

# Why maths still matters

AWARD-WINNING TEACHER EVA ORAVCOVÁ EXPLAINS HOW MOTIVATION, LOGIC AND THE RIGHT TEACHING APPROACH CAN UNLOCK CHILDREN'S POTENTIAL

**Text:** Matúš Beňo • **Photo:** Juraj Sedlák/Seesame

**E**va Oravcová loved maths from an early age. Even at primary school, she says, the subject was like a game to her, a game she always enjoyed. Having studied maths all through school and at university, she began teaching the subject at college. But she knew it was schoolkids she really wanted to teach. They were, she says, just like her in the joy they found in maths. Now a maths teacher at the Gymnázium J. G. Tajovského in Banská Bystrica, central Slovakia, Orav-

cová won last year's Cena Dionýza Ilkoviča, a prestigious award given out annually to teachers who help talented students.

Oravcová, who teaches special maths classes and whose students have been successful at international maths competitions, spoke to The Slovak Spectator about how to get children interested in the subject, the sometimes harmful effects of past school reforms, and why maths should be included in mandatory school-leaving exams.

## What does mathematics mean to you?

It's a joy, and it's a game. I have enjoyed it since elementary school, and I was always tutoring someone. I like discovering things. That's actually how I attract children to mathematics, especially those who enjoy discovering things and not learning formulas by heart. When I was small, I was happy when I solved something. Mathematics is the essence, foundation and principles that can be applied everywhere, I dare say in all natural sciences, in biology, chemistry. Some of my former students who are now doctors tell me that it did them no harm at all, quite the opposite. It's a way of thinking, using the basic principles of logic.

## For many people, mathematics can be scary. How do you get your students to see that mathematics is actually interesting and something they might even enjoy?

I try to attract children who enjoy it as much as I do. I used to teach mathematics in regular classes and the system [for those students] had to be completely different. The students in the special maths class need something to solve. When I tell them they need to know what a quadratic equation

is in order to solve a particular problem, they want me to show them, even though the class ends in 10 minutes. They just have to know.

## So they make it easy for you?

Absolutely, because they are motivated. The root of that motivation lies in that they are given a problem that they can imagine applying in real life. They also may need to derive formulas to solve it and many times they can do that themselves. That is how I get them – I tell them that they will not have to learn anything by heart.

## What about children who are not so enthusiastic about maths?

I have spent a lot of time thinking about this. You have to let them talk and listen to what they need, get on their level. However, it is very difficult to teach maths in a class of 30 students. That is one of the problems of the education system; the classes are overcrowded and a stressed teacher goes from one class to another, they cannot listen to every single student. When I tutor someone individually, I know their weaknesses, because I see where they cannot move forward and I can help them think. This is not possible

in a class. That is why it is challenging. A teacher's job is a difficult one.

## So the idea is to spark their curiosity, their need to discover new things, and the joy of figuring something out on their own?

Yes. Young children have this in them, but it fades over time.

## Maybe, paradoxically, because of school?

Exactly. What I often deal with is tricky problems. I give students a simple problem that they have already solved in the past and should know. But they automatically start using formulas that they learned in the previous lesson. They think that they have to do it that way. They don't have to – they only always have to use their mind. When you learn a lot, it can become a cage in a way, it can slow you down. If the education system were set up so that we could work with everyone on an individual level, things would be different. Everyone has their own level and their own speed. I'm not saying that individuals have the genes for maths or not – although there may be some predisposition – but rather that everyone has their own pace. I al-



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## Eva Oravcová

- Since 1992, she has been teaching mathematics and leading a specialised mathematics class at the Gymnázium J. G. Tajovského in Banská Bystrica, which is one of the last of its kind in Slovakia.
- Together with her students, she founded a correspondence mathematics seminar for primary school pupils, which helps young talents to develop their mathematical abilities.
- Among the most significant achievements of her students are: a bronze medal at the International Mathematical Olympiad 2024; first place and overall winner at the National Round of the Mathematical Olympiad 2024; and overall victories at the international team competition MATHING in 2015 and 2018.

so really enjoy it when I get the impression that certain students won't do well in my class and will transfer to a regular class, but then they eventually start working on themselves so much that they become better than those students who from the outset think they are geniuses. I really respect the former. The latter may over time discover they are lagging behind. Theory is one thing, but one has to repeatedly train one's mind and to find solutions.

### **There is talk that maths could be re-introduced as a mandatory subject in school-leaving exams. What is your opinion on this?**

It should be. STEM universities should require a higher level of mathematics. My friends at universities tell me that they have had students who did not know fractions – this is something that is taught in primary school. The 2008 school reform is to blame for this. The number of maths lessons was reduced and the formation of a school educational programme was left to school principals. I protested against this, but in the end maths teachers left it so that there were fewer maths lessons, which in my opinion should not have happened. In addition, a de-

gree set out that special maths classes lost their status and were no longer included alongside special sports classes and classes for children with special needs. If you destroy something all at once, or there is less of it, the result is that children will learn even less. It will be difficult to go back. Education was good, there were enough science classes. But now pupils have so few classes that they cannot even hold a pair of compasses in their hands. The motor pathways that connect everything are not formed. It's not enough to just tell students what the radius of a circle is, they need practical exercises too. Logarithmic equations, which are typically taught all over the world, have been dropped from high schools. A colleague asked me [at the time of the reforms] why actresses needed to learn logarithmic equations. The question has stuck in my head to this day. I was shocked. High school means general education. How many students go from high school to acting?

### **You run what you call a correspondence maths seminar. Can you describe this?**

It was created at a time when interest

in the maths class was falling and only around 15 students had applied. I have been at the school for 30 years, and for some years I had heard repeatedly that the class was going to be closed. While, fortunately, this isn't something I hear any more, the idea for this seminar was to get as many students across the region who are enthusiastic about mathematics and who have talent, but who might not have realised that there was a class like this. The students come up with their own maths problems – they enjoy coming up with them. Of course, I supervise them and check whether the problems make sense, because they still don't quite know how to write them so that they are understandable. They usually come up with quite interesting problems. We then send them out three times a year to students in other schools, who then solve them and send them back to the students who devised the problems, who then check if the answers are correct. Neither the students who devised the problems, nor those who solved them, know each other. This means we can attract talented students from villages.

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