

Introductory Lesson on Cells

Summary

This is an introductory lesson on cells. Student learning begins with the teacher modeling the use of a T-chart graphic organizer while reading an article comparing simple and complex carbohydrates. Students then move to independent practice using the T-chart graphic organizer to compare simple (prokaryotic) cells and complex (eukaryotic) cells.

Time Frame

1 class periods of 45 minutes each

Group Size

Individual

Life Skills

Thinking & Reasoning

Materials

Science Journal or loose paper for student writing.

Internet access (or hard copies) of the following two SIRS Discoverer articles: Eating the Right Carbohydrates Can Boost Your Health AND Cellular Essentials
(See below for details.)

Background for Teachers

Many 7th grade students have had little exposure to informational text. This lesson is designed to support their learning by teaching a T-chart graphic organizer. Students will also learn about an author's use of subheadings as a tool to assist the reader.

Student Prior Knowledge

Students must understand the concept of "similarities and differences". Students should also have a basic understanding of how an author aids his/her reader by structuring compare/contrast text with subheadings and transition words.

Intended Learning Outcomes

Students will be able to use a T-chart graphic organizer to accurately arrange information presented in text form. Additionally, students will be able to name two differences between prokaryotic and eukaryotic cells.

Instructional Procedures

Introduction to Cells: Comparing Prokaryotes to Eukaryotes

Task 1: *This task should serve as a formative assessment of your student's skills at identifying similarities and differences between objects. It will be most effective if the topics of comparison are not content specific.*

Begin class by having students compare and contrast two items while writing in their science journals (or on a sheet of paper). The two items being compared should be generic enough to include the background knowledge of all your students. If you are unsure of the universality of the items you are asking students to compare, the use of realia (physical objects) or images is recommended. Some

options include: baseball/tennis ball, college ruled paper/ graph paper, police officer/ fire fighter, sports car/ sport utility vehicle (SUV). While students are writing, circulate throughout the room to monitor on-task behaviors and spot check the work of students.

Task 2: This task should help build classroom community and improve the speaking and listening skills of your students.

Recognizing that the 'Think' part of a *Think-Pair-Share* instructional strategy has just been completed, move on to the 'Pair' portion of the strategy by asking students to compare their list with the list of a partner. To encourage active listening and cooperative learning, require students to add at least one descriptor from their partner's list to his/her own list.

Task 3: This task will familiarize students with the T-chart graphic organizer that will be used in the rest of the lesson. Additionally, students should now understand that when they are asked to compare something, they should look for similarities, and when they are asked to contrast something, they should look for differences.

The 'Share' part of this strategy will occur as a whole-class activity. Create a T-Chart on the board and label the left and right sides of the chart with the names of the two items you asked students to compare. See diagram below.

Have students silently review their writing for one minute to identify adjectives (or adjective phrases) that you can write on the chart. Students then share out their words and, as a class, decide which side(s) of the chart the term belongs. [Example: if you had students distinguish a tennis ball (Item A) from a baseball (Item B), a student might offer *round* as a term. Once offered, ask the class if round is descriptive of a tennis ball, a baseball, or both.] Continue having students share until all have had an opportunity to participate. Your chart for tennis ball vs. baseball might look something like this: Finish this task by circling terms that are found in both columns and connect them with a line. Explain to students that the circled terms are terms we would classify as similarities, and the un-circled terms are known as differences.

Task 4: The purposes of Task 4 are

- *To reinforce the T-chart graphic organizer as useful tool for making meaning from text*
- *To introduce an author's use of subheadings to help the reader navigate the text.*

It is likely that many of your seventh grade students will be unfamiliar with information text. It is also likely that many are poor readers and would benefit from learning about the importance of subheadings.

Tell students that you are now going to using the T-chart skill to organize information from an article about carbohydrates. Before you begin reading, ask students to write down what they already know about carbs. You can then continue with the 'Pair-Share' strategy as before, or just ask students to share out what they wrote (the important part about this step is the quiet time allowed for students to access their background knowledge before students are allowed to share out what they know).

Inform students that you are going to be reading and article together about two different types of carbohydrates. Have students create a T-chart in their science journal labeling the left side with Simple Carbohydrates and the right side with Complex Carbohydrates. Once the chart has been created, have students look at the text: *Eating the Right Carbohydrates Can Boost Your Health* by Charnicia E. Higgins.

The title and first two paragraphs of this text are going to give the reader some generic information about carbohydrates. Ask students to read the title and first two paragraphs and be prepared to list three examples of a carbohydrate. Instruct them not to write anything on their T-chart.

At the end of reading the title and first two paragraphs, students should be able to name potatoes, rice, bread, ice cream, corn chips, potato chips, sugars and starches as being carbohydrates.

Guided practice: Now move on to the section with the subheading: *Types of Carbs*. Tell students: "Subheadings like this are an author's way of telling us [the reader] that they are about to describe contrasting things. When authors give us these clues, we can use a graphic organizer like a T-chart

to help construct meaning from the text." Model filling in the T-chart with your students by reading aloud the first sentence: *Carbohydrates are made by green plants and are most abundant in fruits, vegetables, and grains.*

Say: "The author tells us that carbohydrates are made from green plants. Since there is no distinction made between simple and complex carbohydrates, I can infer that both types of carbohydrates are made from green plants and so I am going to write "made from green plants" under both columns." Have students do the same on their T-charts. Now ask students to read the rest of the first paragraph and write one more thing in at least one of the two columns. [Students should come up with something like: carbohydrates are broken down by the body into glucose.]

Independent practice: Ask students to now read the next paragraph. As they read, they need to fill out their T-chart putting stated attributes in the correct column. Fast finishers can continue on with the reading and add additional information to their T-chart, but the benefit of this task will be reached after the completion of the *Types of Carbs* section.

Completed T-charts should look something like this:

You can reinforce the strategy by having students circle similarities, or you can simply ask them to name how simple and complex carbohydrates are alike and different.

Acknowledge the students' work on their T-charts and move on to Task 5.

Task 5: *Your students will now be learning about cells. This is the content part of the lesson. Students should have a good understanding of how to use a T-chart graphic organizer and will be using that tool to make meaning from text even less familiar to them than the text on carbohydrates. Comfort with the use of the tool will support them as they grapple with the new information.*

Again, begin by accessing background knowledge on cells. You can follow the Think-Pair-Share instructional strategy, or simply have students write what they know about cells in their science journal. (Since regional dialects and speech enunciations differ, it is best to write the word on the board so it is not confused with 'Sell', 'Sail', or 'Sale'. Also, cell is a homograph, so be sure to have students limit their writing on biological cells and not jail/prison cells.

Say: "Just as you've learned that there are simple and complex carbohydrates, there are simple and complex cells, too. We are going to read an article that is going to teach us the difference between the two types of cells, and we are again going to use a T-chart to help us organize the information."

Have students create (but not label) a final T-chart in their science journal.

Before reading, ask students to look at the article titled: *Cellular Essentials* by Jude Isabella. Just by skimming the subheadings, ask students if they can figure out what the two labels will be for their T-chart. Students should be able to name Simple Cells and Complex Cells. **(Reinforce the concept that the author uses subheadings to help the reader see how the information is organized.)**

Say: "The article we are about to read was written by a very considerate author. This author knows that people can have a wide range of understanding when it comes to a topic as complex as cells. So this author starts by giving us some background information about cells to help make sure we understand what we are reading. I want you to read the first four paragraphs and underline anything about cells that you didn't already know. Remember, I only want you to underline new information that you have added to what you already knew before you read."

It is likely that many students will underline most of the introductory paragraphs. Once finished, ask students to share out what they learned from their reading and acknowledge how much they learned about cells by just reading the first part of this article.

******Before moving to independent practice, identify the two key vocabulary words (prokaryote and eukaryote) and have students put them in the correct column of their T-chart. Tell students that they are likely to encounter more unfamiliar words as they read the article. What is important about today is that they are able to put the terms in the correct columns. Students will be learning the meaning of the unfamiliar terms in tomorrow's lesson.

Set an expectation for at least three things in each column. Challenge advanced students to have

more than five in each.

See sample chart below.

End class by having students respond to one of two Exit Ticket choices:

Write about how you could use a T-chart graphic organizer outside of school.

What are your 'Wonders', 'Hope to learns', or 'Questions' about cells?

Assessment Plan

Ongoing formative assessments are described in the detailed lesson plan.

Authors

[Thomas Olsen](#)