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Meet Khawarizmi, Malaysia's Youngest Rocketeer

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Muhammad Khawarizmi uses computer-aided design (CAD) Fusion 360 to create a phone application to control the launch and movement of the rocket. - BERNAMA

KUALA LUMPUR: Young rocketeer Muhammad Khawarizmi Muhammad Kamalrul Zaman, 13, is living proof that creative thinkers produce their best work when they are young.

At 9 years old, he managed to create and design his own model rocket using solid fuel. The Form One student of Sekolah Menengah Kebangsaan (SMK) Dato' Syed Omar, Alor Setar, Kedah has to date designed, printed, tested and launched his own rocket.

Muhammad Khawarizmi, uses computer-aided design (CAD) Fusion 360 to create a phone application to control the launch and movement of the rocket. Fusion 360 is a cloud-based three-dimensional (3D) software platform for product design and manufacturing from Autodesk.

Without a doubt, his father, Muhamad Kamalrul Zaman Zainol, plays a key role in shaping the life of this young inventor. Together, they managed to formulate coding for analytic machines at the laboratory and generate fuel for the rocket.

Muhamad Kamalrul Zaman, 38, is currently Assistant Science Officer at the Department of Chemistry Malaysia, Kedah branch, a position he held since 2010. He was previously working at the Department's Forensic Toxilogy Division at its headquarters in Petaling Jaya.

3D ROCKET INVENTION

Sharing his experience creating a rocket based on Science, Technology, Engineering and Mathematics (STEM) approach, Muhammad Khawarizmi said the CAD Fusion 3D software is used with 3D printer to print the model rocket, before it is tested and launched with the use of fuel.

"I would design and sketch the rocket structure in 2D format and transfer it to CAD Fusion 3D software before it is printed as a model rocket.

"Both of us would usually study and work on our project without any knowledge. All these were carried out on an experimental basis until we succeeded in producing the rocket a year later, that is when I was 10 years old," Muhammad Khawarizmi told Bernama in a virtual interview recently.

The story of the eldest of three siblings took the media spotlight when his video, using the software to produce the rocket in 3D format, was uploaded in 2019 in Youtube and went viral in the social media in 2020.

The two minutes and 17 seconds footage throws the light on Muhammad Khawarizmi's expertise in creating, installing and launching the rocket model himself using solid fuel, which earns him the coveted title of 'Malaysia's Youngest Rocketeer'.

The CAD Fusion 3D software and 3D printer are commonly used by university students in the engineering field to create 3D models before producing the rocket.

Muhamad Kamalrul Zaman said at 10 years old, his son was able to use the software to produce his own rocket while he only assisted in the use of fuel and safety aspects in handling the rocket in the final phase before its launch.

SPECIAL APP FOR PARENTS

Muhammad Khawarizmi maximised the Movement Control Order (MCO) period in 2020 by studying the Unreal Engine software to create an online rocket launch game.

"After producing the rocket, we thought of transferring the rocket launch into animation and online gaming. Hence, together we studied and succeeded in creating education-based games that are suitable for children and youths.

"At the end of 2020, I started to focus on game development, coding, programming and building applications that can control the rocket launch by using the telephone and wireless system," he added.

As a result, father and son managed to create education-based online games using 4S Game software.

"We have been brainstorming the online gaming module since end of 2020. At present, we are at the single player stage. To create a module for multiple players, we are now at the experimental stage by storing gaming history data whereby the players can keep and upload the data to continue with their game," he explained.

According to Muhamad Kamalrul Zaman, they also succeeded in creating a telephone application especially for parents to control their children's computer usage via offline.

"In this application, parents can fully control their children's screen time, their access to internet content as well as data on websites accessed by their children based on history.

"This project has previously been presented when Muhammad Khawarizmi was in standard six and received encouraging response from his teachers," he said.

ARKIDS, NATIONAL SCIENCE CENTRE APP

Muhammad Khawarizmi's talent opened doors of opportunity for collaboration with the National Science Centre to develop ArKids application, a merger of Augmented reality (AR) and Virtual Reality (VR) technology.

The new application has just been presented to the National Science Centre and is currently at the experimental stage.

The app can be used by visitors before they enter the National Science Centre building by scanning the code and they will be assisted by a tour guide who will provide information virtually at the exhibition.

According to Muhamad Kamalrul Zaman, as a father to three boys aged between eight to13, he has always encouraged them to be engaged in various STEM activities, such as robotic contests, science exhibitions as well as workshops in school and at national level.

Among other achievements, Muhammad Khawarizmi has been awarded STEM Kid Icon in conjunction with the launch of the Malaysia Techlympics 2021 programme at Technology Park Malaysia.

"We are also participating in the Malaysia Techlympics 2022 and plan to introduce our rocket innovation which was developed three years ago," he said, adding that parents should encourage their children to focus on STEM subjects for their long term survival.

"During my childhood days in the 90s, I derived satisfaction from creating products out of used materials that were available in the village and continued to pursue my interest till my adult years.

"Since young, my own children were exposed to innovative activities such as giving them the responsibility to solve matters related to programming, taking them on visits to the Planetarium and the National Science Centre as well as encouraging them to participate in exhibitions and STEM workshops.

"All these have proven fruitful as my children share a similar journey that I went through when I was a child," he added.

UNLOCKING A CHILD'S TALENT

Besides Muhammad Khawarizmi, two of his younger brothers Khazini and Muhamad Al Amin share similar interest in science and innovations by producing creations based on materials that are easily available.

Khazini is more involved in game development through Unreal Engine and Blender software just like his brother, while Al Amin is more artistically inclined.

"I recognised their talents and interest since they were young and gave my support by providing them with the relevant materials and a mini maker space (for them to work on projects) at home.

"I don't mind spending on STEM activities for my children and in fact, I once sold my car and used the proceeds to buy STEM learning materials for them," said Muhammad Kamalrul Zaman.

"It's important that, during the first years of our child's life, we strengthen their character to encourage them to fulfil their dreams. Observing which subject they excel in will be paramount when it comes to focusing on empowering those skills and abilities.

"You can recognise a child's talent when they've developed a skill with ease and they're able to perform it well.

"For example, if the child is more focused on art, parents can help nurture their talents by providing them with educational animation software," he added.

SIDE BAR

Malaysia Techlympics 2022 is the largest-ever initiative by the Ministry of Science, Technology and Innovation (MOSTI) to nurture young talents in Science, Technology and Innovation (STI).

The nationwide programme, w hich is expected to attract one million students and youths aged seven to 30, runs from March to November 2022.

It comprises a series of 25 competitions based on five key themes and 10 prioritised areas. The five key themes include artificial intelligence, space exploration, drones and applications, trending technologies and sustainable innovations.

A host of activities will be conducted along these themes, including workshops, webinars, games, maker labs, competitions, quizzes and exhibitions during this grand science fiesta.

Techlympics 2022 will complement formal Science, Technology, Engineering and Mathematics (STEM) education in Malaysian schools and universities. -- BERNAMA