What is a course in QL?
By Bernard L. Madison, NNN President

Just a few short years ago the idea of quantitative literacy (QL) was remote from my worries about education. In fact, if pressed, I would probably have chosen remedial algebra as the issue among my worries I believed to be closest to QL. Some years of reflection later and fresh from the experience of conducting experimental QL-like courses, I am beginning to understand how naive I was. Knowing how ignorant I was gives me pause in writing about what believe I have learned about QL education, but, with that caveat, I do so anyway.

First, and foremost, QL is a habit of mind, and as such requires practice, practice, and more practice.

Further, since QL is the ability to use quantitative information as it appears in daily life, practice in QL requires both variety and unpredictability. Coordinated practice in QL across the disciplines, in school and college, is necessary but not sufficient to achieve QL. Achieving QL requires disciplined practice beyond school and college, and the best we can do in formal schooling is instill in our students a culture of disciplined practice at understanding and using quantitative information. Such disciplined practice is more process than methods, skills, or techniques. The QL issues that we, along with our students, face are entangled in contexts that are often confusing, inexplicit, and incomplete. Once we untangle and clarify the quantitative content of these contexts, the mathematics or statistics may be elementary, but the contexts and reflection of our results back into the contexts are often sophisticated and complex.

A central question in my mind is this: What is the role of a course or courses in QL? As I taught an experimental "QL course" during both semesters of the current academic year, this question was never far from my thoughts. Knowing – as I believe I do – that there was no chance of my students achieving QL through my course, I had a goal: provide the students with practice at dealing with quantitative information from their everyday world and equip them with a few tools and instill in them a desire to continue practicing beyond the course and beyond school.

The real everyday world was newspapers and magazines – no textbook. I have been collecting articles for several years, with the help and inspiration of Lynn Steen and Robert Orrill as we worked on beginning a national conversation on QL. For the first semester I put together eleven lessons with the following titles: percent, petty thrift and buying stocks, lower math by Dave Barry, linear and exponential growth, measurement, visual representation of quantitative information, rates of change, weather maps and indices, the odds of that, and risk. As you can probably tell, the course was very loosely organized by mathematical topic, and topics – e.g. rates of change – kept recurring. During the second semester, the number of lessons declined with the major topics becoming percent and percent change, linear and exponential growth, indices and condensed measures, statistical measures, risk, and graphical interpretation and production.

A few people have suggested that I write a textbook, but I have no plans to do so. I believe that the material for a QL course must be as fresh (and unpredictable) as possible so that connections to the real world of the students are apparent. My experience with college mathematics courses is that they tend to degenerate to the methods contained therein, and textbooks accelerate this degeneration to the methods. And the topics sure are predictable. Even calculus often becomes a methods course when the important parts of the course – especially for general education – are the concepts: limits, rates of change, accumulation, and approximation. In my view, a course aimed mainly at achieving QL should be very short on methods and very long on process, thereby setting it apart from traditional mathematics and statistics courses.

Is there a place for such courses? Probably. The experimental course I am teaching is a substitute for the one mathematics course required for humanities and fine arts majors, including journalism. Most of the students in the experimental sections have been journalism majors, for whom the course has a vocational aspect. Normally these students would take the traditional finite mathematics course, which is largely a methods course on probability and linear programming. I have no doubt that my QL-like course is more appropriate for these students than that traditional course.

My lingering doubt is whether or not my QL-like course can overcome what I see as a major problem with most college mathematics courses for humanities and fine arts majors. The problem is that the students never practice what they learn beyond the courses and the methods learned vanish rather quickly. All the students in my experimental courses either had credit in college algebra or had been placed beyond that course on the basis of test results. Therefore, all were supposed to be proficient in college algebra, but most had been away from mathematics for a few semesters. They were generally unable to make any use of college algebra concepts. Equations of lines were a distant memory; exponential functions were mystical; rates of change and odds were words they used but did not understand; algebra was something they had gotten past but was not part of their lives anymore.

Unless we can make courses for these students more prominent as a part of their future, then what they learn in the courses, especially if that consists of disjointed methods and procedures, will soon be forgotten, like the college algebra. We have to build these students a venue for continued practice that means something in their daily lives. That is the primary goal of my experimental course. Time will tell whether or not that goal is achieved.