen if this important step was skipped?

Guiding questions:

- In general, how do these tests work?
- What information is being obtained through these tests?
- Which organs are tested using these methods?

Description of the activity

This activity uses the “jigsaw” method to facilitate collaborative inquiry. For a general overview of this teaching technique, view this helpful YouTube video (it will clarify the structure of this inquiry): <https://www.youtube.com/watch?v=euhtXUgBEts>

Video citation: Cult of Pedagogy. (2015, April 15). The Jigsaw Method [Video]. YouTube.

This activity description follows the outline of the jigsaw method from this video, but variations are certainly possible. Feel free to improvise and adapt based on your classroom and your students.

Step 1: Independent inquiry

For this activity, we have six (6) Inquiry Topics.

Inquiry Topics

1. Electrocardiogram
2. Echocardiogram
3. Pulmonary function test and bronchoscopy
4. Computed tomography (CT) scan
5. X-ray imaging
6. Ultrasound

Because there are 6 Inquiry Topics, divide your class into Jigsaw Groups of 6 students. [Jigsaw Group size should be the same as the number of topics being researched; omit any Inquiry Topics to adapt the Jigsaw Group size as needed].

Within each Jigsaw Group, each student will be assigned one (1) of the Inquiry Topics. That is, each student in the Jigsaw Group will be assigned a different topic, so that all topics are covered within each Jigsaw Group.

From here, each student will **independently** locate information about their assigned topic (e.g., X-ray imaging) for a set period of time (e.g., ~30-60+ minutes; adapt depending on your expectations for student inquiry).

Students should gather information from at least **3-5 reputable sources**, pulling together and comparing different ideas to create a thorough description of the medical test that they have been assigned, focusing on the Guiding Questions: *In general, how do these tests work? What information is being obtained through these tests? Which organs are tested using these methods?*

Students should use the technology and resources that are available to them in their classroom or school. This activity could be completed in the library or computer lab, for example.

Students can use the **Note-Taking Sheet** to organize their findings about their assigned topic, while keeping track of their sources.

Step 2: Meeting in Expert Groups

After each student has had a chance to independently gather information about their assigned topic, they will meet with all of the other students who were assigned the **same topic** to compare findings, fill knowledge gaps, clarify their understanding(s), and ensure that everyone is on the same page. These groups are called “Expert Groups” because theoretically every person in the group should be an “expert” about the assigned topic (they just spent ~30-60+ minutes looking into this topic in Step 1).

Meeting as an Expert Group is a chance for students to fortify their understanding of the assigned topic. It serves as an opportunity for cross-pollination of ideas, knowledge, understandings, and thought processes. This may take ~30 minutes.

While meeting as an Expert Group, each student may prepare a final set of notes that they would like to share with their initial Jigsaw Group in Step 3.

Step 3: Reporting back to the Jigsaw Group (learning from other group members)

After meeting as an Expert Group, each student should feel confident in their understanding of their assigned topic. At this time, students will join their initial Jigsaw Group to report back about their findings. Each student in the Jigsaw Group will take a turn outlining their findings, **focusing on the general purpose of each test, how the test works, and which organs are tested this way**. During this time, students can take notes about all of the inquiry topics on the **Activity Sheet** to organize the new information that they are receiving from their peers. This may take ~30 minutes.

Step 4: Extending the inquiry (optional)

Although reporting back to the initial Jigsaw Group is technically the “end” of the typical Jigsaw process, the inquiry doesn’t need to stop here. Also, the activity doesn’t need to go exactly as outlined above. Perhaps it would be beneficial to meet as an entire class to discuss key ideas that emerged throughout the inquiry, or to further clarify understandings. Perhaps each Expert Group could generate further inquiry questions based on their meeting, and then dive back into the inquiry process to create a more in-depth presentation for the entire class. Feel free to use this Jigsaw activity as a launch-pad for further inquiries that make sense in your classroom.

Assessment Opportunities

There are many opportunities for self, peer, and teacher assessment throughout this collaborative inquiry process. For example:

- After meeting as an Expert Group, students would be able to self-assess how deeply they engaged in the inquiry process. They would also be able to assess their peers’

engagement in the inquiry and sharing process (it will be obvious who was able to contribute, or not contribute, to the Expert Group meeting).

- Teachers could collect Note-Taking Sheets to assess students' independent inquiry processes (Step 1), or the final version of notes that students create during/following the Expert Group meeting (Step 2), or the Activity Sheet to assess students' participation in the final "reporting back" meeting (Step 3)
- Teachers could get Expert Groups to create a resource (e.g., a letter-sized [8.5"x11"] poster) outlining their group's findings for assessment