

Woo-hoo: at last a teacher who can make maths fun



Australia's favourite mathematics teacher, Eddie Woo. Picture: Adam Yip

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- By **TINA ALLEN**
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It is a surprise to discover that Australia's favourite mathematics teacher, Eddie Woo, felt "little joy" while learning maths at high school.

Until the age of 19, Woo felt like he was "trying to memorise an arbitrary set of rules in a game [he] didn't understand and didn't really have any interest in winning".

His first book, *Woo's Wonderful World of Maths*, is for people who feel that maths is difficult, boring or simply "not their thing". Woo hopes people will experience a "light-bulb moment" when they understand what all the "symbols, patterns, shapes and relationships" mean.

The boyish-looking Woo, who has been teaching for more than 10 years, is head mathematics teacher at Cherrybrook Technology High School in northern Sydney.

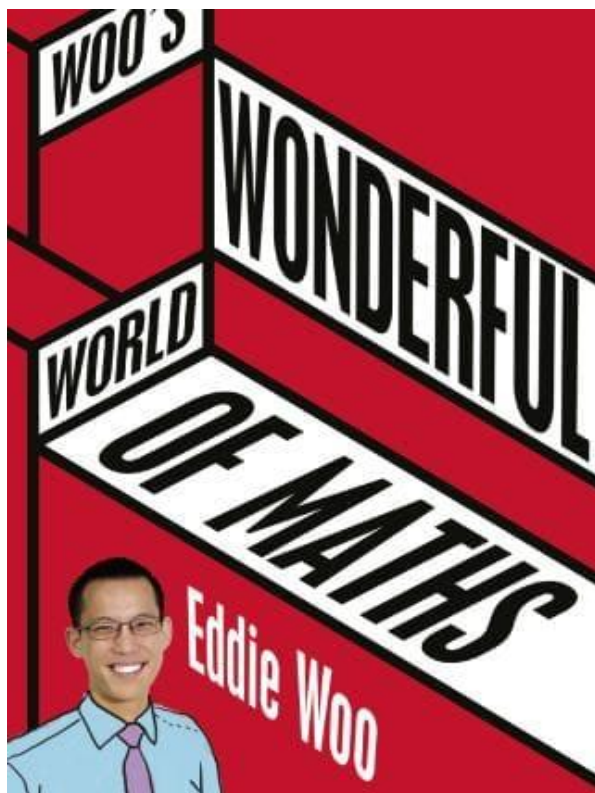
His rise to rock-star status began in 2012 when he started uploading his lessons on YouTube. “Wootube” now has more than 300,000 subscribers and views in the millions.

In January last year, Woo teared up when he was named Australia’s Local Hero. A few weeks later Bill Gates announced Woo as one of 10 finalists in the 2018 Global Teacher Prize.

Woo takes readers on a journey to open their eyes, foster a childlike curiosity about the natural world and discover that “maths is all around us”, from the pattern of florets in a sunflower to the distribution of electrical energy from a lightning bolt.

At the school pick-up one day, Woo’s young daughter asked him: “Why’s [a rainbow] round, daddy?” He replied, “The horizon obscures the bottom half of the circle, but sometimes you can see the full version from the window of a plane — if your timing is lucky enough!”

In a chapter titled The Heavenly Circle, Woo explains that rainbows are a consequence of the “elegant roundness of each and every raindrop”, which splits light into a spectrum of colours by a process called refraction.



Woo's Wonderful World of Maths, by Eddie Woo

Maths is also the reason Google Maps can predict your journey time and best route so accurately. Woo explains that the app utilises a bell curve or “normal distribution” of many, many trips, which it averages to arrive at the answer.

Key words and phrases, such as “refraction” and “normal distribution”, are bolded in red font to make them jump out from the page. Other design features I admire in this large C-format book are the blocks of solid colour and riot of geometric designs interspersed with the text and the cartoon-like images of Woo with a hand-drawn body and crazy arm gestures.

As a child, I remember an ageing American professor with glasses and untamed hair named Julius Sumner Miller uttering the catchphrase, “Why is it so?” while explaining scientific concepts to children on daytime television.

I think that Woo is a modern equivalent in the way he strikes a chord with primary and secondary students by using storytelling, conspiracy theories and card tricks to help them understand a subject perceived by many to be notoriously difficult.

However, Woo’s book reaches far beyond just the *Kung Fu Panda* and teenage demographic. It will also be of interest to anyone wanting to improve their maths literacy for themselves, or for a mature-age entry course or a university degree.

University of Sydney maths lecturer Clio Cresswell describes seas of “glazed” eyes among students. She says Wikipedia is the go-to tool for many of them, but it “doesn’t teach you how to think mathematically; the whole point is to connect ideas”.

Cresswell is cutting through the lack of interest in maths with her TED talk and book of the same name, *Mathematics and Sex*. I think Woo is achieving a similar outcome by assisting people to see relationships and connections that are invisible to others through his Wootube channel and now his book.

Woo says a commonly accepted definition of a mathematician is a person who studies patterns. “They are interested in any kind of pattern, and patterns exist everywhere ... The human brain is nothing if not a pattern-

recognising machine. Memory is nothing more than the connection of patterns with specific meanings ... ”

During a TV appearance to promote his book, Woo performed a card trick, which he includes in the chapter Mathemagic. The reason he can accurately predict the card on the top of the deck is because he knows the pattern he has created with the sequence of steps in the trick.

Magic tricks, he says, “are only magic until you understand them”.

Likewise, mathematics is a puzzle until someone like Woo comes along and provides the context to help us understand and care about the solution.

Tina Allen is a medical writer and medical scientist. Her first book is Bill Gibson: Pioneering Bionic Ear Surgeon.

Woo’s Wonderful World of Maths

By Eddie Woo. Pan Macmillan, 352pp, \$29.99