From the President's Pen

Algebra has become the new Latin. In the past, the ability to master the classic languages of Latin and Greek was seen as an indication that a person had the intellectual ability to deal with higher education. Of course, knowledge of Latin and Greek also meant that a person had money and had been educated in the finest fashion.

In the new age of technology, Calculus and Geek have replaced the old classics. Postsecondary institutions, particularly those in Alberta, are using a certain kind of mathematics as their filter to decide whom to admit to their institutions. It is a little known fact that you can be admitted to university in Alberta with a second language (perhaps Latin, but more likely French) and without mathematics. This of course limits your options. If, however, you wish to be able to select from a wider range of possibilities then only algebra and calculus will do.

Reality says that in any situation where there is a need to limit access to a scarce resource (in this case, postsecondary education) a mechanism will be found to decide who does and does not fit. I have no desire to argue whether or not mathematics should be that limiting factor. In some cases the mathematics itself is essential; in others the ability to think logically and analytically is what is needed. In some cases it is difficult to understand why mathematics is the chosen filter.

As a teacher and principal of students in elementary school, I see that the effects of "mathematics as gatekeeper" are reaching downward. The proposed new curriculum for K–9 mathematics in Alberta has a much more explicit emphasis on representing algebraic expressions.

Recently I have been engaged in discussions about the development of algebraic thinking in elementary students. There are those who think that if students have difficulty with algebra in junior and senior high school, then starting algebra earlier is the solution. They seem to think that substituting letters for unknowns in simple equations prepares children for quadratics.

I would argue that extensive experience with algebraic thinking rather than algebra would better serve our elementary students. When children extend patterns beyond what can easily be listed and when they argue the reasons behind their conjectures, they are engaging in algebraic thinking. When students state pattern rules in words, they are thinking algebraically. Moving flexibly between pattern representations, stating the relationships that underlie those patterns and detecting regularities in the world all prepare children for later algebra.

Young children are context dependent. A relevant problem that is set in a meaningful context is easily solved. A problem in an unfamiliar or unspecific context is much more difficult for them. By providing extensive and deep experience with patterns in context we provide a strong foundation for the later work of abstract algebra. Those who confuse algebraic thinking with the use of algebraic notation and who focus on the latter will confuse students and cause them to avoid algebra.

This is my last "From the President's Pen" for *delta-K*. It has been a challenging two-year term and I have appreciated the opportunity to express my ideas in writing. I look forward to reading many more issues of *delta-K*.

Janis Kristjansson