Mathematics is not just solving x, it’s also figuring out y ~

Bishops’ Conservatory Secondary School

At Bishop’s Conservatory Secondary School we have introduced a Maths Skills Project in Form 1 and Form 2. This involves engaging students in discovery learning, where they can practice through hands-on activities. This project is carried out once weekly and the rationale behind it is that as students engage in different activities they become more aware that mathematics helps them to make important decisions and perform everyday tasks.

As educators, we have noticed that the Maths Skills Project is increasing the students’ levels of motivation and giving them a heightened sense of mathematical purpose and relevance. It is to be helping them apply the more abstract mathematical concepts to real life situations. Moreover, the students are given the opportunity to see Mathematics as a cross-curricular subject, for example by linking concepts of Mathematics with Music. The most important thing is that it is helping the students to experience a greater enjoyment and a sense of fulfilment both inside and outside the classroom.

During one of the first sessions, students were presented with the interesting story of Pythagoras. Eventually this led to the introduction of irrational numbers and representation of Pi (π) as a
celebrity number. In the following hands-on activity the students were given a piece of string and a ruler to measure the circumference and diameter of circular objects. The aim of this activity was to discover an approximate value of \( \pi \). Afterwards, the students had fun searching the digits of Pi (\( \pi \)) for their birthdays. In another session, we looked at the Fibonacci numbers and how they appear in nature in the spirals of certain plants, and the number of leaves and petals in others. The students were also given the opportunity to draw the golden spiral, which also often appears in nature. Such spirals are seen in the shells of snails and sea shells. This was followed by a session on the Golden Ratio. During this session, students became aware that since ancient times, artists and sculptors have known about the Golden Ratio and used it to create sculptures and artwork of the ideal human figure. By using rulers, the students investigated their partners’ face and body measurement ratios.

In a different Maths Skills session, students were given different measuring instruments consisting of a meter ruler, measuring tape and distance laser. Through the use of these measuring instruments they were asked to measure the school’s ground. After completing the task, a discussion followed where students were asked to mention various advances in measuring instruments through the passage of time. The discussion was also aimed to help students decide which measuring instruments, or ways of measuring are the most accurate and reliable, and why.
In the course of another session, students were given different mathematical tricks. They had to determine whether the tricks were actually magic, or if they had underlying mathematical concepts. After working in pairs, students presented their reasoning. Upon completing four different tricks, the students were asked to find, or create their own Mathematics Tricks. In subsequent sessions, students acted as magicians and practiced their tricks with their peers, who in return had to guess the answers and discover the real Mathematics behind them.

Through this Maths Skills project we aim to make Mathematics meaningful to the students and help them understand that Mathematics is not only about solving problems but it is also about figuring out and understanding why.