STEM in vogue

Out of the Box

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STEM EDUCATION SEEMS to be in vogue in Hong Kong. In fact, local students have always done well in the Programme for International Student Assessment and Trends in International Mathematics and Science Study, showing that our young have tremendous potential in STEM – science, technology, engineering and mathematics – subjects.

My alma mater Queen's College recently started using STEM in admitting Form One students. It also started a STEM lecture series by asking old boys, myself included, who are established scientists and engineers to give talks. The Education Bureau and Academy of Sciences of Hong Kong released reports recently pointing out that our city needs to invest more to nurture talent in STEM subjects.

The bureau's report focuses on STEM education in high schools, on curriculum reform and teacher professional training. The academy's report went further: it suggests universities in Hong Kong modify their admission criteria to put more emphasis on STEM subjects (in particular maths); high schools should allow students more choices on STEM courses, and secondary school certification should be decoupled from tertiary admission standards.

Our government is showing some interest at long last; not only did we see the establishment of the long awaited Innovation and Technology Bureau, but we also saw the announcement of the river loop, which is designed specifically to further innovation and tech collaboration between the SAR and Shenzhen.

All of the above makes me wonder why, why now? STEM is by no means a new subject; I believe the term was invented in the United States by the National Science Foundation at least two decades ago.

This term was widely used to spur investment in, to recruit young talents into, and to raise awareness of STEM fields. The motivation was economical in the face of international competition. There are obvious benefits to promote STEM education. For starters, governments are realizing that much of their economic engine is due to innovation and technology, and to compete, societies need to train young people with STEM abilities.

Second, in the face of a rapidly changing world spurred by technology, STEM knowledge allows individuals to stay current, relevant and competitive. But there ought to be a third reason, which is often neglected in our city, which is that an open democratic society needs citizens with a background in STEM in order to function properly.

Many societal challenges, and important decisions associated with them, requires a basic understanding of STEM principles in order to be able to arrive at wise decisions. For example, is coal energy safer than nuclear? Are electrical vehicles more environmentally friendly than those which run on fossil fuels? Will robotics and AI replace jobs?

These are not just economic but also societal and political issues. Citizens asked these questions collectively, and the real issues and nuances cannot be understood without basic STEM knowledge.

My own view is that STEM should not be viewed purely as a tool for economic advancement, but as part of a general liberal education for all students.

STEM is a great achievement in human civilization, just like music and literature. Every "educated" person should have a basic knowledge of STEM, just like for history, languages, arts, etc.

Studying STEM also trains logical and scientific thinking, which are broadly applicable skills. I also believe in the converse: I encourage HKUST students to also study arts and humanities – they will need these as much as they will need STEM.

Making STEM mainstream in Hong Kong will surely face many challenges. We will always have skeptics: local parents and students are less inclined to choose subjects with a perceivably weaker career and income prospect. Our top science students often choose to pursue a career in medicine, and those with language talent often choose law and business instead. Our city also faces a shortage of qualified teachers who are passionate and knowledgeable about STEM.

But we must not be deterred. Investment in STEM should be viewed in the long term. The dollar sign is only one of the many considerations we should have when it comes to science; the earlier our society realizes this, the better our future will be.