

What different teaching techniques are used to teach carbon cycle to 5th through 8th graders?

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Project Information:

I have been working with Facing the Future for the past 10 weeks. The mission of Facing the Future is “to create tools for educators that equip and motivate students to develop critical thinking skills, build global awareness, and engage in positive solutions for a sustainable future”. I started my summer project by learning more about Facing the Future by talking to the staff members and reading through their published curriculum. I wanted my research project to reflect both Facing the Future and Northwest Advanced Renewables Alliance (NARA) missions. Because Facing the Future has a history in developing curriculum, I wanted to create my own lesson based on the NARA Biomass project. During the Facing the Future workshop, I found that one of the teachers had a question regarding carbon; the teacher did not understand how the increase in carbon emissions was having an immense impact on our planet. With this idea, I wanted to create a lesson plan on the carbon cycle, and while doing a literature search, I found that there were many lessons on the carbon cycle. As I looked through the lessons, I noticed that many different teaching methods were being used to teach the carbon cycle. I wanted to understand what types of teaching techniques were being used to teach carbon cycle, and find out what teaching techniques were most often used in 5th-8th grade lessons on the carbon cycle. Similar to the NARA project, my project had to start from the beginning: explaining the carbon cycle.

Methods:

First, I chose what type of lesson I was going to research. I was most interested in finding different types of techniques that involved interactive, hands-on, and group work. Next, I chose 5th through 8th grade as my audience. Finally, I explored the internet for free lesson plans. Once these steps were taken, I discovered seven lessons for 5th through 8th grades on the carbon cycle. All of the seven lessons were found online and freely available. I analyzed each lesson and created various categories: teaching technique used, such as if the lesson contained discussions, group work, examples, terms, and etc. Table 1. shows all of the lesson plans I analyzed. Figure 1. shows a graph of the methods used in the seven lesson plans.

Carbon Cycle lesson plan data

Lessons	Grade	Standards	Subject	Time
A ²	7th	N/A	Science	N/A
B ³	4th-8th	5th	Earth & Space Science, using models	45 minutes
C ⁴	7th-8th	8th	Earth Science	N/A
D ⁵	4th-12th	4th-12th	Earth Sciences	40 mins
C ⁶	3rd-5th	6th-8th	Science (Life, Earth, Physical, Environmental)	50 minutes
E ⁷	6th grade	6th grade	Life Science: Cycles in Nature	N/A
F ⁸	8th grades	8th grade	Next Generation Science Standards	50 minutes

Table 1: Data of the seven carbon cycle lessons separated by grade, standards, subject and amount of time it takes for each lesson to be completed.

Graph of the lessons

Methods used in 7 lesson - Carbon Cycle

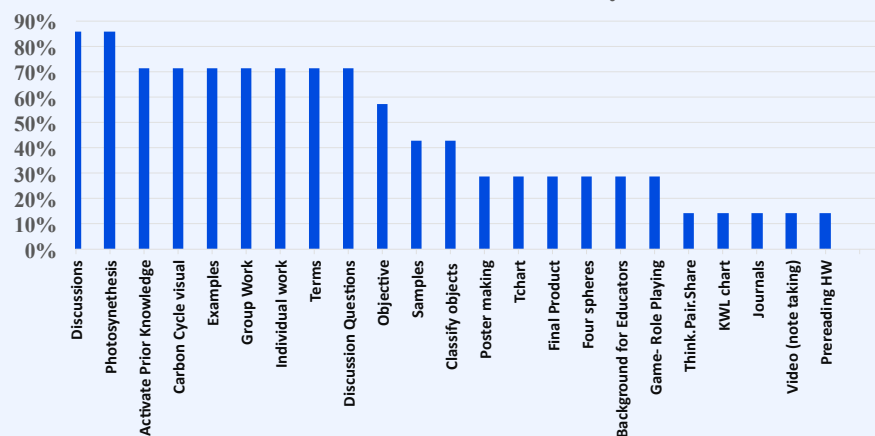


Figure 1: Methods used in the Carbon Cycle lessons in percentages.

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Research:

The information I collected shows the different methods being used to teach the carbon cycle from 5th through 8th grade. This is important information because children who know more about carbon can understand how the global trend of increased carbon emissions is affecting our planet and why it is important to limit emissions. This information gathered shows what teaching methods are used, and whether we should add them to the next lesson curriculum plan for Facing the Future.

Discussion:

My research shows that the main teaching technique used was class discussions and the main content covered was photosynthesis. The discussion method requires the teacher to talk to the whole class and ask them questions along the way. This method is a good technique because it allows the student to bring up any prior knowledge and it allows students to build their confidence through participation and interact with one another. The photosynthesis content was whether the steps of photosynthesis were included as a part of the lesson to discuss carbon. The first step was to gradually introduce students to the carbon cycle.

Conclusion:

This research has taught me that there are different ways of teaching a lesson for 5th through 8th grade. It showed me that a discussion of the carbon cycle was most used teaching method in the seven lessons. Personally, I learned that developing a research question will change over time and become better and stronger with more input from various people.

References:

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