

Mary Ewing

An experienced high school math teacher moves to the middle school and has problems with grouping in a remedial math class where each of the eleven students is working at a different level.

“Forget it! I have to do my own work!” Joe Johnson’s anger at his classmate’s interruption was way out of proportion to the concentration he had been investing on his worksheet.

“Well, excuse me!” Anna Jones affected great indignation to hide her embarrassment at having her request for help rejected.

Mary Ewing was bending over a worksheet of word problems with one of her students, and she looked up in irritation when she heard this outburst from the other end of the room.

“Miss Margolis, would you please help Anna when you have a moment?” Mary addressed her teacher’s aide, who was across the room helping Hank with a division problem. Miss Margolis looked up and nodded, although she was clearly frustrated by the number of students clamoring for help. Mary knew that Betty Margolis was no wizard in mathematics and that it took all her concentration to make mental leaps from addition to division to fractions in order to accommodate the four groups into which Mary had divided her class.

“Miss Margolis promised to help me next!” shouted George, who had been waiting more or less patiently with his head on his folded arms. “This stuff don’t make no sense no how!”

Mary sighed and marshaled her characteristic patience and understanding. It was six weeks into the school year, and she was enjoying the year in most ways, but she dreaded the constant disruption and noise that seemed endemic to this seventh- and eighth-grade remedial math class. “George, you have been very patient. I will help you when I finish with group B. And Joe, next time someone in your group asks for help, you give it!” Mary realized that this outburst had distracted all the children, and she had exacerbated the disruption by addressing the principals from her seat beside Jesse. But Jesse was so close to grasping the arithmetic operation that had been eluding him since September that she did not want to leave his side until they had finished. Too often with this class Mary wrestled with just such a choice: disrupt her group instruction to control the class or risk overall bedlam.

This was Mary's tenth year teaching math, but all her previous experience was on the high school level. Mary had been excited last spring when she was offered the chance to teach at Littleton Middle School. She saw the change as a chance to meet new challenges and to stay "fresh" in her field. She was assigned four regular math classes, which ranged from general math to honors geometry, and one remedial math class during the second period. The latter was a group of eleven children, ages 12 to 15. The class was nearly balanced racially: six black and five white students, but that was where the symmetry ended. The skill levels and math backgrounds of the children were widely diverse. In this class Mary had some students who were working on two-digit addition and others who were ready for fractions. Individualization of instruction was required in all classrooms, Mary knew, but she had never found it so difficult to accomplish until now.

Mary had known that this would be the case when she first began planning during the summer. She familiarized herself with each child's needs through his or her test scores and other records and devised a plan for math that had worked well in her high school classes. She divided the eleven students into four groups according to their readiness and skill levels. On the first day of class she assigned groups as follows:

Group A: Division and fractions

- Hank Donovan
- Sheila Arjoon
- Sara Black

Group B: Times tables and multiplication problems

- Jesse Smith
- Jimmy Lyons

Group C: Four-digit addition and subtraction with regrouping

- George Sanders
- Adam Garth
- Jack Myers

Group D: Simple addition and subtraction

- Anna Jones
- Joe Johnson
- Peter Marks

By the second week, Mary modified her plan, as her personal experience with the children led to a refinement of group assignments. She moved Sheila to group B and Peter to group C. While this rearrangement resulted in groups of different sizes, Mary thought she had like-skilled students grouped fairly closely.

Mary spent the first week of the school year teaching cooperation and group learning skills almost as much as she taught math. Mary had attended a seminar on cooperative learning at her district's Teacher Center a few years ago

when the technique was first introduced, and she implemented aspects of the approach with her high school classes, modifying it as she felt necessary to fit the characteristics of her students. Mary duplicated her group formula in most of her classes this year. She arranged the desks in a horseshoe so that she could sit at the open end when working with one group. The children in other groups sat next to their group-mates around the horseshoe, working independently but sitting close enough to each other for help to be exchanged as necessary. Mary also introduced a token system modeled after one that served her well in her high school remedial classes. Each child earned tokens, redeemable for free time, bathroom privileges, computer time, or library time. Tokens were earned by completing one's own assignments successfully and on time, and they were also awarded on the basis of the success of one's group-mates.

By the second week in October, however, Mary was concerned. Total individualization was required, even within groups. Some students responded more easily to word problems; others to arithmetic operations. Some could use the school-supplied curriculum, but others needed customized worksheets and instruction. Within each group, some of the children had yet to grasp the concept of the arithmetic operation under study, while other students were ready for practice and application of the skill involved. Mary often found herself preparing eleven different math lessons each day, drawing upon four different math textbooks, the curriculum used by the regular math classes, worksheets, workbooks, and her own intuition about what would click with each student.

Besides the time required to prepare so many lessons, a big disadvantage of such extreme individualization was its negative impact on group cooperation. When Mary was working with one group and Miss Margolis with another, the remaining two groups were to work individually at their desks, helping each other with questions and explanations as needed. But because the children were working on different operations even within their groups, they were distracted by one another's requests for help.

Furthermore, Mary was not used to the immaturity of children of this age. In spite of her instruction on group behavior, she soon discovered that the children could not work effectively together without an adult present. They would tease each other when they discovered mistakes, and the more advanced students occasionally made fun of those working on more basic skills. Joe Johnson, in particular, was the butt of many jokes, for at 15 he was the oldest student but was working on the most elementary material. Those students who did try to help their classmates often just confused matters with explanations that were unclear or incorrect.

In spite of the fact that general murmurs of conversation were audible around the room, Mary returned her focus to the students in Jesse's group. She forced herself to recall their conversation even as she listened to—and ignored—the escalating din.

"I'm sorry, Jesse. Sheila, put that down and listen too." Mary glanced sharply at Jimmy Lyons to be sure he, too, was paying attention. "Now tell me, Jesse, again. How many popsicles did the Good Humor man sell on Tuesday?"

"Mrs. Ewing, we done this problem yesterday!"

"Sheila, we are going over this again to be sure your whole group understands it, and then we will move on. You know, using multiplication in everyday life takes lots of practice. Listening to this review won't hurt you."

Sheila grumbled something inaudible under her breath and rolled her eyes. Jimmy and Jesse looked at each other with expressions of disdain, but Mary knew they were trying to mask their embarrassment over the fact that they had not completed this assignment. Mary decided to let the boys off the hook.

"All right, Sheila, since you know the answer to this problem, why don't you show the rest of us how you got it."

Sheila looked down at her worksheet and tried to gather her thoughts. "Well, the ice cream truck sold 439 popsicles on Tuesday; 63 of them were ice bars, 244 were frozen eclairs, and the rest were ice cream sandwiches."

"Sheila, what are we trying to figure out in this problem? What is the over-all thing we want to know?" Mary wanted to be sure these children really understood the concepts of problem solving behind this example, and so she started again at the top.

"Well, what do you mean?"

"Pretend you are the Good Humor man. I mean woman." Mary smiled.

"What do you want to know at the end of the day?"

"How much money I made!" Jimmy was paying attention and even enjoying himself.

"Right, Jim. OK, Sheila, if you want to know how much money you made and you sold different kinds of ice cream bars that sold for different amounts of money, what do you have to do?"

Sheila was on track again. "You have to multiply how many you sold of each kind by how much each kind costs."

"Good! Jesse, do you see what Sheila did? Did she just make sense?" Mary reached for Sheila's paper as she spoke and slid it to the right so that Jesse could see it.

"Uh, yeah, so he sold, um, 63 that cost a quarter and the eclairs cost a dollar. . . ." Suddenly they all heard laughter coming from across the room. Jesse looked up from Sheila's paper and turned toward the sound. Mary turned with exasperation and saw Anna and Peter laughing.

"Hank, look at this!" Peter grabbed a paper from the desk in front of Joe Johnson and sailed it across the horseshoe. As it fell to the floor in front of his desk, Hank noisily leaped forward in a futile attempt to catch it.

"Slow Joe just added 13 and 38 and got 41!" laughed Peter. "Can you believe it?"

"Group D for *dumb*—I'll never get any chips with Joe on my team," moaned Anna.

"Well, you aren't the smartest girl in school either!" shouted Joe. As he spoke, he sent Anna's open book, paper, and pencils flying to the floor with a sweep of his arm.

The noise of the book striking the floor stunned the class into silence, and Mary reacted swiftly and decisively. "All right—*no more!* I am appalled at you! Peter, Anna, I expect you here after school. I will not tolerate this sort of criticism of each other." Mary turned and spoke just as sharply to the rest of the class. "We will all work alone for the rest of the class period. It is obvious you cannot work together today. Miss Margolis and I will do our best to help those who need it, but I do not want to hear one more word from anyone except to a teacher. Is that understood?"

Mary opened her second-period class the next morning with mixed emotions. She had decided overnight to make some changes in the class in order to structure it more realistically in light of the children's attitudes and abilities. She believed that she was bowing to the inevitable, but she also felt a sense of defeat. Mary had always enjoyed teaching classes that could work well together, and she felt that important skills were learned when children cooperated. But this class was simply not responding to that formula, and math was not being learned. Since she had to individualize so much anyway, Mary decided to capitulate.

"Good morning. I have some changes to explain to you this morning," Mary spoke as the bell rang. The children were arranging their notebooks and taking out pencils, but the tone of her voice captured their attention.

"Each of you is working on different concepts in this class, and I have decided that working in groups is not helping you as much as it is distracting you. From now on, we will have a system for individual work. No more groups."

This sank in for a moment, and then Sara Black waved her hand in the back of the room. "Yes, Sara?"

"Does that mean no more chips? How do we earn free time?"

"You will each earn chips on the basis of your own work. Just as before, you get one chip for turning in work on time, one if you get only one problem wrong, and two if your work is perfect. But you get no chips for anyone else's work. Just your own."

"All right!" Jimmy's comment underscored the general nods of approval visible around the room. The students' reactions made Mary sad, but again she was convinced of the necessity of this action. These kids just didn't like working together.

"You will each have your own work folders, which I will prepare with your assignments." Mary walked around the horseshoe placing closed manila folders on each student's desk. "No one else even needs to know what you are working on." When she got back to her desk, she held up a chart with two columns entitled "Need Help" and "Work Complete." "This chart will always be kept on my desk. If you need my help as you are working on your assignment, get up and write your name in the 'Need Help' column; then sit quietly while you wait for me or Miss Margolis to get to you. We will cross off names as we go, so you will know when your turn is coming up."

"What do we do while we wait?"

"You may do other work."

"Even other class work?"

"Yes, as long as you are quiet. When you finish your work, write your name in the 'Work Complete' column; I will check your papers when I am free."

"This might be a little boring," ventured Joe. "Can't we . . ."

Mary interrupted abruptly. "Joe, this is our new procedure. Do you have any questions on how we will work?" Joe remained silent, and Mary gazed around the room at the rest of the class. "OK, then, let's do some math!"