IAVM

Report 6th International Online Conference, 14 March 2020

About 35 participants took part in the 6th International online conference of the IAVM.

Welcome and Olympiad

After a welcome by our co-founder, Swati Dave, James Glover briefly discussed the upcoming International Vedic Maths Olympiad (IVMO) to be held on the 12th of September 2020. This exciting new competition involves four levels of participants: Primary, Junior, Intermediate and Senior. The Olympiad will be run at Regional Centres, in various countries, under the supervision of Regional Coordinators. Approximately 40 centres are expected to be registered. Bronze, silver and gold certificates will be issued for the top 60% (globally) in the ratio 3:2:1. More information about the Olympiad, and how to become a regional coordinator, can be found on the IAVM website.

Global Projects

The first half of the four-hour program involved presentations under the category Global Projects.

Vera Stevens started off by giving an inspiring talk on how her Pebble Maths, using Vedic Maths techniques, has helped many children with learning difficulties in Australia. Vera has been using Vedic mathematics in her country for many years, and many children have benefitted from her passion and enthusiasm.

Devaraj shared with us the 2019 events organised and presented by his Cosmic Maths Foundation. During the past year, he presented many teacher and student training workshops on Vedic Mathematics, at various colleges and universities in Kerala, Gujarat, Telangana and Tamil Nadu, India. Besides the fact that Devaraj is an inspiring presenter and exponent of Vedic Mathematics, he has helped make possible the 5th International Vedic Maths Conference, planned to take place in Kerala in December 2020.

Lokesh Tayal, from Singapore, shared his exciting Math2Shine Vedic Math Project, which provides a colourful and appealing online interactive Vedic Math teaching and tuition tool. Using videos and interactive worksheets, children can learn about different Vedic Maths topics, and then complete the answers online to questions posed on the topics - the answers being assessed immediately. Students can also keep track of their progress.

The training director of Math-Inic in the Philippines, Veronica Prudente, gave a talk on the work she and her father Virgilio Prudente (the creator of Math-Inic in 2011) have done to strengthen maths capabilities of students, and to popularise Vedic Maths in their country. The 6th National Math-Inic Challenge, which also involved a purely mental maths category, was held in May 2019; while in August about 180 students took part in the very successful 1st Philippines National Vedic Maths Olympiad. Furthermore, 240 participants took part in the San Pablo City Vedic Maths Olympiad, where James Glover also facilitated. Besides Virgilio and Veronica, both James Glover and Gowri Ramachandran helped present workshops, in August, to both teachers and students at various locations in the Philippines. With great organisation and enthusiasm, Maths-Inc continues to spread the Vedic Maths message - also by providing online courses and study material.

It was then the turn of Ramyanitharshini Balaj to share her Vedic Mathematics journey with us. She completed courses given by Kenneth Williams' Vedic Maths Academy and, having been struck by the many creative ideas contained in Vedic Mathematics, she started sharing the techniques among children in Frankfurt, Germany. While doing so, she saw the need to change the mindset of some parents when choosing to enrol their children. She also noted that it was necessary to sustain the interest of her young students, and thus started developing fun and interesting methods of presenting various topics. One of these methods involves laying out answers in patterns forming triangles and circles. We are glad that Ramya's initiative is creatively contributing to the spread of VM in Europe.

From Indore, India, Ravi Asrani also presented his personal Vedic Maths journey. A qualified electronic engineer who is also pursuing a PhD in Vedic Maths, Ravi founded the Omni Academy for Vedic Maths. He has presented papers on VM at various conferences, and also presents teacher-training workshops, as well as free-of-charge workshops for less privileged children in government schools. Besides developing University courses in Vedic Maths, Ravi has been involved in a state-level Vedic Maths competition and has published a book on Vedic Maths.

Research Projects

Several papers on Research were also presented.

Asst. Professor Raghavendra Prasad, from the RV College of Engineering in Bengaluru, presented a paper entitled *The Application of Vedic Mathematics on Digital Systems*. He showed how VM can be used in a hexadecimal, rather than a decimal system, and spoke briefly about his work on the design of a 64x64 Vedic Multiplier. He informed us that the adders used in the current system use a shift and add method for multiplication, but by suitably combining the compare, complement, shift and add methods (a process which incorporates VM algorithms) it should be possible to design adders that would perform in a better way, by utilizing lesser clock cycles for computation. Further research planned by Raghavendra and his team involve, among other considerations, the design and implementation of a *n*x*n* bit Vedic multiplier using a proposed *n*-bit adder/subtractor to enhance the performance with respect to area, power as well as speed. Swati Dave responded to this presentation by inviting others who might be interested in this exciting research project - which the IAVM fully supports - to get involved.

Anna Foglino, from Italy, presented her very interesting research on how to use Vedic Maths tools to solve logarithmic equations. After a short review of the basics of logarithms and their properties, Anna proceeded to show how, firstly by using the sutra *Vilokanam* (*by mere observation*) the domain of the solution to a logarithmic equation can quickly be found. Then, by subsequently rearranging terms in the equation, the sutra *Vertically and Crosswise* can be employed to find the actual solutions. The sutra *Sunyam Samuccaya (when the total is the same, it is nought*) can also be employed to facilitate the process. Anna's findings are an example of how Vedic mathematics describes *the processes which the mind naturally follows*, and how VM serves to bring these processes into light. As Anna concludes in her talk: "*Logarithms are more light with Vedic Maths*."

Kenneth William's paper was entitled *Expressing a Number as the Sum of two Squares*. He started off by showing some special cases whereby the *By mere observation* and *Proportionately* sutras, as well as digit sums, factorising and checking for divisibility by 9, all serve to help find the two square numbers that add a up to a specific number. Kenneth then introduced a surprisingly easy and intriguing general method which employs, what he calls, the *Tirthaji numbers*, a quadratic sequence involving the numbers 4, 12, 24, 40, 60 etc.

Angela Pierri 's research on the multiplication and division by 19 was thought-provoking. She showed that, when a number is either multiplied or divided by 19, its digit sum and the digit sum of the respective product or quotient, is the same. Furthermore, the last digit of the multiplicand or divided is the complement from 10, of the last digit of the respective product or quotient. Knowledge of the two aforementioned facts, can then help one easily to find the *first* digit of the product

or quotient as well! The sutra *Ekadhikena Purvena* (*By one more than the one before*) is used in the case of multiplication by 19. By employing knowledge of the last digit in successive steps, division by 19 of a large number - like 235904 - is greatly facilitated.

Ramyanitharshini Balaj also contributed to the Research section of the conference in her paper entitled *Converting a Number to a Palindromic Number.* Ramya showed how, after a stipulated number of iterations, any number can be converted into a number which remains the same when its digits are reversed. The method she discusses involves the sutra *Nikhilam Navatascaraman Dasatah* (*All from 9 and the last from 10*). Using several examples, she compares her findings over different bases and numbers, and also investigates the maximum number of possible iterations in each base.

James Glover gave the final presentation entitled *Consistency in Mathematics.* This addressed the utility of the Vedic maths techniques used in the classroom from the perspective of using consistent methods in different grades. As an example, he showed how *Vertically and Crosswise*, used for multiplying numbers at grades 4, 5 and 6, then gets repeated in algebra form multliplying binomials in grade 9 and polynomials in grade 12. He then alluded to similar consistencies with other techniques leading to a more joined-up mathematical education.

Swati Dave ended the proceedings with an inspiring presentation on the activities and achievements of the IAVM in 2019 - including the 4th International Vedic Mathematics Conference in Hyderabad December 2019, as well as workshops presented in various locations worldwide. After sharing the vision of the IAVM for 2020 - the planned 5th International Conference in Kerala in December 2020, the First International Vedic Maths Olympiad in September 2020, the preparation of a Vedic Maths course for Bagdad, and possible workshops in Nigeria, as well as in India, South Africa and the Philippines – the conference was concluded.

Many thanks to everyone who participated.

Report compiled by Marianne Fletcher – Trustee IAVM