

## Day 2 Teacher Journal

### Planning

One of my main jobs today, while the students were working in groups, was to go around and make sure that I was very clear myself on the procedure or the system that they were using to come up with the rank ordered lists of the cities. In thinking about how to orchestrate the follow-up of whole class discussion, it's going to be very important that I planfully select the students' solutions in a certain order that would then give me the best possibility of pushing my mathematical agenda forward. What I saw happening was two different ways of coming up predominately and then a third way emerged from one group. Most of the students were either taking the total rate of violent crime and adding that to the total rate of property crime and then either taking that number and ranking it or the other one was they were putting ranks on the total in each column and adding those ranks and then finding the total. I did have one group that was looking at the rank of each of the six columns and then I think they were going to total.

I want us to begin by talking about the first two ways. First, I want to have the students take a look at the difference in using the actual rates verses using the ranks and see if we get a difference in the results by operating in those two ways. At that point I will again raise the question of do we want to take a total here or do we want to take an average. I think this would be a nice segue back into that issue and the chance for me to revisit that mathematical concept with the student. From there I want to go to the group that used the actual six columns because one of my goals for this lesson sequence is that in the process of developing these systems, that we can develop one that's sophisticated enough that would deal with differential treatment of the different categories. Now by that I mean if they think murder is much more important than car theft, how can we treat that data so that it has a higher impact on the overall rankings. I have a better chance of doing that through the group's work who dealt with the six individual columns than I do with the groups that did it with the two totals. So that will be something that I can push forward by using that group's work. In looking at the groups who were using the two total columns, I'm not sure if when they take the results in those columns that they're simply working with the sums of those two or if then they're going ahead to average. So, I'll need to go back and take a closer look at their work tonight to see if I could raise that issue in the context of the different ways the students did it; otherwise I'll just need to pose that question myself.

In thinking about the students' activity today and how that feeds into tomorrow, I'm gonna need to give them a few minutes at the beginning of class tomorrow to finish up their systems. In particular I want to make sure that the results of how they thought about the problem are recorded on the sheets of paper, so that when we share them, they have a record of their activity so they can clearly explain to the other students in the class. I'm also going to make a real point, too of asking the students to think about how we might represent or symbolize the results of their activity. I hope to do that right on their paper so that there's a real correlation between their actual work and the symbolization, 'cause I'm, hoping that they can start to think about ways to explain their systems in language that's a little more sophisticated than having to refer to the actual data. Another thing that I hope will happen tomorrow is that we'll get a chance to get closure on the discussion of this first problem and I can introduce the second problem. The second problem, in this sequence of the two Crime problems gives them a different set of cities, such that when you do the rank order Nashville does not come out as looking quite as safe as it did. So, these two in

sequence then provide the opportunity for me to then raise the question of the need for a system such that we can evaluate how safe Nashville is compared to any set of cities.

## Facilitating

In thinking about this problem sequence from the time I had taught it, I decided to make a couple of changes. One of those was I changed the group size from four to three. In doing the problem last time, I had the students working in groups of four and I had given each of the students a sheet of the data and it was just on eight and a half by eleven paper. I didn't think that one sheet of paper would be sufficient for the four, 'cause I just didn't think logistically they could get to it, so I gave each one of them a sheet of paper. What that caused, in some situations, was the students each got involved in their own data sheet and started doing calculations, and it became very hard for them to share even within their group. So I decided to try to go to the one sheet of paper which was obviously much larger and to also reduce the group size so there weren't as many students trying to work off of that one set of data. It's a real tension in making these types of decisions because if I have only three in a group that means I'm gonna have more groups; however, if I have only three in a group I have a better chance of each student having an opportunity to make a contribution to the group's work. So I'm thinking, as I think about how the groups were participating both yesterday and today, that seems to have been a good call in this particular situation. If you look at how specifically I came up with the students for the groups one of the strategies that I typically use when working with students of this age is to look at who gets along well with whom. It's not a productive situation when you have students that generally can't work well together trying to struggle over a mathematical problem. If the students like the students they're working with, they're more likely to get engaged and get involved in the problem. And I saw that today and so I'm pleased with the way that has worked out with these students.

One of the things that's causing a problem for me is I have several students in the class who are really engaged in the activity and every time I ask a question the same three or four hands come up very quickly. And, as a teacher it's very easy for me to call on those people to keep the momentum going in my, of the discussion and so I'm gonna have to make a real conscience effort to work on my wait time to try to get more kids involved in the discussion and make a point of trying to call on students, you know, who I know could answer the question but just haven't jumped into the game as quickly as some of the others. So this is something I'm really gonna try to think more clearly about in the coming lesson so that I start to engage more of the students in the whole class discussions.

## Understanding Student Thinking

In thinking about this lesson sequence and how I would assess the students' mathematical growth over these several days, one of the pieces that I was going to use was a homework assignment that I had intended to give at the end of the Sneakers problem. The way the lesson unfolded, the closure of that first

activity came at the first part of the second day and it wasn't timed perfectly for a homework assignment, so I made the choice of taking their work and using it to raise the issue of the average sum. In doing that, I lost that option of assigning that homework and having that as a piece in which I might assess the students; however, what I did was I actually had each of the students do those calculations and look at those ranks again. The piece that I don't have is their reflective writing about what they think about the relationship between average and totals. So this is a call that I've made that might come back to haunt me later, in that I might wish that I had more information on the individual students. So at present, I'm having to proceed based on the informal assessments I'm doing of students in class in the discussions we're having about these topics.

## Mathematical Content and Context

When I was introducing the data set to the students, I wanted to clarify for them that the data and the chart was given in terms of rates per 100,000 people. We had talked about this briefly the week before and I wanted to clarify to the students what the data meant. So I just quickly revisited that and tried to refresh their memory by referring back to the work we had done the week prior. So in asking the students specifically, I think I picked one of the numbers off the chart and said, "does this mean we have 478 car thefts"? And the students were quick to realize that was no, that's per 100,000 people. So I was pretty comfortable that they did have some basic handle on what that measure was in the context of this problem.

I was really encouraged today when I posed the Crime problem to the students and I realized that they did actually read the newspaper, and in their other classes they did have cause to actually try to look at current events and things of that nature. So when I was able to highlight for them all of the articles that have actually been in the paper recently concerning the police force and the crime rate for Nashville, it provided a real nice grounding or a context for this problem. I felt real comfortable, as a result of that conversation, introducing the data and posing the task of deciding if Nashville was a safe city. The headlines and the articles fed right into the problem situation. I guess a real test of this will be in the discussions, when they actually share their systems, if the context starts to confound their mathematical explorations; in other words if they start to say, "well we did this system and Nashville came out fourth, but, for me personally I think so and so." So although I'd have to argue that it seemed to go very smoothly in the initial introduction, another piece of this is how it plays out in their subsequent activity.