

Pattern Analysis

An elementary school teacher is conducting a lesson on plants as living things. The students have had several long sessions in which to observe 24 similar potted plants:

8 pots are upright and the plants are growing upward;

8 pots are lying on their sides and the plants are growing upward;

8 pots are suspended upside down with the soil held in the pots by a cover through which the plants protrude, all curling up around the pots and growing upward.

In addition, the students have had good opportunity to observe closely a transparent display in which about 20 irregularly cylindrical seeds have been planted. These seeds are oriented at 20 different angles from the horizontal, some pointed up, some down, some sideways. Each seed has sprouted a root and all the roots point down.

The objective of the lesson is to teach the students to observe carefully and to formulate original scientific generalizations about the growth of plants.

Teacher: Now that we've all had a chance to examine all these potted plants, would you tell me what you noticed about them?

James: Some are hanging upside down. They're funny.

Teacher: What's funny about them?

James: They're sick.

Marie: They look OK. How do you know they're sick?

James: Look how they're twisted up

Albert: So are these laying down. They twist up.

Frank: They're not sick. All the leaves are green.

Teacher: Are they, Carol?

Carol: Sure. They're OK. They're just trying to get air.

May: There's air all around. Why do they twist up?

Frank: They're looking for sun. They can't get sun if the leaves are laying face down, so they curl up.

Teacher: That's very good, Frank, especially because we learned that plants need sun. Now, boys and girls, how about these seeds? (Moving to the seeds planted in the transparent display). What do you observe about them?

James: They all got tails.

Teacher: Fred?

Fred: They're not tails. They are roots.

Helen: They're sick. They're all going down instead of looking for sun. They're sick.

Teacher: Helen must have looked very carefully because she noticed that the roots all grow down. That's right, Helen. Are they all sick, too?

Billy: I guess the leaf parts go up for the sun but the root parts go down for water. There's wet down there at the bottom.

Teacher: That's very good observing, Billy. Very good. And you gave a reason, too. That's fine. Now can anyone tell us again the things we've learned about roots and leaves, so I can write out on the board the things we've discovered.

The patterns the children look for are different from the patterns the educational researcher looks for--although sometimes the attention is on curricular issues. Here there are patterns of call on children, using first names of students who last spoke, effort to reward desired responses, and willingness of at least the speaking students to participate in the activity set by the teacher.

Excerpt from *Pattern Analysis*, a handout by David Ireland and Thomas Russell used in the Ottawa Valey Teaching Project, Ontario Institute for Studies in Education.