AI and Digital Literacy Teaching and Learning Story

TASK DESIGN	
Learning Experience Title	*Heart Diagram*
Grade	12
Learning Area(s)	Anatomy and Physiology 12
Curricular Competencies	• Demonstrate an awareness of assumptions, question information given, and identify bias in their own work and in primary and secondary sources • Consider the changes in knowledge over time as tools and technologies have developed
Curricular Content	• organ systems: – structure and function – structural and functional interdependent
Links to Core Competencies	Communication • Collaboration Thinking • Creative Thinking • Critical and Reflective Thinking

TASK SUMMARY

Learners were asked to use generative AI or hand drawings to create an updated version of the heart-cross section diagram for their textbook. Five reflection questions were assigned for learners to complete once they completed their diagram. Learners worked in pairs or independently.

Teacher reflections

Generative AI produced visually appealing graphics, but they were anatomically inaccurate, lacked cross-sectional drawings, and/or featured inaccurate or nonsensical labels. Students could refine the drawings through iterations of prompts, but in all instances, students had to manually input the labels using graphic editing software.

Although the heart diagrams produced were not ideal, this activity proved to be a rich learning experience. Learners were engaged in applying core competencies and their understanding of the heart structure while exploring cutting-edge technologies.

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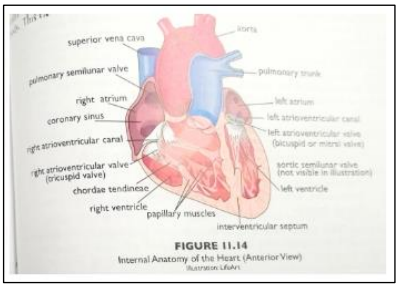
LEARNING STORY

PLANNING

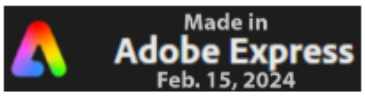
To prepare for the lesson, a heart-cross section diagram from the textbook was selected, and the students were taught about the human heart.



Additionally, five questions for students to answer during the lesson were formulated:

1) What are the strengths and weaknesses of your final product compared to the original textbook diagram?
2) Describe how using AI made the process easier or more complex.
3) It is unlikely that you got exactly what you wanted on the first try. Describe your process and the changes needed for you to arrive at your final product.
4) How did you apply the Core Competencies (Communication, Thinking, Personal and Social) during this task? (Pick one competency or facet)
5) If you were a textbook editor, would you consider your diagram Extending, Proficient, Developing, or Emerging?

To disclose AI's contribution to their work, students were asked to add a watermark to their diagram, acknowledging and giving credit to the program used to generate the graphic.



TEACHING

Learners were introduced to the task both orally and visually as part of a blended online and in-person Anatomy and Physiology 12 course.

The use of generative AI was demonstrated, and students were given 45 minutes to work on the task and familiarize themselves with the technology.

For students who did not wish to use AI tools, or who had parents or caregivers who did not give permission for them to use AI tools, they were able to hand draw their heart diagrams.

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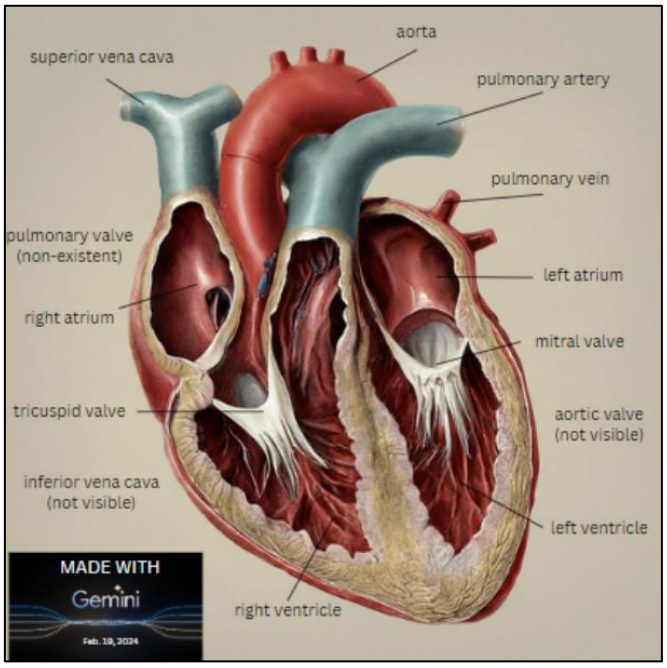
ASSESSMENT
STUDENT A
TEACHER OBSERVATIONS AND STUDENT WORK

Student work and responses are provided below:

Question 1: What are the strengths and weaknesses of your final product compared to the original textbook diagram?

My updated diagram has many weaknesses. For example, it doesn't include the pulmonary valve, and the tricuspid valve doesn't properly connect to the right atrium. The right atrium opens into the bottom of the aorta, and the aortic valve is not visible in the diagram. Although it is somewhat inaccurate, it has a beautiful design and look. It is complex and detailed, yet it is easy to see and recognize the different parts.



Question 5: If you were a textbook editor would you consider your diagram Extending, Proficient, Developing, or Emerging?

Although the model of this heart isn't terrible, I would grade it as proficient because it is somewhat inaccurate. It doesn't include some essential parts of the heart and has a couple of extra parts that would block the heart from functioning properly. If a student looked at this diagram, they could get an idea of what the heart looked like and the parts. This model looks sleek and detailed, and the student may be more interested in this diagram than others. But they also may come to the wrong conclusions about how the heart works because of some of the parts.

Teacher reflections

Conversations about privacy, data storage, information sourcing, and the revenue generation of free-to-use AI companies emerged naturally during this activity.

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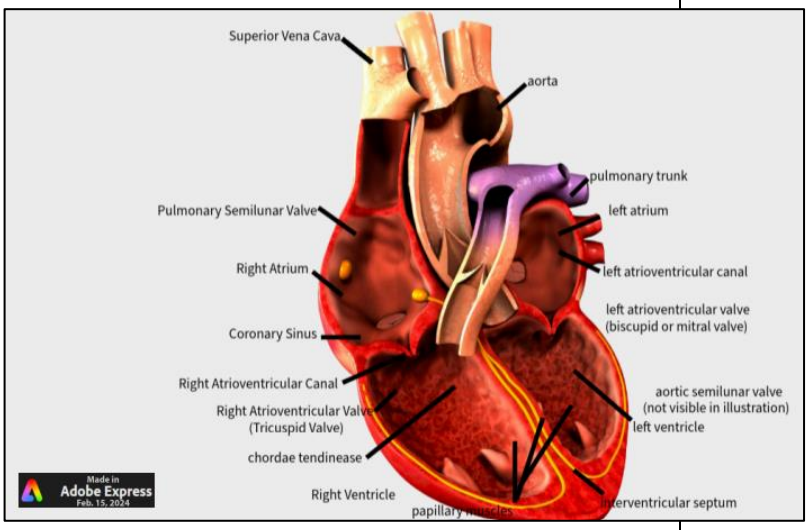
STUDENT B
TEACHER OBSERVATIONS AND STUDENT WORK

Teacher reflections

The reflections of the learners provided valuable insights into the depth of their prior knowledge. For example, one AI-generated image completely omitted the chordae tendineae, yet a learner incorrectly labeled the ventricle wall as chordae tendineae. Another image included the SA and AV nodes, but these were not labeled by the student. These instances illustrate the level of critical analysis performed by the learners, showcasing that such assignments are not easily completed by current AI technologies.



Student work and responses are provided below:

Question 2: Describe how using AI made the process easier or more complex

Using AI was helpful in the sense it made us a new picture, but the resulting picture was not what we were wanting. We had to label all of the different mechanisms in the heart which took a lot longer than simply using the picture from the textbook.

Question 3: It is unlikely that you got exactly what you wanted on the first try, describe your process and the changes needed for you to arrive at your final product.

To get exactly what we wanted, we specified that we wanted a cross section of a human heart. First it gave us a diagram with labels in gibberish, so we just had to search more to find and add an image without labels.

Question 4: How did you apply the Core Competencies (Communication, Thinking, Personal and Social) during this task? (Pick one competency or facet)

We applied communication in the way that we communicate the specifics of our request. We made sure it was a human heart and had the certain important parts of the heart we were looking for. As well, together we talked through everything we were doing, making sure we both agreed with all the changes we were making.