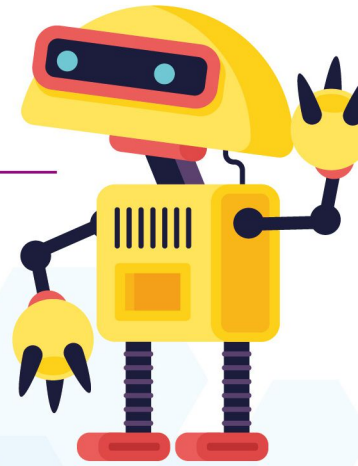


Implementation of CODING in General Studies



The Pioneer Experience of Tsung Tsin Primary School and Kindergarten

Coding and STEM are taking vital roles in the coming new General Studies curriculum, giving rise to a growing urgency for schools to prepare for this new challenge. How can coding, traditionally a computer discipline, be well-incorporated into GS lessons? The experience of **Tsung Tsin Primary School and Kindergarten (Tsung Tsin)** may shed some light on it.



To get ready for the 2019 GS curriculum, **Tsung Tsin** has decided to make STEM a bigger priority in their education. **Coding learning** and **interdisciplinary learning** in General Studies are highly valued parts of their STEM education initiatives.



“Our goals in STEM learning are to raise students’ learning interest and engagement levels through hands-on experience, providing them with opportunities to showcase and demonstrate their works.

Rather than ‘**knowledge**’, we value ‘**skills**’ and ‘**attitude**’ more in STEM learning. In contrast to traditional science learning in which knowledge and skills are treated separately, in our coming curriculum, knowledge and skills form an integral part of STEM education, which helps students build positive attitudes towards science learning. ”

Dr TAM Woon-ling, Principal of Tsung Tsin Primary School and Kindergarten

"School Sharing"

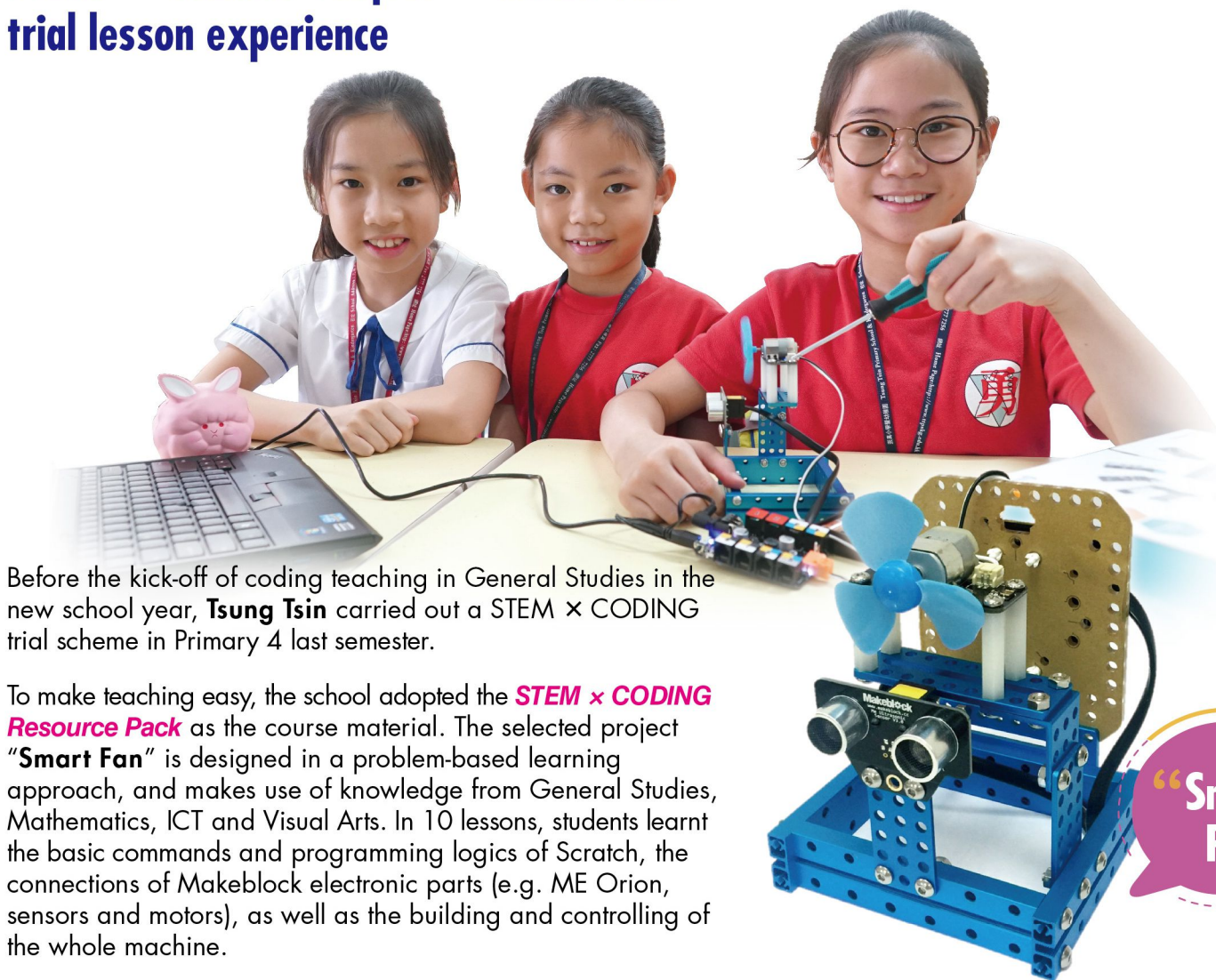
CODING, a perfect bridge for interdisciplinary learning

Promoting interdisciplinary learning has long been one of **Tsung Tsin**'s GS course objectives. With the rise of STEM education in recent years, the school has been strengthening the interdisciplinary learning of STEM in subjects like GS, Chinese, English and Mathematics. This year, they moved ahead in planning cross-interdisciplinary learning among GS, ICT and Mathematics. Coding acts as a perfect bridge among those 3 subjects in their school.

In the new school year, **Tsung Tsin** will incorporate coding learning into GS STEM Project Learning of "maglev train" and "simple machines" in Primary 5 and 6. Meanwhile, ICT and Mathematics will provide a perfect complement. In ICT, gradual reformation of the curriculum will be undertaken to embrace computer programming as the core learning area, which will in turn support coding learning in GS. Mathematics will take a role in terms of improving the projects through mathematical approach and data processing.



STEM × CODING Project – "Smart Fan" trial lesson experience



Before the kick-off of coding teaching in General Studies in the new school year, **Tsung Tsin** carried out a STEM × CODING trial scheme in Primary 4 last semester.

To make teaching easy, the school adopted the **STEM × CODING Resource Pack** as the course material. The selected project "Smart Fan" is designed in a problem-based learning approach, and makes use of knowledge from General Studies, Mathematics, ICT and Visual Arts. In 10 lessons, students learnt the basic commands and programming logics of Scratch, the connections of Makeblock electronic parts (e.g. ME Orion, sensors and motors), as well as the building and controlling of the whole machine.

"Smart Fan"

Students showed great interest in the classes and their learning progress was rewarding. Despite not having learnt coding before, they were able to follow the steps and completed the whole project by themselves.

Mr CHAN Ronald :

Coding teaching in GS is not just about teaching students to code, but it also aims to improve students' problem-solving skills through hands-on and minds-on learning experience. More importantly, coding cultivates computational thinking – from testing, modelling to debugging – this logical thinking ability will benefit students throughout their lifetime.



Mr CHAN Ronald
Assistant Principal,
Head of Studies and Director of
ICT and Database Management

Mr WONG Tony
Head of School Affairs,
General Studies Supervisor

Mr WONG Tony :
Unlike other ICT-focused coding resources, *STEM x CODING Resource Pack* is tailored for coding teaching and learning in GS. The series emphasises coding application which aligns with the key learning areas of GS, making it a great teaching tool for GS Project Learning.

Mr CHAN Ronald :
STEM x CODING Resource Pack provides detailed lesson planning and teaching guidelines. Coding teaching becomes much easier even for GS teachers who are not so familiar with coding.

STEM x CODING Resource Pack (Makeblock Series)

Comprehensive coding teaching
resources tailored for GS education



GS, ICT and Maths: how to go hand in hand?

To facilitate coding teaching in GS lessons, Tsung Tsin has developed a close cooperation among GS, ICT and Mathematics through curriculum integration and class period rearrangement. Professional coding trainings are provided to teachers to equip them with relevant teaching skills.

Subject Cooperation

GS

"Starting from school year 2018–19, we will implement class period rearrangement in the second semester of Primary 4–6: a combined lesson of GS and ICT will be arranged once a week.

In the first semester, GS and ICT lessons will run in parallel as per usual. Once students have finished a simple machine project in GS Project Learning and become familiarised with coding knowledge acquired from ICT lessons, students will then be able to make a leap forward to combine the two skill sets. Therefore, in the second semester, students will learn how to make use of computer programming to improve their simple machines during the combined lessons of GS and ICT."



Mr WONG Tony

ICT

"The course content and teaching plan of ICT will also be adjusted to facilitate interdisciplinary coding learning. Basic coding learning will start from Primary 3 and 4 in order to train up students' logical thinking and equip them with fundamental knowledge of Scratch and micro:bit. In Primary 5 and 6, students will be able to learn more about coding tools and assembly of electronic parts, paving the way for coding application in GS Project Learning."



Mr CHAN Ronald

Maths

The role of Mathematics will stress on the accuracy, quality and improvement methods of the STEM projects. After students finish their STEM project, there will be a "**STEM Study Week**" to allow Mathematics teachers to evaluate the project works with students. Students will be guided to fine-tune their projects with mathematical approach.

Lesson Flexibility

To achieve better teaching quality and learning effectiveness, teachers with science backgrounds will be in charge of both GS and ICT. This will help increase the flexibility of lesson planning, allowing teachers to adjust the teaching schedule more easily. To ensure adequate teaching time to be allocated for coding lessons in ICT, flexibility will also be given to GS and ICT teachers to allot their class periods.

Teacher Training

To prepare for the new challenges of coding teaching, all GS, ICT and Mathematics teachers are required to attend professional training courses. The school also organised training programmes to enhance teachers' coding knowledge and teaching skills.



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