

A Conversation with Dr Jorgensen

Dr Arthur Jorgensen has greatly influenced mathematics education in our province. He has been a principal and teacher in various schools in northern Alberta, an instructor at Grande Prairie College and the University of Lethbridge, a consultant in Jamaica, a Justice of the Peace, and an assistant superintendent. He served on the MCATA executive as director, secretary, vice-president, journal editor and newsletter editor, and most recently has been a contributor to delta-K. MCATA's annual Dr Arthur Jorgensen Chair Award is created to honour his work in education and his passion for mathematics. I wanted to know what he was thinking about current educational issues in mathematics. Here are excerpts from our conversation.

—Gladys Sterenberg

G: Tell me a little bit about who you are and your background.

Dr Jorgensen: I've really been interested in mathematics ever since I was just a child. In elementary school the teacher and I got along very well. I often had ideas, and I really supported her. Then when I got into high school, I often helped many of the students with their math. And then of course I got into university and I took some math there. As far as training is concerned, I got my BEd, which was general; I got a bachelor of arts in psychology and I got my master's in education, which dealt primarily with administration. And then my doctorate in curriculum and instruction in mathematics.

I have really, really been concerned about how children are taught mathematics. I don't think, historically, children have been taught mathematics well. They are so turned off because the teachers themselves are turned off. When people say, "Well, I teach mathematics," that's a disaster. You have to teach *children* mathematics and when you are teaching children, you've got to realize they are individuals. They don't all learn at the same pace, and they don't all learn in the same way. And as a result you have to treat them as individuals.

Mathematics should be enjoyable for children and for anybody who's taking it. Some people would say to me, "It's fun," and I'd say, "No, I wouldn't say it's fun,

I'd say it's enjoyable." I don't consider it fun but I consider it enjoyable, and that's the way it should be for children. But that doesn't happen sometimes. I think of giving a test to a little boy in Grade 3. I tell him on Friday that on Monday there will be a test. He knows he's going to fail the test, his friend knows he's going to fail the test, his teacher knows he's going to fail the test, his parents know he's going to fail the test. And what kind of weekend does he have? I myself know that if I have a test tomorrow, I won't sleep very well tonight. And the same with this little boy; he's not going to have a very good weekend. So what really was the point of the test? And if this little boy had worked hard, it's like running a race. Somebody will be first and somebody will be last. And the one that was last maybe worked harder than the one that was first. And the same thing applies to mathematics. It really disturbs me. I know of a professor. He knew some math but he didn't have any teaching skills, and students had taken his course and they were crying. I wish I could have helped them in the classroom.

G: Talk a little bit about how you envisioned a classroom that would be different from that.

Dr Jorgensen: First of all, I get to know my students right from the start. From Grade 1, 2, 3, I would want them to become involved with mathematics. What we do now is get them to regurgitate answers. 6×56 . All we want is an answer. I want that child to actually get involved with 6×56 —I can teach a dog 6×56 . Let's look at something like $2 + 3$. What's $2 + 3$?

G: Five.

Dr Jorgensen: Is that the only answer that you'll accept?

G: What would you suggest?

Dr Jorgensen: I say that there are many answers to that question: $3 + 3 = 6$, and $6 - 1 = 1 + 1 + 1 + 1 + 1$. You get all kinds of answers. Something like $11 + 2$ is 13. But what if I say $11 + 2$ is 1? And we do it every day on a clock. Everybody knows 11 and 2 is 13. But 1 and 1 can be 0 if I'm working in base 2. I think what's important is that children get an opportunity to see how math works in all these different ways. And I think then they will enjoy mathematics.

G: So, how can we work with teachers?

Dr Jorgensen: I think that teachers should have some good workshops on how to teach children mathematics. When I was in Jamaica, I had teachers who were able to run workshops in mathematics, good workshops, and feel confident in doing it. But we've got to spend more time on teaching teachers how to teach children. People think there's just one answer to mathematics. There are all kinds of answers to mathematics. Let's get our teachers involved in creativity and get them involved with things.

Get the teachers involved with things and show them different ways of doing things. And when you ask our teachers why they did something, they might not know. All they know is that it works. Well, show them *why* something works and show them other ways to make it work. It would make more sense to me to teach children that way. We want our teachers to enjoy the process because many teachers today do not enjoy teaching kids mathematics.

G: You said earlier that you've enjoyed math for a very long time. How did you grow to enjoy it?

Dr Jorgensen: I guess we've all got our areas of interest, but right from the start I could work with numbers, from the time I was very young. And a teacher I had in school would often ask me, "How did you do this?" So I showed her how I would do things. When I got into high school, I often helped other students.

G: Tell me what you would do with teachers that don't have that natural ability or that natural interest. You said you would get them involved, but often they really struggle with their own confidence and with their own abilities and past experiences.

Dr Jorgensen: I don't think all teachers should be expected to teach children mathematics any more than they expect to teach them art or physical education, for example. I think we should have teachers

that teach children mathematics who have a good understanding of it. I think children should adjust. Often one teacher is expected to teach children all the subjects, and I disagree with that because there are some teachers who will not be able to teach children mathematics.

G: So, you are kind of making an argument that we should have specialists in our elementary schools.

Dr Jorgensen: Yes, I am. Absolutely. Who will teach piano lessons? You expect teachers in school to do this but not all teachers can play the piano. If I'm having problems with my heart, I go to a heart specialist, and if I'm having problems with my brain, I go to a brain specialist. These doctors don't know everything about our health, and we don't expect them to. And I think we can do the same thing for children in school. I think we should have people who are really interested in mathematics teaching math.

G: How did you become involved with MCATA?

Dr Jorgensen: I became involved with MCATA, I guess 45 years ago. I felt this council made a difference. And I guess I kept bumping into some very interesting people in MCATA. I was hoping that I could have some influence on how to teach children mathematics.

