

Shopping for Mathematics in Consumer Town

Ann L. Wolff and Nancy Wimer

Justin and Jenny, grade 12 math students, walk with their preschool friends Sean and Meg to the local grocery store. There, two classmates are tending the cash registers. The six of them, along with others, are participating in an in-school “field trip” to Consumer Town, located in the South Windsor High School front lobby. The field trip is part of a project that the consumer math and child development classes developed for the preschool children attending the high school’s Learning Center. The grocery store they visit is only four feet tall, with cardboard walls. Instead of actual pretzels and apples, the store displays pictures of the various products it offers.

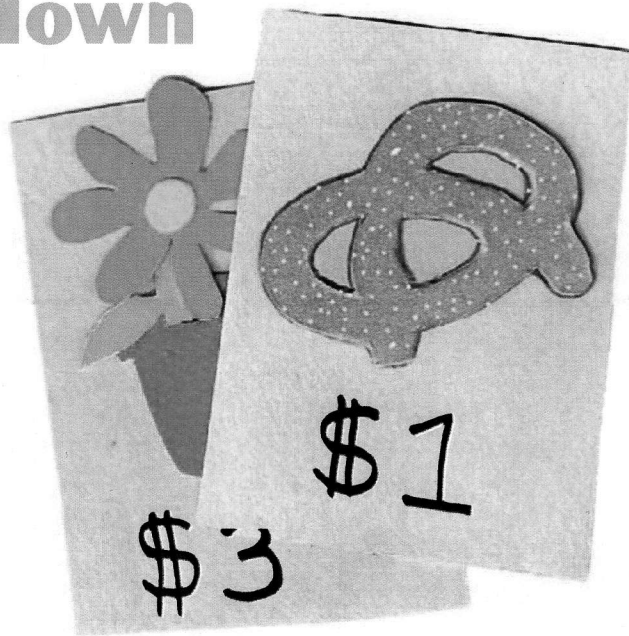
There is sometimes a disconnect between real-world applications and the material covered in standards-based teaching. It can affect children of all ages—early childhood through secondary. In a joint position statement, NAEYC and the National Association of Early Childhood Specialists in State Departments of Education (NAECS/SDE) encourage teachers to address learning standards in a positive manner:

To be effective, early learning standards must explicitly incorporate (1) all domains of young children’s development; (2) content and desired outcomes that have been shown to be significant for young children’s development and learning; (3) knowledge of the characteristics, processes, and sequences of early learning and skill development; (4) appropriate,

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Photos courtesy of the authors.



specific expectations related to children’s ages or developmental levels, and (5) cultural, community, linguistic, and individual perspectives. (2002, 4)

Several teachers at South Windsor asked themselves, What creative and thoughtful strategies can we use to meet math and other learning standards while at the same time promoting the joy of learning?

In education we know there’s never only *one* way to accomplish a goal, but there is always a way that is appropriate for that day or even that moment. Through the creative use of cardboard boxes, paper, scissors, clip art, and Velcro, the teachers of the consumer math class, the child development class, and its accompanying lab class, The Learning Center, found a way to make learning relevant and interesting for high schoolers and preschoolers alike. The consumer math teacher was looking for projects that would spark students’ interest while helping them apply their math skills. The course covers topics such as paychecks, budgeting, shopping, taxes, savings, home ownership, banking, and car ownership. The child development teacher wanted to integrate her curriculum with other subject areas. Using a cooperative curriculum approach, these teachers joined forces.

A bit of history

The previous fall, the child development classes (fifteen 10th- through 12th-graders) worked together with the fifteen 3- to 5-year-olds who attended the lab classroom to create Safety Town. Safety Town consisted of cardboard box versions of commercial and residential buildings, with roads in between that allowed children to travel on scooters and learn safety rules firsthand. The project was a success for both age groups. For the preschoolers, Safety Town offered learning across development areas: for example, literacy—reading books, signs; physical development—walking and movement on scooters; social studies—learning about communities; and math—estimating paper length to cover boxes while recognizing shapes.

Exploring Safety Town helped the children achieve several Connecticut state early childhood performance standards in various areas. For example, in literacy, the children

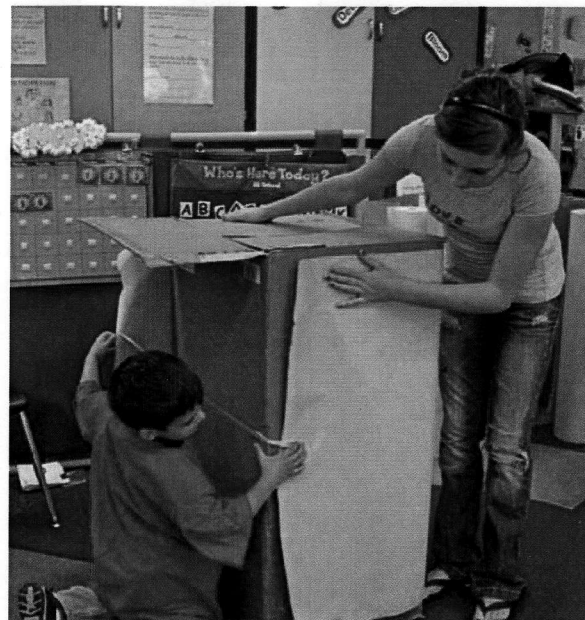
- used multiple-word sentences or phrases to describe ideas, feelings, and actions.
- demonstrated understanding of basic conversational vocabulary.
- demonstrated understanding of messages in basic conversation.
- recognized several printed words. (State of Connecticut State Board of Education 2007)

Since Safety Town had been the highlight of the fall session, teachers planned a similar project for the spring session. The consumer math students would construct Consumer Town. The child development students would encourage the young children to begin learning about the everyday use of money. Consumer Town would help children achieve learning standards (in other subjects as well as math) and experience hands-on learning, and it might encourage some reluctant high school learners to regain the desire to learn.

The process and standards met

To get started, the consumer math classes watched a DVD (created by the students in the video production class) showing the Safety Town buildings and activities. After meeting the children, they brainstormed ideas of stores that would be of interest to the preschoolers. The math students then formed groups to construct the storefronts out of cardboard boxes, paper, and markers. They found pictures of

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products to sell and determined their prices. The consumer math teacher helped the students understand that the young children were just beginning to understand numbers. Students decided the denominations of pretend money should be \$1 and \$5, nothing higher. They then based the prices on these denominations. One math student said, "It was interesting pricing out all the items because, let's face it, where else are you going to get an iPod for three dollars?" Consumer Town included The J&J Corner Store, a gift shop, a hardware store, a pet store, the Cozy Corner Restaurant, a convenience store, a sporting goods store, several grocery stores, a bank, and even a Mother's Day shop, since Mother's Day was right around the corner.

As the math students planned their businesses, the child development students brainstormed ideas with the young children and began constructing their own buildings—an ABC store, a numbers store, a dinosaur store, and replicas of the children's houses, placed as Consumer Town suburbs.

Consumer Town helped the preschool children achieve some of the National Council of Teachers of Mathematics geometry standards, such as

- recognizing, naming, building, drawing, comparing, and sorting three-dimensional shapes;
- finding and naming locations with simple relationships, such as *near to*;
- recognizing and creating shapes that have symmetry;
- recognizing and representing shapes from different perspectives; and
- recognizing geometric shapes and structures in the environment and specifying their location (NCTM 2002).

Consumer Town also allowed the children and older students to meet the NCTM Connection standards, which state that prekindergarten through grade 12 math education should enable all students to

- recognize and use connections among mathematical ideas;
- understand how mathematical ideas interconnect and build on one another to produce a coherent whole; and
- recognize and apply mathematics in contexts outside of mathematics (NCTM 2002).

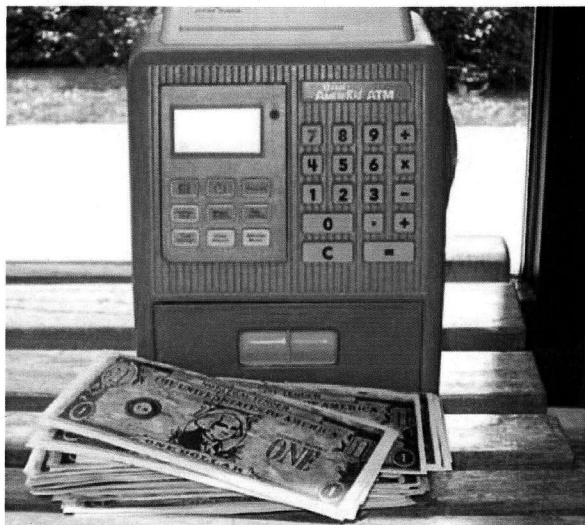
Experiential learning

Whether preschool or high school age, learners need to know how various concepts learned in class can be applied in the real world. Such understandings help them become independent, lifelong learners. "Students in all ability groups, when asked what changes would help them learn more in school, talk about needing opportunities for hands-

Creating Consumer Town in Other Settings

Not everyone is as lucky as we are in having a laboratory preschool in a high school. Here are some ways that other early childhood programs could implement Consumer Town as part of their curriculum:

- Find a local high school that has child development classes, and propose working with them. Some middle schools may have this department or similar departments.
- Select a high school with a future teachers club and see if its members might adopt your preschool and contribute to the curriculum.
- Identify a high school or faith-based institution that has a community service requirement, and offer the building of Consumer Town as a service project.
- Have a parents' night or weekend, when family members can work with the children to build and operate the town.
- Work with the teachers of fourth- or fifth-graders to invite their students to help the preschoolers create and operate Consumer Town.
- Plan a project with a focus on the topics addressed through Consumer Town. Allow the project to follow the children's interests. For example, have the children take turns being consumers and clerks.
- Contact teacher educators at local colleges or universities. Groups of early childhood students could take on such projects while interning in preschool classrooms.



on and applied learning" (Wagner et al. 2006). We teach the child development students to be educational guides, leaders, and innovators, and in this project, they acted as the children's teachers. The students used descriptive words with the children when referring to shapes, location, and colors throughout the building process as well as during the visits to Consumer Town.

When the big day arrived, the high schoolers assembled the buildings in the school lobby to create Consumer Town. After sharing a short circle time and a story about shopping, the child development students brought the children to the town. The children, eyes wide, approached the bank with oohs and aahs. A consumer math student paired with a child development student to give each child a debit card and a PIN number to plug into a child-size ATM. As the children typed in the PIN numbers to receive a bundle of money, their older partners assessed their recognition of numerals. Each child also received a shopping basket.

First, the children walked around the town window shopping. Once they got the lay of the land, the high schoolers took them around to make their purchases. When the children saw a product they wanted to buy, they told the shopkeeper, paid for the item, and pulled the picture off the storefront (affixed by Velcro so that it could easily be restocked for the second session). Of course, a lot of counting took place during transactions. When Sean, a young 4-year-old, wanted to make a purchase, he needed high-schooler Justin to count out the money slowly to show him exactly what \$3 looked like. At the next storefront, Sean bought another item for \$3. This time, Justin looked on, but Sean did not need help. He paid the correct amount.

Children were also developing social skills. Child development students first modeled how and then encouraged the children to ask the store owners questions about

the items. "What does this product do?" 3-year-old Josh asked, pointing to a tool in the hardware store. "What's the Special of the Day?" 4-year-old Samhith asked in the Cozy Corner Restaurant, prompted by his child development buddy. Five-year-old Shawna wanted to know, "Can I have my Mother's Day gift wrapped?" The store-owner math students used patience, respect, and courtesy, social skills that many of them, as reluctant learners, were not used to giving or getting.

When the bell rang for the high school students to switch classes, the preschoolers returned to their room for snack and a bathroom break. Then the next set of high school students came to take the children back to town for another 20-minute shopping spree.

Twenty consumer math students served as store clerks and cashiers in town. A few of the stores, such as the letter store and the dinosaur store, were open on a self-serve basis. On day two, the students added roads to the town. The children cruised around town on scooters, getting some gross motor skills practice while shopping.

The outcomes

Throughout the Consumer Town experience, all learned from each other—the child development students, observing and helping the young children, learned how children

learn best. The preschool children learned about numbers and money with help from the high school students. The high school students all learned about different ways to work with children by observing one another's interactions with the preschoolers. The teachers learned how this experience affected the students and considered ways to improve it the following year.

"[This project] taught and gave children the responsibility of picking items they either want or need. The child development students got a better feel for the children's interests, such as their favorite pets and their eating preferences. Consumer Town really allowed the children's imaginations to run free. We may have seen scooters and boxes, but they saw cars and shops. Bringing the children to an environment outside the classroom really contributes to their development and learning. It gives them real experiences of choice, decision, and smart spending."

—Child Development Student

"I learned that just watching their parents shop teaches children math. I often heard them saying, 'My mom does this . . . ' or 'My dad does this . . . ' They learn just from observing everyday things."

—Consumer Math Student

"It was interesting watching the kids learn—how the first day they needed help from the high school students in counting the money, but as the days went on, they started to count all on their own."

—Consumer Math Student

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"This project allowed for true individualization. Most of the 3-year-olds were still at the stage of simply counting single dollar bills, with help, to purchase their item of choice. Several of the 5-year-olds were getting math lessons from their child development student, like learning that when they had five single dollar bills to begin with and spent three dollars for an iPod, they had two dollars left. The child development students were learning firsthand that while a young child can easily count to 10 via rote, it does not necessarily follow that he or she comprehends what the numbers are for and how important application is at times like this."

— Child Development Teacher

We became like a one-room schoolhouse as students of all ages learned from one another.

The future

One shortcoming of this project was that the preschoolers saw no scarcity of money, thinking that it is everflowing from the ATM. The experience did not foster children's

understanding about the sources of money and the connections between money and work. Next time we implement this project, Work Town will join Consumer Town, exposing children to a more realistic flow of money.

Perhaps the high school students can learn about and apply Howard Gardner's theory of multiple intelligences (Gardner 2006) and consider the many different ways children learn. The students could compose a jingle to go with their product to appeal to children through music, or design a flyer advertising their product, or draw a map for children to follow.

High Schoolers Met Standards Too

The Consumer Town project helped the high school students meet National Council of Teachers of Mathematics geometry standards (NCTM 2002), such as

- drawing and constructing representations of two- and three-dimensional geometric objects using a variety of tools
- visualizing three-dimensional objects and spaces from different perspectives and analyzing their sections
- using geometric models to gain insights into and answer questions in other areas of mathematics
- using geometric ideas to solve problems in and gain insights into other disciplines and areas of interest, such as art and architecture

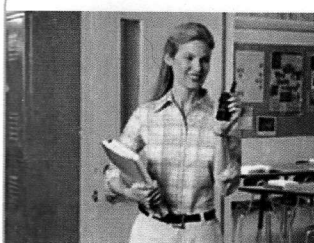
We were happy with the initial run of Consumer Town. Throughout the unit, classes were full of enthusiasm. We became like a one-room schoolhouse as students of all ages learned from one another, creating an awesome atmosphere of interaction and interest in new material. Consumer Town was one answer to creatively implementing learning standards while teaching mathematics in a fun, interactive way. When we add Work Town in the future, we will work with the high school business department as well. Work Town will, for the first time, introduce the concept of earnings.

By implementing a large-scale project relevant to young children's real-life experiences, we went beyond just achieving specific learning outcomes. Consumer Town tied learning in school to the real world.

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