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JUL - SEP
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CONTACT

ISSUE
31

THE TEACHERS' DIGEST

BEYOND THE FOUR WALLS

Teachers today bring rich experiences from the world into their classrooms

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JUL - SEP

The 1970s saw the invention of the microprocessor, and an explosion in the use of personal computers. Tinkering with seventies technology, an Oxford undergraduate named Timothy built his own computer using an old television and a soldering iron. It would be a decade, and a series of jobs later, before the young programmer invented the World Wide Web.

Today, we know Tim Berners-Lee, 63, as one of 20th century's most important figures. He received the 2016 Turing Award (named after the famous code breaker) for achievements in the computer sciences, and he has been knighted by the Queen. Sure, he graduated with a first-class bachelor's degree in physics, but it was his skill as a coder that changed the world.

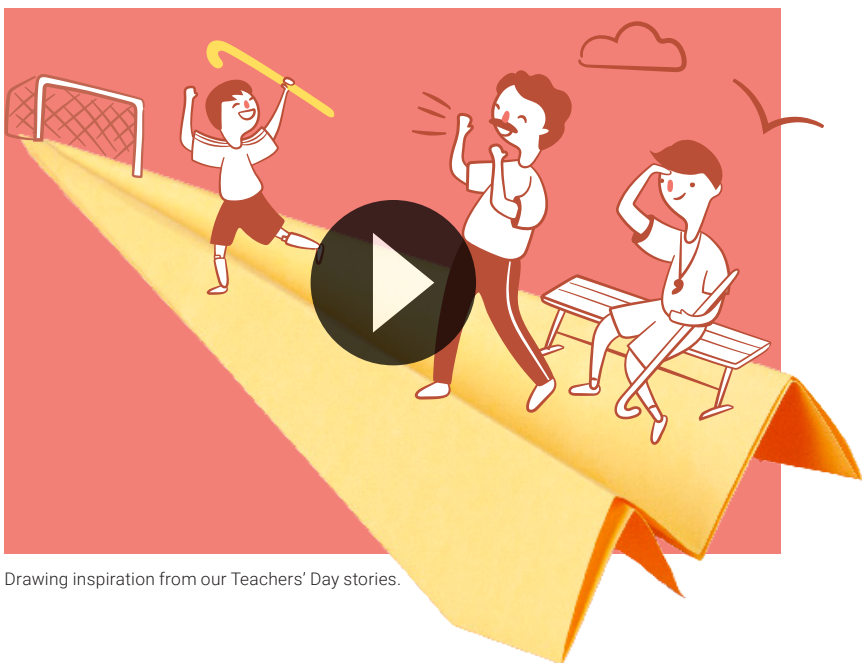
So, we're thrilled that this issue features young makers using their skills to change the lives of those around them (see **p09**). More important, the school experience is changing. Today, students learn and apply their knowledge at the same time, inside and outside the classroom (see **p02**).

Teachers are at the heart of this 'quiet revolution' (as a recent *Economist* article noted). Chalk-and-talk pedagogy has been replaced with inquiry, problem-based and project-based learning (see **p16**). And as Principal Mr Shawal expresses in his profile piece, educators should be encouraged to take bolder leaps during lessons and co-curricular activities (see **p06**). Of course, real life remains the natural venue for learning by doing (see **p08**).

On the topic of keeping things real. The winning entry for this issue's Back Cover is from Mr Tay Li-Cheng, an Art teacher from Raffles Institution. (Congratulations!) Also, congratulations to the featured stories from this year's Teachers' Day dedications on the theme, Tiny Moments That Matter. The illustration on this page is one of the drawings based on these special moments, which are being shared on social media (see details on **p21**).

We wish you all the best with the last term of the year. If you've any thoughts or reflections on 2018 thus far that you'd like to share with us, do drop a note to our editorial team (contact_online@moe.edu.sg); we're always up for tips and collaboration ideas.

The *Contact* Team



Drawing inspiration from our Teachers' Day stories.

CONTACT

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COVER ILLUSTRATION: GARCON DESIGN

BEYOND ROTE LEARNING

How do teachers help students cultivate a love of learning that goes beyond memorisation and regurgitation? By bringing the real world into the classroom and encouraging students to apply what they have learned to find solutions to problems.

In Primary 1 and 2 classes at **Teck Whye Primary School**, students are performing in little speech-and-drama shows for their English and Mother Tongue classes. In another Primary 2 classroom, they're getting an English lesson with input from Art and Music as they play chefs in their own cooking programme.

Primary 3 children are learning to create animations through simple coding, and writing their own fairy tales. In Primary 4 and Primary 5, they take on the roles of budding reporters and advertisers, respectively, to produce online blogs and ad campaigns.

"Our Applied Learning Programme weaves media concepts and literacy skills into the language and aesthetics lessons, by allowing our pupils to become creative media producers themselves," says Ms Keng Gek Yong, co-ordinator for the programme. "It also helps them to think critically about media, and develop into confident communicators."

This may not be school as children who grew up in the 90s think of it. But this is the new normal. Schools in Singapore have embraced applied learning, which encourages students to use their knowledge and skills gained in class to tackle real-world problems. All secondary schools now offer an Applied Learning Programme (or ALP), as do more than 80 of the 191 primary schools. All primary schools will have one by 2023.

"Students are more engaged with lessons when they can see the practical applications and relevance to their lives, and they also want to learn more," explains Dr Kenneth Lim, a research scientist at the National Institute of Education (NIE) who has extensive experience in curriculum design, teaching and training.

Dr Lim and Mr Joshua Lee, a Ministry of Education teaching scholar, led an NIE team that worked with **Yio Chu Kang Secondary School** mathematics teachers to test a new way of teaching lessons on averages, including the mean, median and mode, for Secondary 2 students. The trial lessons were carried out in February and March 2018.

The teachers had said that the conventional textbook-based lessons, which rely on rote-learning and worksheets, often left the students unable to clearly understand the application of the various types of mathematical averages.

STORY **FENG ZENGKUN** ILLUSTRATION **GARCON DESIGN**

The students also said that mathematics lessons did not seem relevant to them in real life, which can make them indifferent to the subject and unmotivated during classes.

As part of the new method created by Dr Lim and Mr Lee, the students looked at data and applied what they had learned about averages to answer one simple question: Where is the best spot to study in school during the after-class hours of 3 pm to 6 pm, excluding the library? "This is something that the students did, so it made the context not only real but also personal to them," says Mr Lee.

After the question was posed to the students, they shortlisted various locations and the school deployed sensors to collect data on the areas' brightness, noise and temperature at five-minute intervals over the three hours from Monday to Friday. The data was then formatted, printed and distributed to the students in class.

Working in groups, the students filled out a worksheet that required them to, among other tasks, select a time interval to use and explain the rationale for their choice, extract the relevant figures from the data sheet and calculate the mean for each of the three factors.

"ALLOWING OUR PUPILS TO BECOME CREATIVE MEDIA PRODUCERS HELPS THEM THINK CRITICALLY ABOUT MEDIA AND DEVELOP INTO CONFIDENT COMMUNICATORS."

- Ms Keng Gek Yong, ALP co-ordinator, Teck Whye Primary School

The class discussions after the exercise showed that the students were both engaged in the lessons and had a clear understanding of the mathematics, Mr Lee notes.

"There were instances when the sensors unexpectedly produced a 'zero' reading, and the students debated over whether these readings should be included in the calculation of the mean. This showed that the students not only had a fundamental understanding of what a mean is, but also an intuitive understanding of what a zero-reading would do to the final result," he says.

In interviews with the students after the exercise, many of them said that they preferred the new method of teaching averages because it was more relevant to them. In a further display of enthusiasm, they also wished that they had been involved in the setting up of the sensors and collection of data.

Other primary school and secondary school students in Singapore were similarly passionate about their applied learning experiences, saying that it encouraged them to learn instead of simply memorise facts.

In **Eunos Primary School**, pupils from the Green Market Co-Curricular Activity (CCA) Club help to maintain a Sensory Garden about the size of a basketball court on the school's premises. The garden reinforces lessons that they learn in their science classes about plants' life cycles and parts, and about processes such as photosynthesis.

When the garden was set up in early 2018, the pupils helped to create the soil beds and learned how to transplant flowers and vegetables from their pots to the beds. "We were careful to cover the roots of the plants with soil because the roots not only anchor the plant but also take in water and mineral salts," recalls Primary 5 pupil Krystal Sandar Swe.

She says that her work in the garden has taught her valuable lessons: "It helped me to understand the value of unity as the Green Market team members all worked together to set up the garden."

She is also likely to carry with her other lessons from the garden beyond primary school. She explains: "With the help of friends and by being resilient, nothing is impossible. And when you put a lot of effort into doing something meaningful, one of the biggest rewards you receive at the end of it all is a huge sense of satisfaction."

Notes from Researchers

Project highlights from NIE's Office of Education Research

Makerspaces for Interdisciplinary STEM Education

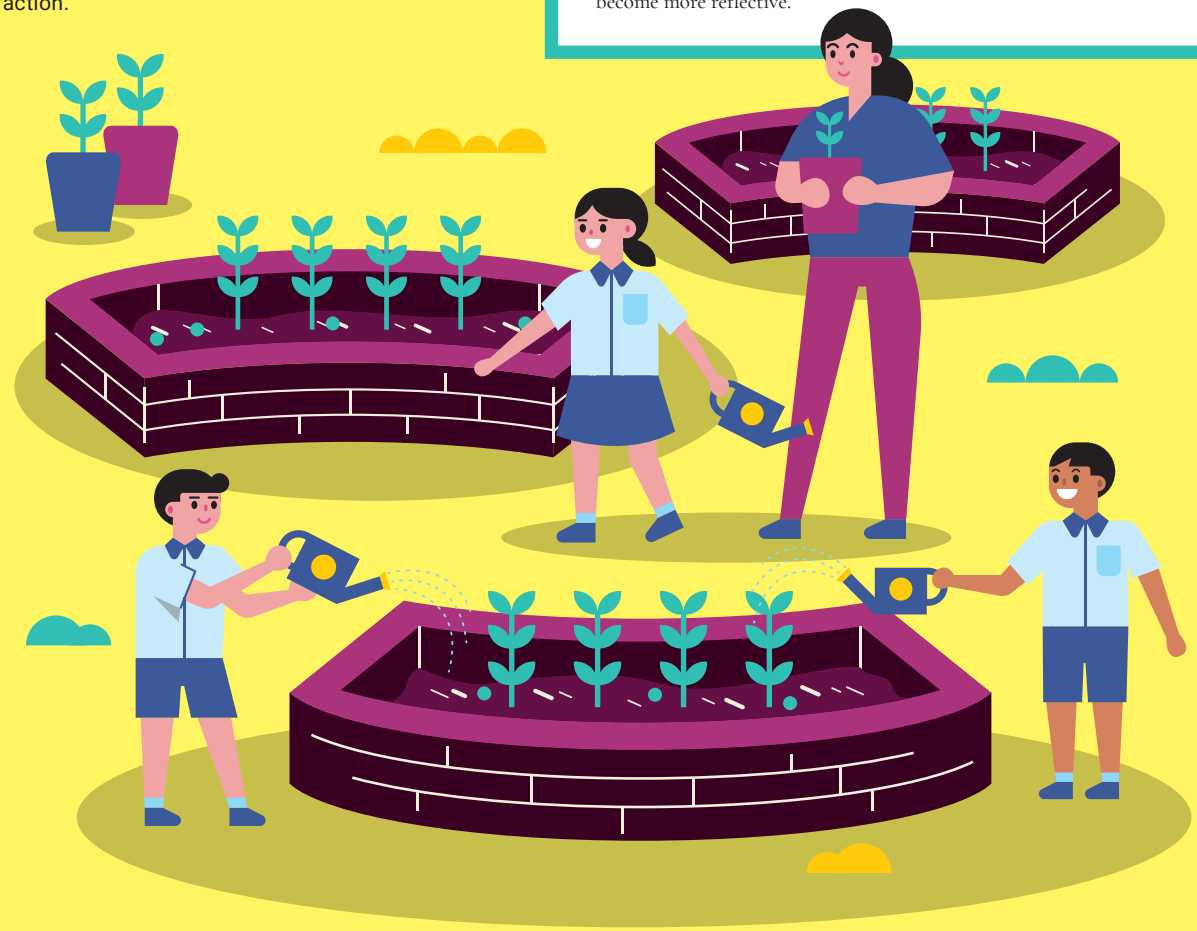
PRINCIPAL INVESTIGATOR: DR MICHAEL TAN

"Science, Technology, Engineering and Mathematics, pose a new interdisciplinary challenge to education. If we wish that students acquire knowledge that is of use to them in their lives, teaching these subjects in isolation and abstraction is no longer sufficient. The makerspace needs to be as essential as the school field. While the things of the makerspace are important, it would be a mistake to underinvest in the people, too. Educators seeking to lead these classrooms need to understand the nature of science and technology in order to adaptively address the emergent challenges of facilitating student activities."

Visualising and Performing Character and Citizenship through Digital Storytelling

PRINCIPAL INVESTIGATOR: DR PHILLIP TOWNDROW

"One way to help students open up in Character and Citizenship Education (CCE) classes is through hands-on drama and digital storytelling. We found that students can design and produce subtle and nuanced stories about character and citizenship with little or no direct instruction. As a result, their confidence levels can rise, and their perceptions of their surroundings become more reflective."



In **Evergreen Secondary School**, the range of applied learning initiatives include the Mother Tongue Fortnight programme, which spans two weeks each year from Secondary 1 to Secondary 3, and exposes the students to different aspects of Chinese culture.

This programme consists of: Hands-on classes for traditional Chinese medicine, including the tasting of health-boosting teas, for Secondary 1 students; read-aloud sessions of Chinese literature for Secondary 2 students; and lessons about Xinyao, a genre of Mandarin songs unique to Singapore, for Secondary 3 students where they also write their own Xinyao songs. Several of these songs have been submitted to national Xinyao competitions and won prizes.

Tracy Goh, a Secondary 3 student, says: "I think that for many of us, the more we discovered about Chinese culture through these Fortnight programmes, the more interested we became in both the culture and in learning Mandarin during our normal classes."

Her classmate Max Kok, also a Secondary 3 student, agrees. He adds: "I have many friends who were not interested in the Mandarin classes because they mainly speak English at home and with their friends, but the Fortnight lessons really changed their minds and made them realise that Mandarin can be very fun."

Q&A

Mr Kenneth Sim, Vice-Principal, Fuchun Secondary School

Why is it important for students to learn coding?

Computational Thinking hones students' problem solving skills. Our lives now revolve around things with functions achieved through coding, from smart appliances in our homes to the apps and games in our smartphones. Exposing students to the world of coding enables them to develop basic programming skills, and their ability to think critically and creatively.

What help do teachers provide students?

Most of our teachers working on the Applied Learning Programme started with little knowledge in coding, but have since become proficient in coding and robotics. When students are stumped by errors, teachers need to be able to identify the bugs and teach the skill of debugging a piece of code. Many times, teachers have to think on their feet to respond to new challenges posed by our students' imaginative minds.

Why is applied learning important?

It allows students to appreciate the connections between theory and practice, between school and industry, and across the various disciplines of STEM subjects. The learning process is a continuous cycle of designing, implementing, testing and innovating. Resilience and determination are required to overcome obstacles. This forms a strong foundation build on skills, knowledge and confidence.

Fortune Favours the Messy

A conversation with Mr Shawal Bin Hussin, Principal of Orchid Park Secondary, about the value of giving teachers and students time and space for experimentation.

PHOTOGRAPHY **PINCKERS**

Learning is messy business. At Orchid Park Secondary, teachers and students are given the opportunity to experiment and learn from their mistakes, as long as safety is not compromised. Since Mr Shawal Bin Hussin took over as the school's principal, he has encouraged teachers to take bolder leaps during lessons and co-curricular activities to keep their students interested and learning.

Contact: **You've said that school is a place where errors and mistakes must be accepted. Why do you believe this?**
Mr Shawal Hussin: Teachers are experts in their fields, so they should be given the professional trust to do what they think is necessary for their students.

As long as they explain the objective of their ideas, the rationale, what their ideas are based on and the end results that they want to achieve, if there is no issue about safety, they should be given the freedom and leeway to try. My view is: If you don't get the end result that you wanted, tell me what happened, what you've learnt from the experience and what are your plans moving forward. We won't blame or finger-point as long as students' safety and well-being were not compromised.

In the initial few years, my teachers told me that it was hard to adjust to my approach. But they are slowly getting the hang of it. I've seen many of my teachers blossom and become more confident in their abilities, more vocal, more forthcoming with their ideas and opinions. And confident enough to disagree, challenge norms and decisions made. I like that. I don't think I have the answers to everything, and I need people to share their perspectives, their thoughts, and provide advice.

Contact: **How do you encourage teachers to take calculated risks if good grades and achievements are still valued as pinnacle outcomes?**
Mr Shawal Hussin: I tell my teachers that students can go for competitions and not come back with awards, as long as they learn something from the experience. I don't put pressure on the teachers in charge of co-curricular activities (CCA) to chase achievements and win trophies.

Instead, I ask: "How's your attendance for your CCA? Are the students interested in coming? Are the students having fun? What have they learnt from their CCA, in terms of values, leadership, innovation and community spirit?" My teachers are pressured to ensure that their CCAs are solid platforms for character building.

> "I TELL MY TEACHERS THAT STUDENTS CAN GO FOR COMPETITIONS AND NOT COME BACK WITH AWARDS, AS LONG AS THEY LEARN SOMETHING FROM THE EXPERIENCE."

What is more important: A trophy or lessons that a student will carry with him or her throughout his or her life? A trophy is significant as it shows a level of achievement after much effort and work, but it's not the end all or be all.

I'll give you an example: We have a cross-country interest group, and the first time they participated in a competition, they came in last. This year, they came in second-last. To me, that is a 100 percent improvement. The important fact is that they were willing to go out and try again. It would have been easy to give up, to cook up excuses, to quit. But they ran again and completed the race.

Contact: **How do your teachers find the time and space to dream up new ideas in the midst of all their duties?**
Mr Shawal Hussin: Make it part of your lesson planning. Take our Physical Education (PE) curriculum: We follow the curriculum as prescribed, but the manner in which we deal with the curriculum is different. We look at what the students need and what will be useful in the long term. We include practical activities in the curriculum that will excite them.

We have a partnership with the People's Association's Water-Venture division to offer kayaking and dragon-boating as part of the Secondary 2 PE curriculum. At one point, we even had a tie-up with the Singapore Sailing Federation for our PE lessons to include sailing. We are also working with Sport Singapore so that our Secondary 3 students can go to Yishun Stadium to learn how to use the health facilities, gym, track and field.

By using these external facilities and introducing ourselves to the community around the school, we also become more involved in the community. Most of our students live in the area. I want them to have a sense of responsibility and attachment to the community, and this is one way to achieve that.

For every event, every programme, we ask: How effective is the teaching, how effective is the learning (academic and non-academic), and how are we building up the students' character and values?

Contact: **What feedback have you received from parents?**
Mr Shawal Hussin: The most common feedback that I get from parents is that their children are happy to come to school. We have very few issues with attendance. Their only gripe is that their children don't want to go home! Every day, we have to go around the school at 6.30 pm to shoo people out.

FROM PARENTS TO PARENTS: SIX THINGS WE LEARNT

Six panelists — all parents — from the Possibilities panel discussion share their thoughts on how to help children prepare for the future.

1. Don't just climb up, climb sideways

Many think of success as a ladder to the top. But your journey could go sideways, if you have transferable skills! That's how Ms Ginette Chittick has gone from rock musician to running the fashion diploma course at LASALLE. She advises her students: "You may not get the job that you want in the industry, or you may not be interested in the job you're studying for. But you can move sideways."

2. Get noticed through networking

Want to land a job? Don't just blast out resumes to dozens of employers; go out and actually meet them – at networking events, recruitment fairs, and trade shows. That's how marketing man Mr Imran Johri "beat the numbers game" of job-hunting. He's had 12 jobs, 11 of which came through people he'd met before. "Be shameless when it comes to your own success, because no one else will do it for you."

3. Cultivate a sense of fearlessness

Mr Moh Hon Meng, co-founder of iFAST Corporation, wants his two sons to be fearless. Not reckless, but unafraid to fail. And why is failure important? The serial entrepreneur says: "I'm never going to hire the guy who has never failed, because his first failure is likely to be with me."

4. Helping others also helps yourself

How do you motivate someone whose life has been nothing but horrible? Oncology product specialist Mr Christian Eber organised a group of at-risk students to educate other families on climate change and electricity conservation. He tells them, "You may think you have it bad, but you are sharing all you know with all these people. Don't let them down. They need you." That sense of purpose was exactly what those students needed.

5. Take calculated risks

Nothing ventured, nothing gained—but some students (and parents) refuse to take risks. So, communications lecturer Ms Crispina Robert gets them to talk to strangers and shoot videos in Geylang, taking them out of their comfort zones. "I explain to their parents that because they are willing to let their kids do these things, they will learn that taking risks may not be as bad as they thought."

6. Keep reading, keep learning

There's a good reason we need to keep learning even after we leave school: we're living longer than before. "The idea that what you learn at 25 will be sufficient for you to work 40 or 50 years, is a gross miscalculation," says Mr David Toh, Chief Technology Officer of NTU's business incubator NTUitive. He continues to take courses to update his knowledge about robotics and programming to support his current work. He believes it's a habit best developed from childhood: "It is only from healthy reading habits, that constant yearning for reading, that you develop the skill to continuously upgrade your knowledge for the rest of your life."

The Possibilities panel took place in July. It was an MOE forum featuring a range of angel investors, HR experts and polytechnic lecturers who had a variety of job experience. They spoke directly to parents who had concerns about their children's future. Watch the live recording of the discussion at **bit.ly/PossibilitiesPanel**

STORY **DON SHIAU** ILLUSTRATION **BERT LIM**

MADE IN SINGAPORE SCHOOLS

We take a look at how students are applying what they learn in classrooms to create products that benefit the community.

Extraordinary Everyday Objects

A pair of chopsticks with a spring attached for those who have trouble manipulating it. A robotic arm to aid the movement of those suffering from arm injuries. These are just a few products that students in the iDesign Club at **Teck Whye Primary School** have created to solve issues they see in their community. The school's CCA develops students to think of and design solutions that improve the quality of life for family members, or the school experience for classmates. With 3D printing, students even get to see their projects come to "life"!

STORY **MAGDELINE LEE** ILLUSTRATION **CHENG SU BING**

NEW SPACES FOR STUDENTS

$2.5 billion

Money spent from 2009 to 2018 to build eco-gardens, performing arts studios and redesigned classrooms in primary schools. Learning isn't just about textbooks.

Source: Ministry of Education, Singapore

TEACHING IN THE 21ST CENTURY

"Pedagogy is changing in schools. It is more experiential, applied and exploratory."

– Minister for Education, Mr Ong Ye Kung, addressing parliament during the debate on "Education for Our Future" on Jul 11.

Cleanliness Ambassadors

Students from **Cedar Girls' School** created two characters for storybooks they wrote for pre-schoolers, Responsible Roy and Stubborn Stacey. These characters are used to educate children on the importance of keeping Singapore clean, in a fun way. Roy is a 'superhero' by night who picks up litter in his neighbourhood even when he is injured. His dedication touches the people around him. Stacey is a stubborn girl who constantly litters, but eventually turns over a new leaf. The storybooks can be found in our public libraries. This book project is part of a school-wide Social Innovation Programme, where students learn to apply Design Thinking to solve real-world problems.

CELEBRATING HOLISTIC ACHIEVEMENTS

196

Number of Special Awards given out on Aug 14 – the highest number in a single year so far – to recognise students' accomplishments in both academic and non-academic spheres, including their contributions to the community.

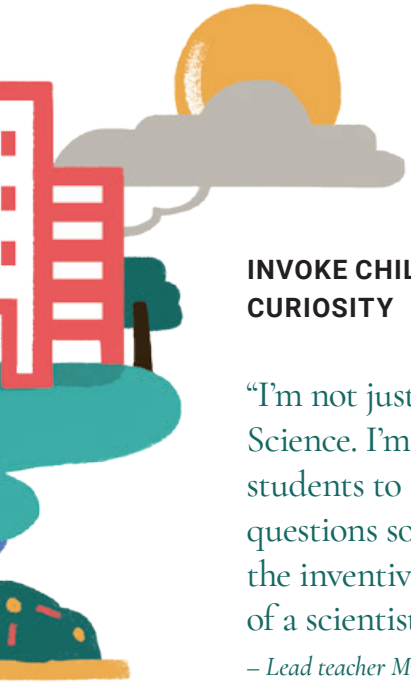
FLY THE FLAG HIGH — OUR STUDENTS ON THE INTERNATIONAL STAGE

SECONDARY STUDENTS AWARDED STOCKHOLM JUNIOR WATER PRIZE

This year's win went to two students from **Hwa Chong Institution**, Caleb Liow and Johnny Xiao, for using durian shells and sugarcane pulp to produce graphene oxide, a material that can be used to purify water.

SINGAPOREAN DUO WIN BRITISH AWARD FOR YOUNG LEADERS

Among the 61 winners of the fourth and final Queen's Young Leaders Award: 20-year-old Mock Yi Jun, for his work in Singapore supporting young people to pursue their ambitions. And 25-year-old Oon Tian Sern, for using technology to help people access mental health support, by creating the online platform Acceset.



INVOKE CHILDREN'S CURIOSITY

"I'm not just teaching Science. I'm teaching students to ask questions so they have the inventive mind of a scientist."

– Lead teacher Mrs S Nirmala Devi, Guangyang Primary School, one of the eight recipients of this year's President's Award for Teachers.

Toys for Teachers

Heard of the "Piano Spinner"? This is a toy created by a group of Secondary Two students from **Swiss Cottage Secondary School** for kindergarten kids. The toy has rainbow panels and a wheel that can spin to attract children's attention, and comes with instructions to teach them dance and jumping actions. This is a six-month interdisciplinary school project that the students embarked on. The students read up on early childhood education, 3D-printing and design thinking to equip themselves with theoretical know-how. As part of their research, the students visited kindergartens to interact with children, interview teachers and observe lessons to understand the needs of their users.

JC STUDENTS WIN FIRST PLACE IN WORLD ROBOTICS CHAMPIONSHIP

A team of three **Nanyang Junior College** students – Samuel Tan, Leong Heng Yew and Fadhel Erlangga Wibawanto – clinched the top spots at this year's RoboCup Junior Rescue League Rescue Simulation Contest, held in Montreal, Canada.

POLYTECHNIC TEAM CREATES GADGET TO HELP DYSLEXIC CHILDREN

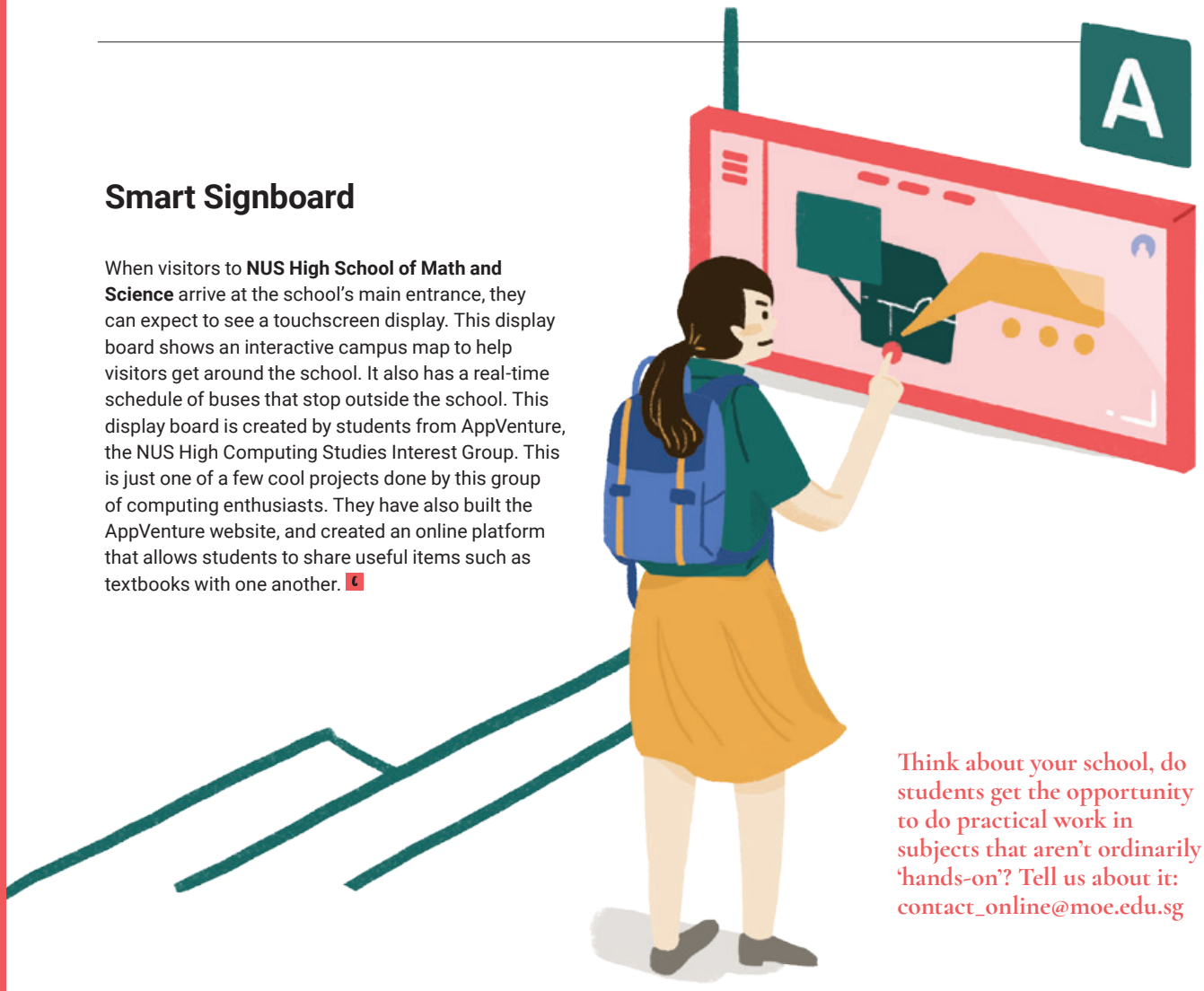
The Microsoft Imagine Cup 2018 World Finals in Seattle, USA, featured ProCubeX – machine-learning cubes to guide children aged six to eight in spelling – developed by **Nanyang Polytechnic** student Eugene Lee, and alumni Guo Xihuang and Sun Yetong.

Pot of Gold

Five years. That was how long it took for students at **Teck Whye Secondary School** to successfully cultivate a hybrid of the golden orchid, which they named "Dendrobium TWSS50". With patience and perseverance, the efforts from five cohorts of students came to fruition. The hybrid is patented by the Royal Horticultural Society of the United Kingdom. The school runs an Orchid Hybridisation Programme, which comes under the Science Talent Development Programme. Students are taught concepts relating to plant biology, and they get to visit orchid farms where they learn to grow orchids. The learning goes beyond books — students also have to market and sell their orchid products. In the process, they develop collaboration and communication skills.

Smart Signboard

When visitors to **NUS High School of Math and Science** arrive at the school's main entrance, they can expect to see a touchscreen display. This display board shows an interactive campus map to help visitors get around the school. It also has a real-time schedule of buses that stop outside the school. This display board is created by students from AppVenture, the NUS High Computing Studies Interest Group. This is just one of a few cool projects done by this group of computing enthusiasts. They have also built the AppVenture website, and created an online platform that allows students to share useful items such as textbooks with one another.



Think about your school, do students get the opportunity to do practical work in subjects that aren't ordinarily 'hands-on'? Tell us about it: contact_online@moe.edu.sg

1

GALLERY TALK

What makes our schools unique? In the pages that follow, three winners of our inaugural photo contest present their winning images and the stories behind these pictures.

When we asked students and educators to tell us their school stories – through photos – 191 schools responded, and we received close to 800 entries for the inaugural "Our Schools, Our Stories" photo contest. Congratulations to our 27 prize recipients. Images from the three teachers who won Best Photo are profiled here and in the following pages.

2

1 & 2

BY **MR KUANG KIM CHUN**
CATHOLIC JUNIOR COLLEGE

Theme
PRICELESS MOMENTS

"Catholic Junior College holds an annual concert – and this one was taken over by the teachers! They donned leather outfits, strapped on guitars and jammed to songs such as *Rewrite the Stars* and *Pompeii*. All to inspire their students in another dimension beyond the classroom."

3 & 4

BY **MS JOSCELIN CHEW**
NORTHBROOKS SECONDARY SCHOOL

Theme
MY SCHOOL COMMUNITY

"Northbrooks Secondary School's eco garden is a work of art by Mr Poon, the school's gardener. He has been in Northbrooks Secondary for many years. His patience, effort and dedication are reflected in the beauty of the garden – as well as in the colourful recycled art that welcomes visitors to it."

3

4

5

5

BY **MR QUEK MING YEOW**
CHANGKAT CHANGI SECONDARY SCHOOL

Theme
ORDINARY SCHOOL DAY, EXTRAORDINARY SCHOOL LIFE

"We hope our students won't forget the lessons they learned: **Perseverance** – a group of junior netball girls joined with their seniors to wipe down the netball court with wipers so that training could continue after the rainstorm! **Teamwork** – getting together to build up their spirit!"

CHECK OUT MORE WINNING ENTRIES OF "OUR SCHOOLS, OUR STORIES" PHOTO EXHIBITION AT THESE LOCATIONS:

Academy of Singapore Teachers
until Oct 30, 2018

Jurong Regional Library
Nov 1 to 30, 2018

Tampines Regional Library
Dec 1 to 31, 2018

We are also publishing a selection of photo stories on MOE's Facebook page. Look out for them!

Visit *www.moe.gov.sg/schoolstories* to learn more about the exhibition or photo contest.

OUT OF THE FOUR WALLS

Today, teachers are bringing rich, first-hand experiences of the world into the classroom. Here are some fresh ideas from two recipients of the Outstanding Youth in Education Award 2018.

Small Steps into a Big World

BY **MS TAN SI HUA**
HOD FOR ICT, JUYING PRIMARY SCHOOL

I chanced upon a note while marking one afternoon. Sandwiched between stacks of Mathematics activity books, it read, "Thank you for being my teacher! When you give us interesting lessons, I can feel that you care for us because you do not want us to die of boredom. Love, Abby."

This candid and unexpected encouragement from my 8-year-old student tugged at my heartstrings. I was reminded of how my teachers had fuelled my interest in learning when I was in school.

I am dyslexic. I spent a large part of my childhood learning to read and spell. I struggled in school and had a slow start. I was fortunate to have teachers who were willing to spend extra time with me, adapting their teaching strategies to meet my learning needs.

To help me read, they taught me how to decode and comprehend words – from guiding me with small, simple words, to breaking bigger words into syllables. In time, my reading improved. One of my teachers even made me her "Little Helper" to improve my vocabulary. I learnt words as she guided me to create learning resources such as posters and word cards for the class.

Twenty years later, I am a teacher myself. I have the same privilege as my teachers to inspire the love for learning and bring out the best in all my students. Remembering how my teachers helped me, I am determined to customise my teaching to meet my students' needs.

Apply a Little Tech

Most children I meet now are exposed to technology from a very young age. Gone are the days when they would sit quietly and pay attention throughout a lesson.

Like Abby, today's learners yearn to have a greater level of engagement, while they seek relevance and meaning in their learning. They want to know why they are learning a particular subject and be given the space to explore.

To create a more relevant learning environment, I decided to use technology in my lessons. After extensive research, my colleagues and I decided on two new approaches to engage our students.

In Flipped Team-Based Learning, students learn from application of knowledge. The teachers curate and design videos,

ILLUSTRATION **GARCON DESIGN**

simulations, games and quizzes, and get students to try them at their own pace before attending class.

Enter the Food Detectives

For example, in teaching bar graphs, we did not merely show students how to read and interpret the data. Instead, students took ownership of their learning by researching on the diverse types of graphs and their uses.

Following their research, our students played the role of Food Detectives to investigate the main cause of food wastage in school. In groups, they crafted interview questions and used iPads to interview their peers during recess. Armed with the trend data on food wastage, they then returned to class to decide on the most appropriate graphs to present their findings.

The teachers would help them to extend their learning by sharing on the food wastage situation at the national level. Beyond Mathematics, students also discovered which countries in the world were facing starvation, and in turn they learned to appreciate the abundance our nation enjoys.

Works like Magic

To help students relate what they have learnt in the curriculum to the real world, the teachers also adopted Phenomenon-Based Learning. Students engage in activities that allow them to explore real-world phenomena, identify potential problems, imagine possibilities, make connections and generate innovative solutions. For instance, a lesson on electricity would see students construct miniature "smart homes" using recycled materials.

Through these dollhouse-sized "smart homes", students explore how LED lights, motion sensors, timers and motors work in tandem to mimic the principles of energy conservation in energy-saving devices. They would even learn how to programme these devices using micro-controllers.

Seeing the sparkle in students' eyes as they presented their "smart homes" to their classmates, as well as their pride when they took the fruits of their labour home to share with their parents, I felt an immense sense of satisfaction. The journey to uncover this constantly changing world with my students is exhilarating. I ensure their experiences in the classroom are different every day, because I constantly adapt my teaching to suit my students' needs, just as my teachers have done for me. Thankfully, my task is made easier with the help of technology.

"TODAY'S LEARNERS WANT TO KNOW WHY THEY ARE LEARNING A PARTICULAR SUBJECT, AND BE GIVEN THE SPACE TO EXPLORE."

A version of this article was published in Schoolbag.sg with the headline *Technology, a teacher's best friend.*

In Search of Purpose

BY **MR WONG YI FONG**
SUBJECT HEAD FOR STUDENT LEADERSHIP DEVELOPMENT COMMITTEE,
UNITY SECONDARY SCHOOL

When I was in university, I knew someone who had no interest in what he was studying – he only wanted to get a degree. When I asked him why he chose this course, he said it was the "best" one that he qualified for. Subsequently, he interned in a company in a related industry because it was "the practical thing to do". When he graduated, he got a job in that company.

I remember him telling me, "Be realistic! How many people actually like their jobs?" I felt very sad about the values he was espousing. Are we driven only by pragmatism and economic stability? As an aspiring teacher at that time, I asked myself: "What can I do to help my future students so that they would not end up as uninspired? How can I help them discover their interests and passion?"

I discussed this with a group of like-minded friends, and we thought that one way to help students explore would be to expose them to the many different careers in the world at a young age. To do this, instead of merely giving career talks, we would get volunteers who would be willing to mentor students. Through "mini-apprenticeships", these mentors would share their stories of how they found their passion, conduct activities to give

"I WAS HEARTENED BY HOW INQUISITIVE THE STUDENTS WERE ABOUT DIFFERENT PROFESSIONS. THEY HAD THOUGHTFUL REFLECTIONS ABOUT WHAT THEY WANTED TO DO IN THE FUTURE."

students an opportunity to experience their profession, and most importantly, guide students to reflect on what motivates them in a career.

Eyes on the Future

With this idea, my friends and I set up a non-profit organisation to partner schools and bring the programme to students. When we ran the programme in my own school, I was heartened by how inquisitive the students were about different professions. They actively asked questions and had thoughtful reflections about what they wanted to do in the future.

One student told me he had thought a computer programmer must be a genius who is very intelligent. However, through the apprenticeship, he realised that computer programming was about having a logical thinking process, and most importantly, it was something he could possibly do with practice. Another student, upon the completion of the programme, told me how grateful he was for the mentors who had spent so many Saturdays helping him find his passion. Though he was a quiet student, he felt at ease asking his mentor why she is so passionate about her job. These moments give me great joy and satisfaction when I see my effort benefitting my students and their future.

Let Earth Inspire

So how did I come to choose my own profession? As a child, I was fascinated by the destructive power of nature, in the form of natural disasters like volcanic eruptions and earthquakes. I found myself wanting to learn more. I read books and watched documentaries, and even studied my elder siblings' Geography textbooks. When I had to pick a subject combination in school, it was obvious that Geography had to be in it.

When I was in university, learning about Geography ignited a streak of wanderlust in me – I wanted to visit other countries in order to experience their physical environments and learn about the unique culture of each place.

Bringing Home Life Lessons

As a teacher, I want to share my passion for Geography with my students. It is a discipline that helps us make sense of the world – how both the physical and human environments interact with each other to make up the world we know today. Geography also teaches us to appreciate our world. It imbues in us a sense of social justice; we know that the world we live in is imperfect, yet it is our duty to make it a better place.

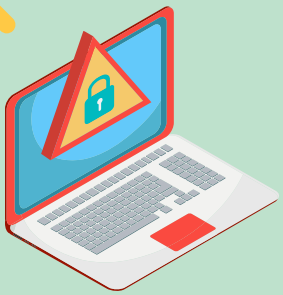
In class, I draw heavily on my travel experiences. From talking about environmental degradation in the context of Easter Island, to the melting of Antarctica's azure glaciers due to global warming – a lesson in Geography is not just about cognitive knowledge, but also an emotional response, a desire to do something about the world. I truly believe in bringing the world to my classroom.

I count myself fortunate to have discovered early in my life two things that enraptured me for years – my passion for Geography, and my passion to teach. I enjoy the work I do and find it tremendously meaningful to be able to contribute to society in my own way. I know that each person finds motivation and meaning in different ways and fields. That is why it is my wish that through my role in education, I can help my students define their own meanings of success – that one day, they will find something that offers them the joy that I get from teaching Geography.

A version of this article was published in Schoolbag.sg with the headline *When passion leads to your dream job.*

SAFE SURFING!

Tech tools have the potential to make a big difference in your teaching and your students' learning. But there are many risks on the Internet. Ask these four questions before using any online tool.

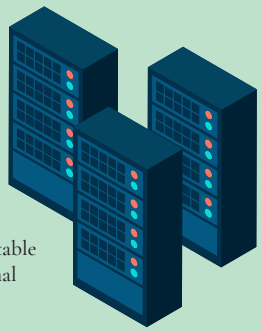


01. IS THE WEBSITE SECURE?

Look for "https" in the URL for websites that require input of personal data. These websites are encrypted, and probably more secure than those marked "http". Websites with the highest level of encryption will display a green address bar with a lock icon.

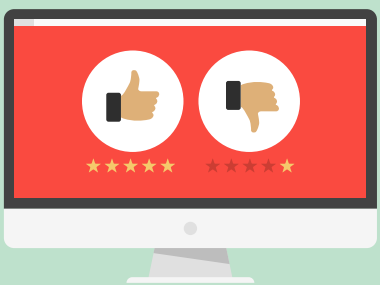
02. DOES THE ONLINE TOOL HAVE A PRIVACY POLICY?

You should check that the online tool has a privacy policy statement, and understand the terms before using it. Reputable sites should tell you how they protect your students' personal data, and whether third parties have access to the data.



03. AM I REQUIRED TO SUBMIT MY STUDENTS' PERSONAL DATA?

If possible, select online tools that do not require you or your students to key in personal data during account creation. However, if there is no viable alternative, provide only the minimum amount of information required to access the service.



04. HAS THE ONLINE TOOL BEEN REVIEWED?

Reputable online tools used by schools would usually have positive peer reviews on education websites, such as privacy.commonsense.org.

What counts as personal data?

Information about an individual that enables the person to be identified:

- Personal identifiers e.g. name, NRIC/FIN/BC number, telephone number, photo
- Personal details that when put together could identify the individual, e.g. 'Jack Chan, 15, student, lives at Block 321 Bedok North Street 12, from XYZ Sec School Sec 3B'

References:

- https://ictconnection.moe.edu.sg/cyber-wellness/cyber-wellness-101/online-identity-and-expression
- https://ictconnection.moe.edu.sg/cyber-wellness/for-parents/guides-and-tips/helping-your-child-stay-safe-online
- https://www.csa.gov.sg/gosafeonline
- http://www.nlb.gov.sg/sure/10-tips-on-how-to-protect-your-data-online
- https://www.medialiteracycouncil.sg/Online-Safety/sharing-personal-information-online
- https://www.pdpc.gov.sg/Individuals/Protecting-Your-Personal-Data

TINY MOMENTS THAT MATTER

Former students share how a small gesture from their teachers inspired them many years on.

"In Primary 3, we were tasked to create a boat that could float. To our dismay, our boat was the first to sink. But Science teacher, Madam Chng, awarded us a consolation prize for exemplary teamwork. This taught me, us, that success is not always about winning. She taught us that having the right values will lead one to success in other ways too."

Ms Gracie Chua on her teacher, Mdm Winnifer Chng from Methodist Girls' School

"Being in the reserve team was no fun. You bring your gear to school. Change. Do the entire warm up and then wait... During a friendly hockey match, my teacher talked to our coach, who had a look on his face that said, "Really? Him? Are you sure?" I was sent on. It was a surreal experience. It was a tiny moment that mattered, even now, 28 years on.''

Mr Raizan A. Razak on his teacher, Mr S. Ganesan from Victoria School

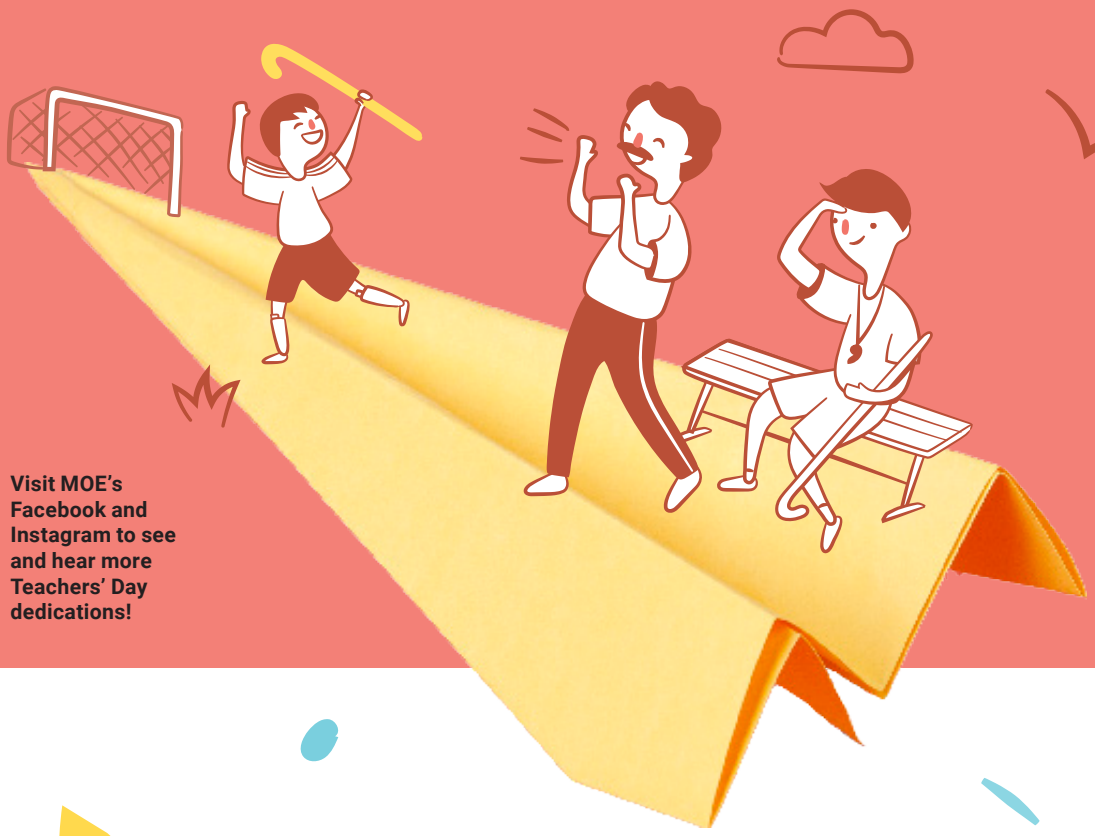


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ILLUSTRATION **JOSEPH TEY**

By **Tay Li-Cheng, Teacher, Raffles Institution**

#CONTACTBACKCOVER: STORIES BY *CONTACT* READERS

Each issue, we publish a comic on the back cover – and it could be written by you! Your assignment: In 6 to 8 lines, tell us your funny story, inside joke, or even share a poem. Send your submissions to contact_online@moe.edu.sg. Please include your full name, school, designation, NRIC and contact number in your email. We'll choose one winning entry to illustrate, and the winner will receive an attractive prize.