

## Middle School Science

Students at Lincoln Middle School have been working on a project called Feed-A-Friend. The Feed-A-Friend project is an umbrella for several ongoing inquiry activities. The overall goals for the project, from the educator standpoint, is to introduce and/or reinforce McRel content standards 4.2, 5.2, 5.5-5.7, 6.4, and 6.5 in addition to a continuation of experience with the scientific process (standards 11 and 12). But, just in case you don't have a copy of the content standards on hand, this means that students will be learning about the structure of plants and how plants use sunlight to grow and reproduce; how plants maintain stable internal conditions while living in a constantly changing environment; how plants react to environmental stimuli; how energy is transferred from sunlight through plants and released as heat energy by consumers, and how plant material is recycled in ecosystems.

The Feed-A-Friend project presents students with the mission of growing a one-meter-square garden that can produce enough cumulative calories to feed a child their age with enough nutritionally balanced calories for one day. That mouthful opens the door to many key questions such as:

- How many calories does a student my age need each day?
- What is a calorie?
- How do plants (food) get calories?
- How are calories determined?
- What does nutritionally balanced mean?
- Where do the materials come from that makes a plant if plants don't "eat"?
- What requirements do plants have to stay healthy?
- How do you make compost?

To answer these questions students design and/or conduct investigations in the laboratory that determine factors needed for germinating seeds; the calorie contents of foods; the effects of light, soil, and heat on plants, and even the role gravity plays in determining the way a plant grows.

Mean while, in the gardens, students are researching what to grow and experimenting with how to solve garden problems. Each team starts with 1000 Rupees. From that 1000 Rupees they must rent the land and purchase water, seeds, tools and fertilizer (compost they make themselves is free). Each team learned how to use Excel to construct a budget spreadsheet to monitor expenses. They also must keep a gardening log, construct a map of their gardens, and maintain a harvest record. All work is done electronically and kept in a team file on our server.

But that is not all. To encourage students to think more globally, each team must develop and answer a question(s) that reach beyond our school community and that build awareness. For example, some groups are trying to answer the question, "how does the average calorie and nutritional intake for a child my age compare between the world's richest nation and the world's poorest nation?" Other groups are researching a specific

country of interest, such as Mali, where one of our students is from, or America, where students have often heard about how obesity is a problem.

The project will conclude with a team presentation that brings together their garden results with their research and class investigations. They must use available technology, but, again, no paper resources. Teams will present their findings during an end-of –the year celebration called, Wellness Week.

By Lori Riggleman, Middle School Science Teacher

