TEACHER INSTRUCTION PAGE (delete this slide)

Hexagonal Thinking Workbook

Student Activity: In this printable activity students cut out hexagon tiles with key vocabulary and work with groups to make meaningful connections based on what they learned.

It also includes pages for reading the article and taking notes, short answer questions, multiple choice questions, and a discussion worksheet for open-ended prompts.

How to share with students: These pages are sized for printing or can be assigned digitally using an LMS (like Google Classroom), where students can work on their own slide decks via “Make a Copy for Each Student.” Each slide is set up with text boxes for students to type in.

Please Note: Because Diffit resources can vary in length, be sure to check the formatting on each slide.

Suggested Lesson Flow:
1. Students record what they notice and what they wonder about the image.
2. Students cut out the hexagons and discuss them with their group.
3. Students read and take notes.
4. Students answer the questions and explain their thinking.
5. Students write answers to the short answer questions.
6. Have students complete the Open Ended Questions and discuss with partners or groups.

Feel free to edit, remix, and use this resource however works best for you and your students! **Find editing tips here!**

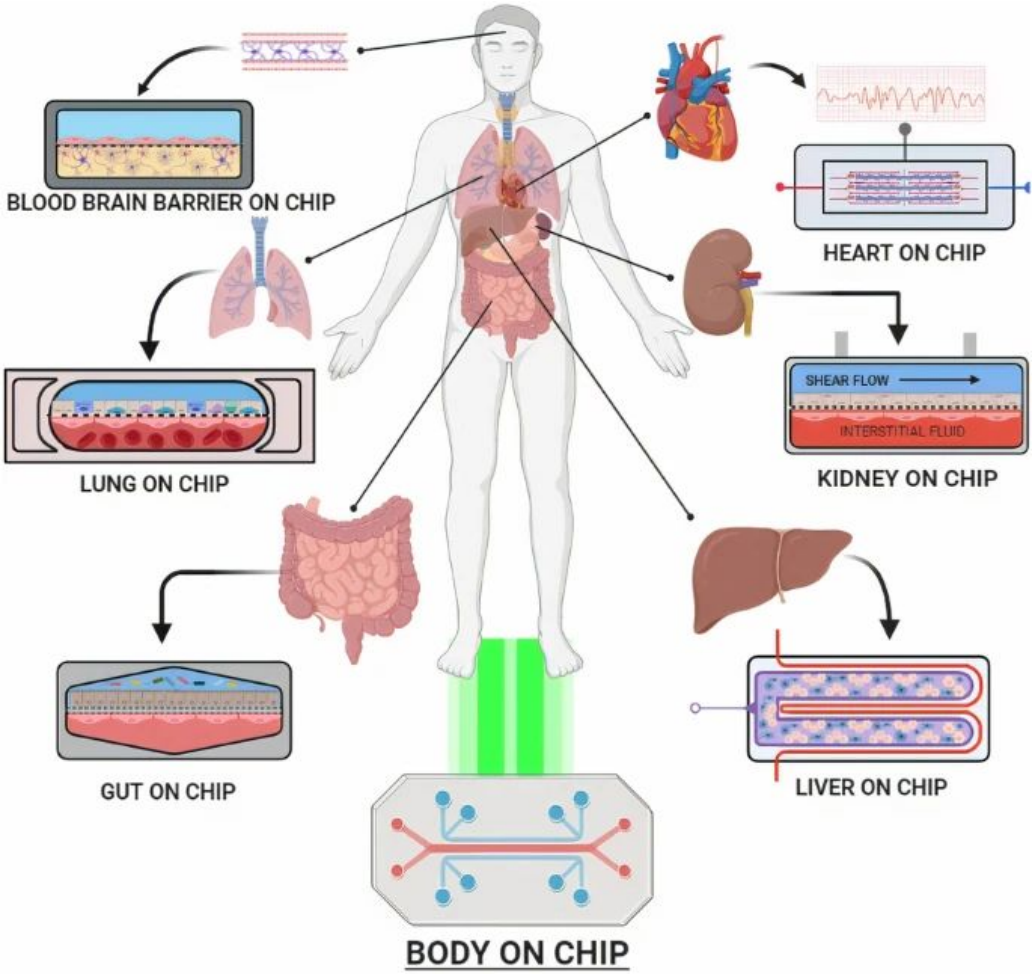
Learn More: Please reach out with any questions or feedback. You can also learn more on our FAQ page, or get more resources at Diffit.me!

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Image Analysis: Notice & Wonder

Instructions: Look at the image and write down 2-3 things you notice (key details, main ideas, themes) and then write down 2-3 things you wonder (questions you have because of the image, things you are curious about when you look at the image.)

What do you notice?	



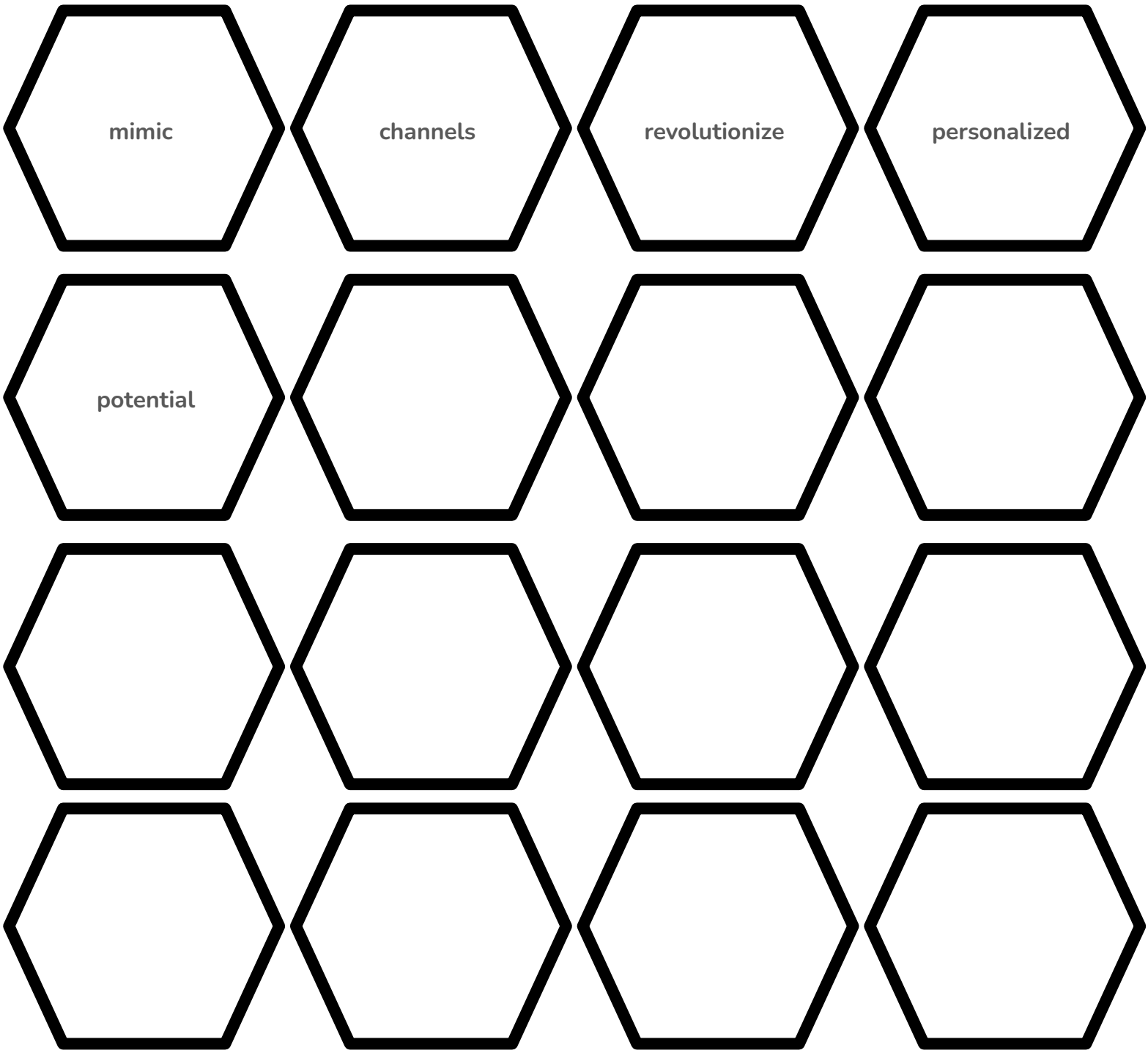
What do you wonder?	

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Hexagonal Thinking

INSTRUCTIONS:

- Cut out the hexagon tiles below.
- Divide the hexagons evenly between group members.
- Put one tile down to start.
- Each person adds one tile at a time, making and explaining connections as they go.
- A tile can connect to more than one as long as you explain all connections when you place it down.
- The goal is to make and explain connections between terms based on what you've learned.
- If a tile does not connect to anything, start a new hexagon map.



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Read & Take Notes

Instructions: Read the passage below. Take notes in the space provided.

Organ-on-a-chip (OOC) technology is a new way to study how drugs work in the human body. It uses tiny chips that mimic human organs, like the liver or the heart. These chips have tiny channels that act like blood vessels, carrying nutrients and oxygen to the cells. They can also be used to test how drugs affect different organs.

OOC technology is important because it helps scientists develop new drugs faster and more safely. Traditional methods of testing drugs, like using animal models, are not always accurate. OOC technology allows scientists to study how drugs work in human cells, which is more accurate and reliable.

OOC technology is still being developed, but it has the potential to revolutionize drug discovery. Scientists are working to create more realistic organ models and to connect them together to create a "body on a chip." This will allow them to study how drugs affect the whole body, not just individual organs.

In the future, OOC technology could be used to develop personalized medicine, where drugs are tailored to each patient's individual needs. This could lead to more effective treatments and fewer side effects.

OOC technology is a promising new tool for drug development. It has the potential to improve the safety and effectiveness of new drugs, and to make personalized medicine a reality.

Take Notes Here

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Answer and Explain

Instructions: For each question, answer the question and then explain why you picked the answer you did using specific evidence from the text.

Question: **1. What is the main purpose of Organ-on-a-chip (OOC) technology?**

Pick the Answer

A) To study how drugs work in the human body.

B) To create new organs for people who need them.

C) To test how drugs affect animals.

D) To develop new ways to grow food.

Explain: Why did you pick that answer?

Question: **2. Why is OOC technology considered more accurate than using animal models to test drugs?**

Pick the Answer

A) It uses tiny chips that mimic human organs.

B) It is cheaper than using animals.

C) It is easier to use than animal models.

D) It allows scientists to study how drugs work in human cells.

Explain: Why did you pick that answer?

Question: **3. What is one potential benefit of OOC technology in the future?**

Pick the Answer

A) It could help scientists develop new ways to grow food.

B) It could help scientists create new organs for people who need them.

C) It could help scientists develop personalized medicine.

D) It could help scientists study how drugs affect animals.

Explain: Why did you pick that answer?

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Short Answer Questions

Question	1. What are the tiny channels in OOC chips designed to mimic?

Question	2. What is the goal of scientists who are working to create a "body on a chip"?

Question	3. How does OOC technology help scientists develop new drugs faster?

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Reflect and Discuss

Instructions: Respond to the following question using the reading and your own knowledge and experiences. Be as thorough as possible.

1. Imagine you are a scientist working on organ-on-a-chip technology. What would be the most exciting part of your job? How would you explain the importance of this technology to someone who doesn't understand it?

Write Your Response Here. Be sure to use what you learned in the reading and your own knowledge and experiences to answer the question thoroughly.

Instructions: When instructed, you will share your responses with your group. Take notes on their responses in the boxes below. Be sure to write their names at the top of each box.

Student #1: _____

Student #2: _____

Student #3: _____

Student #4: _____

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Reflect and Discuss

Instructions: Respond to the following question using the reading and your own knowledge and experiences. Be as thorough as possible.

2. The text mentions that organ-on-a-chip technology could lead to personalized medicine. How do you think this could change the way people get treated for illnesses? Would this be a positive change for you or someone you know?

Write Your Response Here. Be sure to use what you learned in the reading and your own knowledge and experiences to answer the question thoroughly.

Instructions: When instructed, you will share your responses with your group. Take notes on their responses in the boxes below. Be sure to write their names at the top of each box.

Student #1: _____

Student #2: _____

Student #3: _____

Student #4: _____

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Reflect and Discuss

Instructions: Respond to the following question using the reading and your own knowledge and experiences. Be as thorough as possible.

3. The text explains that organ-on-a-chip technology is a new way to test drugs. How do you think this technology could impact the way new medicines are developed in the future? What are some of the benefits and challenges of using this technology?

Write Your Response Here. Be sure to use what you learned in the reading and your own knowledge and experiences to answer the question thoroughly.

Instructions: When instructed, you will share your responses with your group. Take notes on their responses in the boxes below. Be sure to write their names at the top of each box.

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Student #3: _____

Student #4: _____

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