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BME 530

Seed Scarification
Grade level: 5th
(Adaptable for all grades)

Introduction:

This lesson will be introducing the students to a Science experiment on seed scarification through a hands on activity relating to many concepts including adaptation to environment, water absorption, germination, and variables. Students should understand how organisms emerge and adapt in order to survive.

AZ State Standards:

Standard 4: Life Science. Students understand the characteristics of living things, the diversity of life, and how organisms change over time in terms of biological adaptation and genetics.

1SC-F1 – Plan, design, conduct and report on the conclusions of basic experiments.

PO 3 – Predict the results of an experiment.

4SC-P6 – Describe and explain how the environment can affect the number of species and the diversity of species in an environment.

PO 1 – Explain how the adaptations of various species are related to their success in an ecosystem.

Behavioral Objectives:

Students need to recognize the diversity and complexity of the life forms found on earth in order to understand the network of interrelationships among organisms and between living and non-living things.

Students will learn about seeds, seed coats, and the adaptations of plants in response to their environment.

Students will participate in an experiment using variables.

Students will be able to:

Recall information about seeds, or familiarize themselves with this topic.

Share information about their environment.

Look for cause and effect relationships between environment and life forms.

Execute an experiment with variables.

Anticipatory Set:

Students will focus on the environment they live in, and consider the adaptations that the plants and animals must make in order to survive. There will be a discussion about the seeds from desert plants, and how they are spread and germinate.

Teacher Input:

Teacher will ask the students to share their ideas about their environment.

Teacher will encourage the students to think about the adaptations that plants and animals have had to make within this environment.

Teacher will have students describe seeds, especially the seed coat.

Teacher will draw on the board, imagery and observations of the students, along with an easy to realize explanation for why some seeds would have a very hard seed coat.

Modeling the behavior:

Teacher will encourage students to focus on the topic. Teacher will lead the discussion, and explain points the students do not understand. Teacher will promote creative thinking, especially in the areas of adaptation.

Check for comprehension:

Teacher will check for comprehension with questions such as; “What environmental factors would favor a hard seed coat over a soft one?” “What other kinds of plants have a hard seed coat?” “Where would be a place that you would find many of the desert plants growing, and why?” “Why is it necessary to damage the seed coat, and how does nature accomplish this?”

Guided Practice:

Students get together in groups to summarize the lesson’s main points. Students will write the directions, in sequence, for doing the experiment. Students will make predictions about what seed is going to germinate first (the one that is cut or the one that isn’t).

Closure:

Teacher will check for comprehension with review questions and help to explain students’ questions. Students will be asked to summarize lesson’s main points.

Independent Practice:

Have students think of other trees with hard seeds (Palo Verde, Mesquite) and invent other experiments that could be done with these seeds. Students could use other methods to scarify (hot water, lemon juice). Another medium could be used instead of water (soil). Students could compare results between different variables.

Assessment:

Students will be given a short, fill-in-the-blank quiz, to be done in small groups. Also, the instructor is going to ask orally about the main points in the lesson.

Resources and Materials, Cultural Object, and Activity:

Handouts, seeds, jars with lids, water.

Modifications for students with disabilities:

Students will have hands-on experience with the seeds. Teacher will encourage students to help each other to come up with ideas, and to work cooperatively.