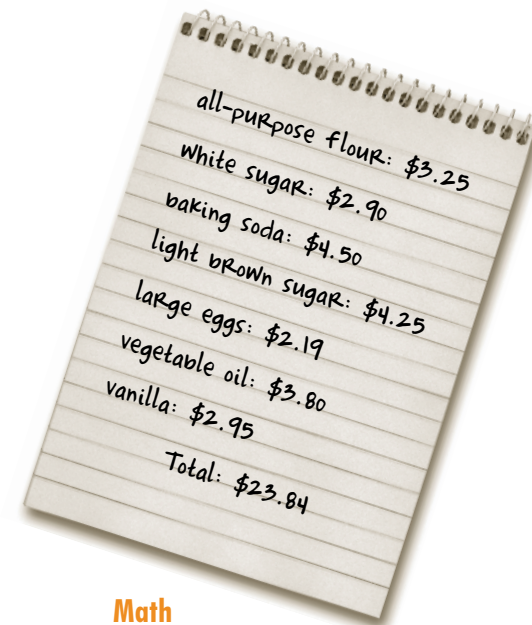


Integrating CTE and Academics: One Teacher's Account

BY DEBORAH ANN BOLGER



Math

This is an easy concept to integrate into a foods class, but not an easy concept for special needs students to grasp. I often have to make references to money when talking about measuring in recipes. For example, one-half of a cup is equal to 50 cents. Student activities may include increasing and decreasing the recipe's ingredients, pricing catering events, selling products in a school kiosk to students and faculty, and using weights and volume for figuring portions.

One eye-opening activity for students is for them to plan a day's menu by eating only at fast food restaurants for all three meals. They write the menu as they would order it from the restaurant, along with portions and items; calculate the total amounts of calories, fat, protein, carbohydrates, sodium and sugar in the foods they have selected; and calculate the amounts of nutrients needed for a teen considering age, gender and activity level. Once these figures are obtained, students must go back to the fast food restaurants and select foods to keep them within the caloric and nutritional needs identified; they are amazed at how eating poorly on a daily basis contributes to excessive weight gain.

Science

Science is an area that my students are exposed to the least. It can be a fun subject for hands-on activities with visual stimulation. One activity that directly

relates to safety and sanitation is done by creating a surface on a paper plate similar to a Petri dish with Knox gelatin. Students take samples from various areas around the classroom/school such as the water fountain, desktops and the bottom of their shoes to see what grows on the plate under various conditions. They are amazed to see that bacteria still grew on areas they thought to be clean. Other examples:

- Salt and sugar crystals are exciting to grow in the classroom and they provide good comparison and contrast when looked at through a microscope.
- Making mayonnaise and salad dressings from scratch demonstrates the effect of emulsion.

The science of baking opens a wide area for activities. One activity the students enjoy is when I tell them they are going to bake a cake. Ingredients such as flour, brown, white and powdered sugar, salt, baking soda, baking powder, yeast, eggs, milk, water and vanilla are placed on the table with measuring equipment. The problem: they don't get a recipe. Activities related to baking can be modified to discuss the relationship between the effects of ingredients when cooked.

Social Studies

When it comes to this subject, students are always fascinated when they learn how and when their favorite food items came to fruition. Everything we consume has an origin, so I have students research and create a food history timeline. They select items to find out how and when they were invented or discovered; compose a small card with a picture of the item and any interesting facts that relate to the discovery; and the cards are dated and added to a large timeline on the bulletin board so all students can identify with their favorite foods.

Geography

Geography is easily incorporated into a

foods curriculum given that countries offer a variety of cuisines. This activity integrates technology, social studies and English into a project. Students select a country; complete a K-W-L (know, want to know, learned) worksheet; create a PowerPoint presentation that covers geographical and historical facts; identify food indigenous to the region and various meal patterns that make the country unique; and identify agricultural products of the country, and its customs. English skills are used throughout this project and two slides must contain two types of poems: acrostic and cinquain. The acrostic poem must be done on a spice or herb that is frequently used in the recipes from the country. Example: SAGE

S-tuffing recipes use a lot of this herb
A-flat, long, leaf
G-green in color
E-everyone agrees it has an
overpowering flavor

The cinquain poem describes something about the country and consists of only five lines. Line one and five describe the same topic, line two includes two words that describe the topic, line three are nouns ending in "ing" and line four is a small five to six word phrase that describes the topic. Example:

Festivals
Celebration, Attractions
Eating, Drinking, Dancing
Families gathering for fun and laughter
Carnivals



Five years ago the term career and technical education (CTE) was not part of my vocabulary. Now as a teacher in family and consumer sciences (also working on my Ph.D. in occupational and technical studies), I have learned how to integrate academic coursework into my CTE curriculum. I teach a high school program called

Commercial Foods which is designed to prepare students for careers in the food service industry. The majority of students are special needs youth who generally will not go on to postsecondary education, so my emphasis is placed on workforce development and life skills.

Students have resource classes; they do not have many academic classes in the

areas such as the core four: science, math, social studies and English. It is challenging and exciting to create projects that will expose the students to areas of education that they might not otherwise experience. How exciting to intertwine academics and the foods curriculum so that students don't think of it as learning a core subject.

The second part of this project covers making a travel brochure in Publisher. Students make a brochure to entice visitors to the country. They include pictures, tourist attractions, climate and geographic information, and food selections native to the country. After the students have researched their country, they select a recipe and prepare the food for the class to taste.

Hands-on Learning

Since most students are excited about using technology, I try to incorporate the computer activities related to English Composition in my curriculum as much as possible. For Black History Month a couple of projects included writing a report with a PowerPoint outline for presentation on an African American chef, inventor, or influential leader and submitting recipes to the classroom cookbook.

A dinner project is another way to use a variety of academics in one activity. Students select a well-balanced meal they want to prepare at home. They select the recipes; make a grocery list of items needed and items on hand; price and shop for the foods needed; cook the menu items; set the table; serve the foods to the family; and clean up the kitchen when they are finished. Upon completion they write a paragraph on the steps of preparation, timetable and any areas of difficulty they encountered. The final step involves a parent evaluation of the total dinner project.

CTE and Academics: A Good Partnership

Chadd and Drage (2006) identified that CTE will continue to decline unless we can clearly show our programs: a) contribute to academic success of students as measured by state academic tests and b) serve as a motivation for students to stay in school and help students perform better in academic courses. As a CTE teacher, integration of academics is necessary to promote education across the curriculum with practical applications of math, science, social studies and English. It also reinforces classroom learning so students make the connection through real-world experiences. **I**

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References

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Integrating CTE and Academics: One Student's Account

BY BRENDAN FENNESSY



ISTOCK PHOTO

While most high school juniors in Howard County, Maryland, were quietly studying in their classrooms, students enrolled in the Energy, Power and Transportation Academy (EPT) of the Applications and Research Lab (ARL), in Ellicott City, were making a lot of noise, welding and cutting away to build an all-terrain wheelchair.

I was a part of this unique project and learned valuable real-world problem solving techniques used by engineers. While many of us entered this academy with only a vague idea of the tasks that lay ahead of us, by the end we knew a lot about turn-

ing the knowledge of an engineer into an operational vehicle.

John Ensor and Robert Hodge, academy teachers, taught us the foundations of engineering and basic shop safety skills. Then we learned how to use SolidWorks, a CAD software program that enabled us to design a 3-D model in our computer lab. The sub-system team leader, Brian Severson, recalled, "I've taken some engineering classes at my home high school [Wilde Lake High School], but this class has so much more to offer because of the advanced facilities."

Once we passed the preliminary stages of the coursework, we were ready for

a project. Ensor suggested designing a vehicle that would allow a disabled camper to experience a hike with the other campers. Our goal was to build an all-terrain wheelchair with special adaptations to help a middle school student with a broken leg participate in a 10-mile hike.

Our class was divided into groups of two or three to brainstorm and sketch ideas. Each group further developed their ideas and presented them to the class as if they were real engineers competing for a contract. One of the concepts that was hard to grasp was just exactly what is an all-terrain wheelchair? In our research, we found designs looking like anything from

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