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## **Using Children's Literature to Link Mathematics and Social Studies: A Multicultural Exploration with Bread**

Denisse R. Thompson  
University of South Florida  
College of Education, EDU 162  
Tampa, FL 33620  
813-974-2687  
[thompson@tempest.coedu.usf.edu](mailto:thompson@tempest.coedu.usf.edu)

Kendra Holyoke  
University of South Florida (student)  
1236 Horsemint Lane  
Wesley Chapel, FL 33543  
813-994-0351  
[krholy@aol.com](mailto:krholy@aol.com)

Denisse Thompson is a mathematics educator at the University of South Florida. She is interested in using literature to integrate mathematics with other content areas.

Kendra Holyoke is an undergraduate student majoring in elementary education at the University of South Florida. She became interested in using multicultural literature with mathematics while completing an independent study project with Dr. Thompson.

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The high stakes assessment environment in Florida, with an emphasis on reading, writing, and mathematics, has placed pressure on teachers to find time to teach social studies. One way to maintain social studies in the elementary curriculum is to integrate the content with the teaching of mathematics and language arts. Elementary teachers may naturally think of the social studies and language arts connections, through the reading of books with a multicultural connection; however, they may overlook the mathematics connections that are possible with those same books.

The purpose of this article is to illustrate how mathematics and social studies connections can be made by considering a unit that uses several children's books with a bread theme. By focusing on bread and its relationship to cultures throughout the world, natural social studies connections can be made to economics, geography, cultural values and traditions, and history. Such connections incorporate the cultural diversity recommended in the national standards for social studies (National Council for the Social Studies, 1997) and also relate to the geography of people, places, and environments recommended in Florida's Social Studies Curriculum Framework (1996). Simultaneously, each of the five mathematics strands in the Florida Mathematics Curriculum Framework (number and operations, geometry, measurement, algebraic thinking, and data analysis & probability) can be incorporated with the same material.

## Summary of Several Bread-Themed Books

*Bread Is for Eating* (Gershator and Gershator, 1995) provides a brief story about how the grain for bread is grown and harvested, and incorporates Spanish songs for each stage from planting the seeds to eating the bread. *Tony's Bread* (dePaola, 1989) tells the story of a young man who wants to become the most famous bread maker in northern Italy. For a look at different breads associated with various cultures, *Everybody Bakes Bread* (Dooley, 1996) provides a nice complement to *Tony's Bread*. As a young girl visits neighbors to find a three-handled rolling pin, she samples breads made by her ethnic neighbors. *Pancakes for Breakfast* (dePaola, 1978) tells a story, through pictures only, of all the processes needed to make pancakes, from mixing flour, to collecting eggs from the chickens, to milking the cows, to churning butter, to collecting syrup from the farmer.

Two non-fiction books that provide information complementary to the story books are *Pass the Bread* (Badt, 1995) and *Bread Around the World* (Rothman, 1994). The first of these describes different types of bread, how they are made, and the cultures where the breads are found. The second book is a large picture book illustrating a cultural variety of breads and occasions where special breads are used.

### Activity 1: A Class Bakery

A class bakery can be established by having teachers and children collect or make a variety of breads from different cultures. Ethnic grocery stores in many cities provide a good source for obtaining such breads. Local bakeries might donate bread if notified that the class needs breads for a lesson exploration.

With the bread, the class can establish a class bakery at which children can take turns role-playing the baker and the customer. In displaying the breads, children can sort the breads using attributes such as size, color, and shape (geometry), arrange the breads in patterns (algebraic thinking), and indicate different costs (number & operations as well as economics). Breads can also be arranged by geographic location, with children using a map or globe to locate the country or culture from which the bread originates (geography).

Children can role-play purchasing bread for their family. Variations on price are possible by offering discounts for purchasing multiple loaves, by offering special purchases on certain days of the week, or by calculating sales tax. As children purchase breads, the baker can make change using paper money and coins. If only certain denominations are available on a given day, the baker will have to consider the relationships between money quantities; for instance, if nickels and pennies are the only coins available on Monday, the baker must make all the change with these coins.

Children can also explore the different currencies used throughout the world and relate these currencies to U.S. dollars (number computations and economics). Daily newspapers usually carry the current exchange rate. In fact, children can plot the fluctuations in the exchange rate on a daily or weekly basis (data analysis), possibly

relating any major changes to economic or political events occurring in the various countries.

If a wide variety of breads are collected for the class bakery, groups of children can work together to research information about the country. For instance, children can find the average yearly consumption of breads in the country and the average amount spent in the country on this staple, with the results compared across countries.

#### Activity 2: Exploring Breads

Children can measure and weigh whole loaves of bread, exploring the differences between light and dense breads (measurement). The comparative weights of the loaves can provide benchmarks or referents for children when dealing with customary or metric units of measure. For instance, how many loaves are needed to approximate 10 pounds or 15 kilograms? In addition, how many loaves of pita bread are needed to weigh about the same as a loaf of sandwich bread?

Children can describe the breads in terms of geometric shapes; in particular, sandwich breads are approximately rectangular prisms, French bread is roughly a cylinder, and some bakery breads (e.g., Polish rye bread) are roughly hemispheres. Children can conjecture the shape of the cross section when the bread is cut in a particular way and then test their conjecture (spatial reasoning).

Children can also compare the number of slices per loaf and the number of sandwiches to be made per loaf (number operations and estimation). Given this information and the different costs for each type of bread, children can determine the most economical bread for their family.

Another economics and mathematics extension is to have children budget \$20 to purchase bread for a week. Given costs of several types of breads, they can determine the type and number of loaves to buy with their \$20. If children record their results in a table and look for patterns, they are engaging in some informal algebraic thinking investigations.

If kitchen facilities exist or if a bread-making machine is available, children can explore making their own breads, dealing with recipes and adjusting the amounts to make enough for the class (measurement and number operations). Children can make loaves in different shapes and can cut breads in various designs for sandwiches or small party hors d'oeuvres (spatial sense).

#### Activity 3: Collecting Data about Themselves and Bread

Children can taste different breads, record their favorite bread and then graph the results of the taste test as a class. In addition, children can develop a survey to rate each of the breads on features of interest to them, such as taste (sweet, plain, sour), use for the bread (sandwich, main meal, dessert), number of bites needed to eat a slice, etc. This information then becomes the basis for further graphing or number work. For instance, the class can determine the mean, median, or modal number of bites needed to eat a slice of a particular type of bread; these results can be compared for different types of breads (data analysis).

For a week, children can be asked to record the amount and type of bread that they eat each day. The class can tabulate these results and then graph them, estimate the amount of bread eaten in a month or year for the family or the class, and approximate the cost to purchase that much bread. The children can even investigate

the amount of bread purchased by the school cafeteria each week, consider the amount of storage space needed for this amount of bread, and estimate the cost to the school each year for bread. Children can write word problems using the information they have collected, with the word problems recorded on index cards and placed at learning centers for children to solve during mathematics class time.

### Technology Resources

Many additional resources exist on the Internet to supplement further social studies connections. For instance, one website provides a timeline of food, indicating that bread was introduced about 10 000 B.C. (<http://www.gti.net/mocolib1/kid/food.html>). Another website provides a history of bread, suggesting that the invention of bread was an accident (<http://www.breadworld.com/yeast/history.asp>). A government website charts grain usage over time, along with comparisons of the amounts of different foods that Americans eat (<http://www.usda.gov/news/pubs/fbook98/ch1a.htm>).

Websites such as these can provide an endless exploration in social studies and mathematics. With the technology available to today's students and teachers via the Internet,

in-depth research can be done on individual countries involved, their populations over time, and the change in lifestyles. Children can take a virtual tour of a bakery. They can even discuss the unit with classes in other parts of the world via teleconferencing on Internet II or communicating through email.

### **Conclusion**

A thematic unit, such as a unit on bread, provides a perfect opportunity to explore cultures. The recommendations from the National Council for the Social Studies include

a thematic strand devoted to culture and cultural diversity, stating that “culture helps them [children] comprehend and make sense of themselves as individuals and members of various groups” (NCSS, 1997, p. 14). It is important, especially in the elementary grades, for children to discuss different cultural customs and beliefs and to realize that all people should be treated equally, regardless of culture or skin color. The NCSS recommends that teachers help children “consider the strengths and advantages that this diversity offers to the society in general, and to their own growth as a human being in particular” (p. 15). For societies with a belief in democracy and the value of human rights, it is especially important for children to appreciate cultural diversity.

As illustrated in this article, mathematics, social studies, and literature can be easily and effectively integrated to give students realistic and meaningful explorations of a wide variety of topics. The activities suggested here, in the context of a unit on bread, can be applied to many other areas of study. Today’s elementary teacher must take advantage of every opportunity to make social studies and mathematics as real-world as possible. With the increased demand for performance on standardized and state-level tests, social studies often receives less priority in the curriculum because it is not the focus of such tests. Integration with other subject areas can guarantee that the social studies curriculum continues to be taught.

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