Post-It Concept Map: Cellular Respiration

Students will connect information learned about cellular respiration through a concept map using Post-It notes. This activity should be used as a review after learning the entire unit of cellular respiration.

Subject(s): Science
Grade Level(s): 9, 10, 11, 12
Intended Audience: Educators

Suggested Technology: Computer for Presenter, LCD Projector

Instructional Time: 50 Minute(s)

Keywords: cellular respiration, aerobic and anaerobic cellular respiration, concept map

Instructional Component Type(s): Lesson Plan, Problem-Solving Task, Student Center Activity

Resource Collection: FCR-STEMLearn Cell Biology 2016

ATTACHMENTS

Concept_Map_Key.docx
Concept_Map_Terms.docx
Template_for_Concept_Map.docx
Concept_Map_PowerPoint_Presentation.pptx

LESSON CONTENT

Lesson Plan Template: General Lesson Plan

Learning Objectives: What should students know and be able to do as a result of this lesson?

- Students will make connections between processes and energy output of aerobic and anaerobic cellular respiration.

Prior Knowledge: What prior knowledge should students have for this lesson?

- Cellular respiration has two forms, aerobic, which requires oxygen and anaerobic which doesn't require oxygen.
- Steps of cellular respiration.
- The amount of energy released in each phase of cellular respiration.
- Locations of cellular respiration.

Guiding Questions: What are the guiding questions for this lesson?

- What are the connections between aerobic and anaerobic cellular respiration?

Teaching Phase: How will the teacher present the concept or skill to students?

Lesson opener/attention getter:

- Use slides 2 -5 from the attached **PowerPoint** to introduce the activity.

Key talking points about the lesson topic:

- Pair off students in groups of 2.

Directions for students:

- Using the attached **terms word bank**, write each term on a separate Post-It note.
- Generate or complete a concept map connecting the terms of cellular respiration. All terms will be used once.
- Using slides 3-5, introduce two possible versions, either standard or challenging.
- Each group gets to choose which version to complete. I suggest awarding extra credit to groups choosing the challenging version. In standard version, students will be given the **Concept Map Template** to guide them through the activity. See the attached **Concept Map Key** for answers. If groups choose the challenging version, students will not be given the template, but will have to create their own connections between key terms.

Guided Practice: What activities or exercises will the students complete with teacher guidance?

Instructions for setting up and leading the activity that the students will complete with teacher guidance:

- Watch concept map tutorial on slide 6 of the attached PowerPoint. When finished, project the key terms found on slide 7.

How will you check for student understanding?

- Use the image on slide 7 to reiterate that all key terms must have a description, statement, or phrase connecting them to other terms.

Common errors/misconceptions to anticipate and how to respond:

- Concept maps can be made in many different ways. If students are choosing the challenging version, there's not one correct way to complete it. All key terms must be connected in the concept map.

Independent Practice: What activities or exercises will students complete to reinforce the concepts and skills developed in the lesson?

Instructions for facilitating the activity that the students will complete independently or in groups:

- Pass out large paper (18 x24 or larger) and 15 post it notes to each group. Ask groups which version they choose. If standard is chosen, give students **Concept Map Template** and **Concept Map Terms**. If challenging is chosen, only give them the Key Terms handout.

How will you check for student understanding?

- Walk around from group to group ensuring that all key terms are connected and connected correctly.

Common errors/misconceptions to anticipate and how to respond:

- Groups completing the challenging version might need more guidance when getting started. Use these probing questions for extra help: What is needed to start the process of cellular respiration? What is that process called when it is broken down?

Closure: How will the teacher assist students in organizing the knowledge gained in the lesson?

- Choose three groups that will share their concept map with the class. One should be a group who completed the standard version and the other two groups who completed the challenging version. Emphasize that there are many ways to complete the map.

Summative Assessment

- Completion of the concept map will serve as the summative assessment.

Formative Assessment

- Walk around from group to group ensuring that all key terms are connected and connected correctly.

Feedback to Students

- Concept maps can be made in many different ways
- All key terms must be connected in the concept map

ACCOMMODATIONS & RECOMMENDATIONS

Accommodations:

Concept Map Template

Extensions:

Have students create drawings/diagrams for each key term.

Suggested Technology: Computer for Presenter, LCD Projector

Special Materials Needed:

- **Concept Map PowerPoint**
- Post-It Notes (15 per group)
- Large paper (18 x 24 or larger)
- **Concept Map Template**
- **Concept Map Terms**

SOURCE AND ACCESS INFORMATION

Contributed by: Krisitn Wilson
Name of Author/Source: Krisitn Wilson
District/Organization of Contributor(s): FSU Lab School
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Related Standards

Name	Description
SC.912.L.18.8:	Identify the reactants, products, and basic functions of aerobic and anaerobic cellular respiration.