**Charles
Bender**

Math-Kitecture at PS 88

“Math-Kitecture” is a program for integrating computer, mathematics and architecture into the elementary level curriculum, demonstrated by fourth and fifth grade students in New York’s Public School 88.

Introduction

The Office of Instructional Technology (OIT) offers support in instruction and professional development in the use of computers and related technology in the K-12 classroom. OIT started as a program to integrate computers in middle school classrooms as part of Project Smart Schools. Today’s OIT includes teacher workshops, city-wide conferences and Internet-based resources. One of OIT’s activities is Math-Kitecture, a website about using architecture to do math (and vice versa). The activities presented here, starting with “Floor Plan Your Classroom,” containing directions for making floor plans using computer software, offer an engaging way for students to study mathematics by doing real-life architecture. Everything is designed to mesh with the middle school mathematics core curriculum for New York State, as well as the mathematics performance standards. When students submit a completed project, the results can be displayed in the “student gallery” on the website.

Math-kitecture at PS 88

Dr. Ellen Margolin, the principal of PS 88 (Public School 88) in district 24 Queens, New York City, attended the annual “Share Fair” of the Association of Supervision and Curriculum Development (ASCD), held in January 2001 at Fordham University. While there, she sat through the Math-Kitecture presentation. The idea of using architecture to teach mathematics appealed to Dr. Margolin, and she was looking for ways to integrate technology into the kindergarten-5th grade curriculum.

Dr. Margolin tapped Dan Fenner to initiate the project. Mr. Fenner is the technology staff developer at PS 88. In an e-mail to the Math-Kitecture site, he wrote “My principal (Dr. Ellen Margolin) attended your workshop on Math-Kitecture when we were at Fordham and she loved it. We’ve started it at our school (P. S. 88) and it is as good as it looked. We have a couple of 4th grade classes and a couple of 5th grade classes working on it. We’re starting small in order to work out the bugs. Mostly, we’re following the notes posted at the [Office of Instructional Technology] site. We intend to have as many students as possible make their floor plans on the computer using Claris/AppleWorks, and one of the teachers involved is interested in a CAD program. We’ll send you some of the projects when we’ve completed them. I’d also like to send you some notes on our procedure and our progress. Maybe you have some other ideas to help us along.”

When his students completed their first CAD (computer-aided design) floor plans, Mr. Fenner submitted them as email attachments to the web site’s student gallery.

The procedure step-by-step

According to Mr. Fenner, these were the steps the students undertook to complete a CAD floor plan:

1. Students estimated the classroom measurements during lunchtime time.
2. One student made a ClarisWorks spreadsheet of students' predictions of lengths and widths.
3. Pairs of students measured the classroom during lunch time using a tape measure. They measured windows, doors, computers, teachers desk, closets, radiators, black board, etc. (Figure 1).
4. Another student made a spreadsheet of the actual measurements. Copies of both spreadsheets were distributed to all the students.
5. Class 4-227 made a scale drawing of the room on large graph paper [1"=1' scale.] They used it as a model (Figure 2).
6. In the computer lab, individual students used AppleWorks 6 to make a CAD floor plan of the classroom (class 4-227 worked in pairs). Mr. Fenner demonstrated what to do using Mac Manager software.
7. Using Apple Airport file sharing technology, the students' AppleWorks files were transferred onto Macintosh I-Books. Each student received his or her own I-Book on which to work.
8. While working in AppleWorks, the students used the grid lines and rulers built into the program to draw and measure the different elements and position them correctly (Figure 3).
9. When the floor plans were completed, with dimension lines and key/scale included, they were e-mailed as attachments to the web site (Figure 4).

When asked which of the steps proved especially difficult for the children, Mr. Fenner said that the students had the most difficulty with converting to scale, that is, knowing how big to draw a line on the computer. He said the children should work in pairs, so they can verify the correctness of the measurements. The whole project took about five weeks to complete, with students working on it at least twice a week during 45-minutes pull-out sessions.

Figure 1

Figure 2

Math-kitecture's future at PS 88

Mr. Fenner said that PS 88 plans to increase the number of students working on Math-Kitecture, and will probably have students measure the classroom and work on the laptops during the mathematics class itself. This is as opposed to the current model, which is having the students pulled out of the classroom to work on Math-Kitecture.

Figure 3

Figure 4

About the author

Charles Bender is a staff developer for the New York City Board of Education, Office of Instructional Technology. He specializes in integrating technology into the mathematics curriculum.