

The *Real* Benefit of Learning Mathematics: A Conversation with Dr Ron Aharoni

*Dr Ron Aharoni is a mathematics professor at the Technion – Israel Institute of Technology. One of the world’s leading combinatorialists, Aharoni is also a vigorous champion of mathematics education. He is the author of *Mathematics, Poetry and Beauty*, which won the CHOICE Outstanding Academic Title 2015 Award. He is also the author of *Arithmetic for Parents*, based on his experience teaching mathematics to elementary school children. He shares some of his thoughts with readers of *EduNation*, which was published in Issue 10, April 2016. The following is the interview article reproduced from *EduNation*.*



EN: *Mathematics is, of course, just one part of a holistic education. Could you comment on the importance of mathematics relative to other subjects commonly found in most primary school curricula (e.g. languages, science, social studies etc.), and how mathematics relates to these other subjects?*

RA: Instead of an answer – a story. A couple of weeks ago I taught a third grade class. The topic was the multiplication table. I asked a student to come to the front of the class, and raise both hands – how many tens do you see? – I asked. One ten, they said. One times 10 is 10, we all said aloud. Now put down one finger, I asked. What do you see? One times 9 is 9. Now I asked another student to come to the front of the class, they both raised all fingers – 2 times 10 is 20, we all said. Now let each of you put down one finger – what do you see? 2 times 9. And how many fingers did they put down together? 2. So 2 times 9 is 20-2. We continued like this – it doesn’t take that long. When we got to having 7 students come to the front of the class, I asked the class – before they raise their hands, please tell me how do you calculate 7 times 9? They knew: 70 – 7. The entire class was filled with joy. They understood a principle, and they were happy about it.

For me, this is the *real* benefit of learning mathematics: the recognition that there is joy in understanding, and that ideas can be beautiful. A child who

experiences this joy will transfer it to other subjects, and will be able to appreciate the beauty of (say) the Darwinian idea of natural selection. Mathematics is the epitome of abstraction, and it is the best place to have this experience.

And of course, mathematics is the most applicable subject of all, in everyday life and in science.

EN: *In the preface to *Arithmetic for Parents*, you describe how, in your early lessons, you over-estimated children’s power of abstraction, and at the same time, you realised the power of words and of interactive discussion. You also stressed the importance of words such as “the scaffoldings that allow the building of high towers of ideas”. This seems to point to the importance of language in learning mathematical concepts. In your opinion, is it necessary that children have an adequate grasp of the language used in arithmetic before the concepts are introduced? How much of this mathematical language should children have learned by the end of their preschool years?*