Introductory Level Rock Layer's Cake

Objective: To use the law of superposition to identify sedimentary, igneous and metamorphic simulated rock layers using a cake model and a key

Background: The Law of Superposition states that in undeformed rock layers the younger layer is on top of the layer below it.

Materials:

1. One box of yellow or white cake mix
2. One bundt cake pan
3. Ingredients required to make the cake mix according to package directions
4. Food coloring
5. Sprinkles, poppy seeds or sesame seeds
6. Confectioner sugar (cocoa powder optional) and a strainer and tablespoon
7. Knife to cut in food dye and to cut cake
8. Rock Layer Key
9. Plates or napkins
10. Paper and pencil to record data
11. Large Straws
12. 10 inch Bamboo Skeweres

Procedure:

1. Remember to spray the bundt pan with oil or butter and flour according to package directions
2. Prepare the cake batter according to package directions
3. Divide batter into 4 bowls
4. Add green food coloring to one bowl of batter
5. Add blue batter to another bowl
6. Add red food coloring to the third bowl
7. Leave the 4th batter uncolored
8. Pour the uncolored batter into the bundt pan
9. Pour the green Batter on top of the uncolored batter
10. Pour the red layer in the pan
11. Add poppy seeds to the blue batter and pour it into the pan
12. In two or three places squeeze 3 or 4 drops of red food coloring
13. Plunge a knife in out of the drops of food dye to force it through the colored layers
14. Bake, cool and unmold the bundt cake according to the package directions
15. When cooled mix the half of the confectioner's sugar with the cocoa (Cocoa is optional)

16. Sprinkle white sugar on top of half the cake and the other half with the sugar and cocoa mix
17. Mark coordinates in the sugar N=north E=east S=south and W=west
18. Have students draw and describe the cake
19. Give each student or lab group a rock layer key
20. Firmly push a straw into the cake and extract a small tube of cake- make sure each student knows where their slice came from (N,E,S or W)
21. Observe the layers through a clear straw or carefully push the tube of cake out with a Bamboo skewer
22. Draw and describe your sample of cake
23. Identify rock types of each layer, intrusions and fossils using the key
24. Label your cake sample diagram top to bottom
25. Compare your sample with samples from the other 3 coordinates
26. Cut a slice of cake Draw and describe the full slice
27. Compare the interior of the cake to your core samples
28. Enjoy eating your cake

Observations:

1. How many different rock layers are in your sample of cake?
2. What color is the top rock layer?
3. What color is the bottom layer?
4. What color batter did you pour in first?
5. What colored batter did you pour in last?
6. How did the slice of cake compare with the core samples?

Analysis:

1. Using the Law of superposition for your sample of cake label the layers from youngest to oldest.
2. In what type of rock did you find fossils?
3. Based on the kind of rock the fossils are found in where were they formed? Explain why.
4. What type of rock is under the sediments or soil?
5. Explain how the green layer formed.
6. In which layers were volcanoes active on the surface of the cake? Explain why.
7. If these cake layers were originally formed in the pan give at least one deformation that happened to the layers.

Rock Layer Key

1. Red	**2. Yellow or white**	**3. Green**	**4. Blue**
Igneous Rock	Sedimentary rock	Metamorphic rock	Sedimentary rock
Basalt	Sandstone	Quartzite	Limestone
5. Poppy Seeds	**6. Powdered sugar**	**7. Brown powder**	

Fossils	Sand	Soil	

Follow-up:

Have the students make a cake in a square or rectangular pan. Insert cardboard covered in tin foil and have them create a cake with tilted layers, Missing layers and intrusions or mixed layers. Have them ice and decorate their cake and then hunt for the unconformities.