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| **Lesson Title : Human Body Systems** | **Unit #:**  **1** | **Lesson #:**  **1** | **Activity #:**  **1** |
| **Activity Title: Organ System Jigsaw** |

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| **Estimated Lesson Duration:** | **4 days** |
| **Estimated Activity Duration:** | **2 days** |

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| **Setting:** | **Rm 2610, Scott High School** |

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| **Activity Objectives:** |

Students will be able to:

1. Identify organ systems and components of those systems,
2. summarize the functions of those systems, and
3. construct a hierarchy of the human body based on the components and interconnections of those systems.

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| **Activity Guiding Questions:** |

* What are the different organ systems?
* What components make up each system?
* What is the function of the organ systems?
* How do the organ systems work together?

| **Next Generation Science Standards (NGSS)** | |
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| **Science and Engineering Practices (Check all that apply)** | **Crosscutting Concepts (Check all that apply)** |
| Asking questions (for science) and defining problems (for engineering) | Patterns |
| Developing and using models | Cause and effect |
| Planning and carrying out investigations | Scale, proportion, and quantity |
| Analyzing and interpreting data | Systems and system models |
| Using mathematics and computational thinking | Energy and matter: Flows, cycles, and conservation |
| Constructing explanations (for science) and designing solutions (for engineering) | Structure and function. |
| Engaging in argument from evidence | Stability and change. |
| Obtaining, evaluating, and communicating information |  |

| **Ohio’s Learning Standards for Science (OLS)** |
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| **Expectations for Learning - Cognitive Demands (Check all that apply)** |
| Designing Technological/Engineering Solutions Using Science concepts **(T)** |
| Demonstrating Science Knowledge **(D)** |
| Interpreting and Communicating Science Concepts **(C)** |
| Recalling Accurate Science **(R)** |

| **Ohio’s Learning Standards for Math (OLS) and/or**  **Common Core State Standards -- Mathematics (CCSS)** | |
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| **Standards for Mathematical Practice (Check all that apply)** | |
| Make sense of problems and persevere in solving them | Useappropriate tools strategically |
| Reason abstractly and quantitatively | Attendto precision |
| Construct viable arguments and critique the reasoning of others | Look for and make use of structure |
| Model with mathematics | Look for and express regularity in repeated reasoning |

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| **Unit Academic Standards (NGSS, OLS and/or CCSS):** |

LS 1-2 - Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

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| **Materials**: (Link Handouts, Power Points, Resources, Websites, Supplies) |

Poster paper, markers, handout (see attached file)

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| **Teacher Advance Preparation:** |

Prepare large sheets of paper with organ systems titled on them, post around classroom. Provide markers/pens/pencils for students to write on posters

Copy notes pages for each group

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| **Activity Procedures:** |

Day 1:

1. Human Body Silent Brainstorm
   1. Put the title of each organ system on a sheet of paper, and place on tables around the room. \*\*You may need to have 2 sheets per organ system depending on the size of the class
   2. Students will be given 5 minutes (you may increase to 10) to move around and write as much as they know on each organ system sheet
   3. Take pictures of the papers after the activity - they will be given to the teams for the jigsaw
2. Human Body Jigsaw
   1. What is our standard? What are we expected to be able to do? Let’s put that in words we understand
   2. Each team will be assigned an organ system
      1. Fill out notes page (legibly - will be making copies for the class) - DO NOT FILL IN CELL OR TISSUE TYPES
      2. Present information to the class (2-3 minutes)
      3. 3-5 MC quiz questions
   3. How should we grade this? What would be examples of good notes? Bad note? Good presentation? Bad presentation?
      1. What is a good question? When we get stumped, sometimes we say “that’s a good question.” Should good questions be very easy or more difficult to answer?
3. Human Body Jigsaw: team work time
   1. What is a team?
   2. How are you going to break up the work to make it feasible for everyone?
   3. How are you going to get the deliverables to the teacher?

**Exit Slip:** Take 5 minutes to reflect on what we learned today. Make a t-chart. On one side, write ideas we discussed today that you are very comfortable with. On the other side, write questions you still have or something you don’t understand. Your t-chart should not look like anyone else’s t-chart!

Day 2:

1. **Enter Slip:** Write a one paragraph summary of how your team’s organ system functions to keep your body alive.
2. Human Body Jigsaw: 5-10 minutes to finish notes and review with team
   1. At end of time: notes page and quiz questions are due
3. Human Body Jigsaw: Divide and conquer (20-25 minutes)
   1. Break class into 3-4 groups, each group has one member from each team
   2. Each team member gets 2-3 minutes to present their notes to the group
   3. Must explain the components and the function of the system to the class
   4. Notes will be on the board for each group and will be distributed tomorrow to each class member
   5. After mini lecture, students should be able to answer the quiz questions (open-note quiz tomorrow!)
4. Share out - what questions do we have?
5. Look at the standard - how can we now make this a hierarchy? (20-25 minutes)
   1. What do we still need?
   2. What questions do we need to answer?
   3. Divide cells and tissues into previous groups
   4. Find info - present in 10 minutes
      1. Definition
      2. Function
      3. Where it can be found
6. **COLLECT GROUP NOTE SHEETS** - make copies and pass back to students tomorrow
7. **Exit Slip:** Write one sentence about what you did today. Write one sentence explaining why it was important. Write one sentence about where you could use what you did today again. Write one sentence about how well you worked today in class. Write one sentence about what you think the next step should be. Please turn your exit slips to the homework bin.

**Formative Assessments:** Link the items in the Activities that will be used as formative assessments.

Quiz questions, walking around to different groups during activity, exit slip

**Summative Assessments:** These are optional; there may be summative assessments at the end of a set of Activities or only at the end of the entire Unit.

Unit test at the completion of this unit and the subsequent unit.

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| **Differentiation:** Describe how you modified parts of the Lesson to support the needs of different learners.  Refer to Activity Template for details. |

As I was just getting to know my learners (I began this activity on the 3rd day of class), I made sure there were ample resources in place for students to be able to ask for help and find all the information necessary. I provided each student with a guided worksheet to complete for the jigsaw, as well as technology to find the information.

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| **Reflection:** Reflect upon the successes and shortcomings of the lesson. |

This lesson works pretty well. The difficult part is getting students to build a rubric as a class on only the third day of the class. For the next time I present this lesson, I plan to have a format that I provide for students, so they are only filling in what they should be doing instead of coming up with an entire rubric on their own. The students, for the most part, are really good about finding the information and filling in the worksheet. They do lack research skills, so many times they would just fill in the top result on google rather than investigating and determining if the information is correct.

The piece the students struggle with the most is the presentation aspect. Instead of presenting to the entire class, I have them present the information in small groups. As I do this lesson so early on, there aren’t good established routines. I need to determine a way to streamline this activity so they are learning the information and then sharing it out with their small group. One idea I had was to utilize google docs for students to post their information, then take an open-note quiz with the information posted on their website.