

Lessons and Learnings from a 3-year STEM Engagement Programme in Low Enrollment Schools

Izhana Fitri Mohamed Rawi, Petrosains, Malaysia

Outreach program is one of the integral part of community based initiatives among many science centres. PETRONAS Sentuhan Ilmu Program (PSIP) is a three-year community engagement model with the initial idea to increase awareness and interest in STEM, knowing that the STEM workforce of the future is sitting in today's primary classrooms. PSIP supports STEM learning ecosystems in schools and communities by cultivating students to become engaged, knowledgeable and skilled in STEM disciplines as they progress through childhood into adolescence and early adulthood. Sustainable plan for the learning ecosystem includes continuous professional development for teachers.

The focus audience for this program are students and teachers from low-enrollment schools. These schools are located mainly in the rural areas, with majority of them under-privileged children from low income families. This is in-line with the noble intention of PETRONAS in improving the lives of Malaysians through its Corporate Social Responsibilities (CSR) initiatives carried out throughout the nation.

The students who participated in 15 STEM modules are challenged to work in teams to design, build, test, redesign and solve problems from creating a functional simple machine to building a strong and stable structure to coding a flood detector model. Students are exposed not only to classic experiments and hands-on workshops but also on simple computer applications, and on microcontroller to program their water level detector model, thereby gaining valuable experience with hardware and software.

The first 3-year cohort from schools in the North and East Coast of Malaysia has resulted in positive outcomes, inclusive of knowledge and understanding, skills, attitudes and values, enjoyment and behavior. Students show a positive learning experience, most of them realized a change in the way they think about science, and this change represents not just learning new knowledge, but a step toward changing their relationship with science. Anecdotally, we have observed sustained interest towards science learning and positive inclination on school attendance. It convinced us that the overall initial outcomes offer insights into how STEM knowledge, understanding and interest develop overtime. These findings have provided the impetus to continue the program for a 2nd cohort in the center and south region in 2019.

A touch of knowledge through this initiative has impacted more than 3,000 students from 9 low-enrollment schools in underrepresented community in Malaysia.