

A Note from Louisiana from Winston Conway Link

Some people plan their lives down to the smallest detail, while others wander aimlessly throughout theirs. And there are others who find their lives take an unexpected turn, the result of an unforeseen event or a chance encounter with a stranger.

In August 2002, I was in New York working on my dad's estate business, and was scheduled to meet with our attorney in the city. With me was my business partner, a postmaster in a very small Louisiana town. Knowing that I had only one day in the city and that the Joint Statistical Meetings were in progress, I decided to attend morning and early afternoon sessions, and meet with our attorney later in the day. But the problem was what to do with my friend, who with a degree in English, would not likely be entertained by the presentations.

Nevertheless, I looked through the JSM Abstracts and found several possibilities. An afternoon session -- Introductory Overview Lectures on Disease Surveillance and Bioterrorism, which included a case study of Anthrax -- looked promising for her. For me, the morning session on Statistics Students as Disease Detectives was ideal.

Early that morning, we caught the train for the two hour ride into Grand Central Terminal, found the meeting site, registered and walked in Session #83 just as it got underway. [In case you have been wondering what my initial paragraph had to do with the rest of this article, this is the connection.] I was so impressed with the *Detectives in the Classroom* presentation that after the session was over I spoke with Dr. Mark Kaelin and told him of my interest in working with the project.

Although I had been teaching mathematics and statistics at the college level for 32 years, I had also developed summer programs for academically talented kids, which ran at Louisiana State University in Shreveport from 1986 to 1999. It was my belief that students didn't like mathematics because they saw no practical application for it, so in the programs I helped develop and others I was a part of, I researched and presented, at a low level, of course, interesting and practical applications of mathematics and statistics in grades two through twelve.

In the summer of 1994, I was asked to become an instructor in LaPREP, a nationally recognized program for high ability (mainly) minority middle school students with an interest and ability in mathematics and science. During my one hour each day, I presented fundamentals of discrete mathematics and probability and statistics during the 7 week, 8 hour a day program.

My enthusiasm for the *Detectives in the Classroom* prompted me to call the LaPREP director on the return train trip that evening to suggest that my probability and statistics component be modified so I could do a shortened version of the *Detectives* program with the summer 2003 class. His initial response was that there was already a medical careers component in LaPREP and he felt that there would be too much overlap.

Shortly after my return to Louisiana, Mark contacted me and asked that I examine the five modules. During the next eight months, I reviewed the first three of the five, making suggestions and editorial changes. The more I read, the more I became convinced this material would not only be suitable, but essential for our LaPREP students. The break I had been waiting for came

in May of 2003 when Dr. Spaht gave me the go ahead to modify my probability and statistics component to incorporate about half of the *Detectives in the Classroom* curriculum.

Recalling the attention-grabbing technique of distributing DZ cards to carefully selected Session #83 attendees at the 2002 NY ASA meetings, I introduced the short form of the *Detectives* curriculum to our LaPREP students in a similar manner. DZ cards were given out based on several criteria ranging from the obvious to the obscure including presence of glasses, jewelry, hair length, hair color, a particular color of a clothing item, gender, foot wear, and whether or not they were seated in a chair in the isle closest to the door. The class discussions and interactions following each re-distribution of cards were spirited and meaningful. After the final re-distribution of the DZ cards, students were asked to suggest other criteria for the distributions.

Due to the time constraints, it wasn't possible to cover all sections of each module. Based on conversations with Mark, I decided to limit instruction to certain investigations in Modules 2 and 3, and throw in about 1.5 hours of instruction on elementary probability, so that they would better understand the relative risk estimate concept.

The most spirited class discussion centered on the material in Investigation 2-4 - Backpacks and Back Pain. Students were quite familiar with the problem, but not all were aware of the guideline that a backpack should weigh no more than 15% of the carrier's body weight. Significant contributions made by the students included the following: (1) Same weight students who are more physically fit may experience back pain less often than their less physically fit peers even though the weights of the backpacks are the same; (2) In a given grade, the size of students will vary considerably, yet many are taking the same courses, which means they are using the same books, and therefore, have backpacks weighing approximately the same. Smaller students may be very close to the 15% level, while larger students will have backpacks weighing much less than 15% of their body weight; (3) There is no discernable difference between a back pack that weighs 14.97% of body weight versus one that weighs 15.03% of the same body weight. Yet the first person would be put in cell "c" or "d" in the 2 x 2 table (Not Heavy Backpack) while the second person would be placed in cell "a" or "b" (Heavy Backpack).

Much of the remainder of the condensed *Detectives* curriculum consisted of presenting the investigations that Mark had suggested. Although the students' favorite part of the program was not unanimous, the top vote getter was Investigation 3.4 -- Confounding. On the final exam, all 23 students correctly answered the two five-point questions on confounders, which were structured much like the ten confounding examples in Investigation 3.4.

Although many of the LaPREP students did well on their exams, three were exceptional and were recognized for their outstanding achievement at the graduation ceremony held at the LSU-Shreveport Student Center. Each of these students received a copy of Stolley's and Lasky's *Investigating Disease Patterns -- The Science of Epidemiology*, a Scientific American Library publication.

Even though the presentations were conducted without the use of PowerPoint, the authors have done an excellent job of providing an easy-to-understand and easy-to-learn script with the material. An hour or so spent in preparation before each investigation should be adequate to familiarize oneself with the background necessary for presentation to the class. The group work and individual seatwork forms were easy for the students to understand and work out.

Many universities and colleges run summer programs for children of all ages. I have been involved with such programs at LSU-Shreveport for 17 years. While a local university may not have a program such as LaPREP, there may be general interest programs available. If you were interested in running a *Detectives* program during the summer, a good starting point would be the College (Department, office) of Conferences and Institutes (or its equivalent) at your local college or university. Since there is considerable competition for dollars generated by summer students of all ages, directors and/or coordinators are often very receptive to new ideas and eager to offer different and challenging summer work. Ask about their summer programs for children, and try to determine if the *Detectives* curriculum, either in a condensed version or the full-blown 30 hours, would be a good fit.