

A TEACHER REFLECTS



I was interested in the conversations that were going on in the groups to determine what was in the bags they had. One group, Cal, Carmen,

Jimmy, and Lori, were rather average students who enjoyed the group work. When I walked around to their group, each student had taken three turns. They had decided to pass the bag around six times rather than have each student pull out a cube six times in a row.

They were pretty sure of their results, sure they had bag C. Jimmy and Lori were both becoming rather distracted, thinking that they already had the answer and got bored waiting. I pointed out that they all still needed to take their other three turns. They did so, basically because they knew I was checking on them. The new turns hadn't really changed their results much; no one had pulled a blue cube and, even more than before, they were convinced they had bag C. Looking at their results, I had to agree with their reasoning. I hadn't written down which group had which bag, so I didn't know which bag they had either.

When the class came together again, two of the other groups also had not chosen any blue cubes, so there was a general discussion of which groups should take extra turns and how many.

Cal's group by this time was still convinced they were right and not particularly interested in the discussion. It was agreed that all three groups would take two more turns, so Cal pulled two more cubes out of the bag. The other two groups had gone first and neither had picked a blue

cube. Cal casually picked out a cube but was rather amazed and a little embarrassed when he picked out a blue cube. Since the picks were costing the company money, the class decided to skip his last pick since it was now obvious the group had neither the C nor the E bag. Looking at every group's data, the class decided that Cal's group had to have bag D, in which the numbers of each color of cube were more nearly equal, even though the group's results were not wholly consistent with that bag's contents.

The groups opened up their bags and determined that the class had been accurate in their predictions. However, the most worthwhile aspect of this project to me was the new interest and genuine puzzlement of the members of Cal's group in realizing that they did indeed have bag D. As they determined the theoretical probability for pulling each color and looked at their experimental probability, they saw very large differences. They had had 2 blue cubes, yet in the first 24 pulls not one of them had been pulled. Now they wanted to talk about it, a little proud of themselves for results that were unlikely but also chagrined because they had been so certain they were right in their initial choice. They realized in a way they hadn't before the importance of taking many samples to get an accurate sample, though we had talked about it. They also realized that events that are unlikely can, in fact, happen. Cal was making jokes about winning the lottery. As the class period ended, I felt that I could not have planned it better if I had tried.