

Source: <https://www.thesundaily.my/opinion/bringing-back-the-soul-to-stem-HE644191>

Bringing back the ‘soul’ to STEM

MY VIEW -
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05 MAR 2019 / 20:47 H.



MANY years ago, Akademik Sains Malaysia organised a timely conference themed “Injecting the soul in R&D” in Kuching.

At that time, the idea of STREAM was already floated as an expansion to STEM (science, technology, engineering and mathematics), which was coined earlier from SMET.

The latter did not pick up allegedly due to some offensive meaning in other cultures. I am appreciative of the cultural sensitivity as a reason for the change but this is exactly the issue I have with STEM at the very fundamental level.

The acronym sounds so cold and clinical that it is almost inhuman. It is devoid of the “soul” that has to be injected again.

This takes us back to the historic moment that coincided with the paradigm shift from “natural philosophy” to “modern science” leading to the period known as the Scientific Revolution.

From that point onwards the new discipline is rendered “soulless” and the struggle with the church came to a peak where the Scientific Revolution played a dominant disruptive role, culturally speaking.

Since then “science” underwent many changes again and again, each time taking on a heavier emphasis on “supporting” aspects as though to make science education more “comprehensive” in the search for solutions to pressing issues while at the same time strengthening the economy for both emerging and developed countries by educating the workforce, scientifically speaking.

For example, at one time it was fashionably known as S&T (science and technology), which then gave way to STI (where “I” stands for innovation) when “innovate or die” was promoted as the way to quantum leap forward. So the shift from STEM to STREAM is not unusual.

In fact there are many versions in between, ranging from STEMM (the other M is medicine) to STEAM (the A for arts) depending on varying contexts and worldviews.

Some other examples include STM (scientific, technical, and mathematics), STEMLE (science, technology, engineering, mathematics, law and economics), STREM (science, technology,

robotics, engineering, and mathematics), and even THAMES (technology, hands-on, art, mathematics, engineering, science). So why not STREAM?

Before one is accused of trying to customise a borrowed idea, let us try to understand what STREAM is and how much of a difference this can make.

For starters – the RE reads as “religio-ethics”, A is “arts” or broadly “aesthetics”, and M for “management”.

Each of these has played an important role to better “govern” science before it abruptly loses its “soul” in the run-up to the days of the so-called European Enlightenment, a precursor to today’s secular world.

With the rise in transdisciplinary knowledge in the search for new solutions to the world’s grand challenges like climate change and global world, some have deemed STEM as helpless as each of the individual disciplines in offering viable long-term sustainable outcomes.

In fact, much of today’s intractable global problems can be traced back directly or indirectly to the “science without soul” acting in isolation with mote room for the various knowledge-bases to counteract and balance each other.

In tandem with such phenomena, it is interesting to read that, more recently, the board on higher education and workforce of the US National Academies of Sciences, Engineering, and Medicine has come around to suggest another acronym – HACD (humanities, arts, craft and design) – as a supplement to STEM.

Not surprisingly, STEM in the 2017 World Economic Forum, had its fair share of criticism as “only a one-dimensional solution, which is inadequate for the multi-dimensional reality of economic development and growth”.

In addition, reportedly, while there is a need for scientific and technological knowledge in all countries, it has been suggested that there is “not as big a shortage of STEM-related workers as previously thought.

“In addition, too much focus on STEM alone runs the risk of over-saturating certain sectors rather than producing a well-rounded workforce.”

In fact, one Michael S. Teitelbaum in a 2014 article, “The Myth of the Science and Engineering Shortage”, in *The Atlantic*, criticised the efforts saying the then-current national fixation on increasing STEM participation paralleled previous US government efforts since World War II to increase the number of scientists and engineers, all of which he stated ultimately ended in “mass layoffs, hiring freezes, and funding cuts”; including one driven by the Space Race of the late 1950s and 1960s, which he wrote led to “a bust of serious magnitude in the 1970s”. Succinctly, focusing on STEM alone is not enough.

Educating young minds in the related subject areas are deemed necessary to ensure they are aware of their interconnectedness.

And also to create conscientious global citizens who are capable of making responsible and sustainable decisions to lead a balanced and harmonious world.

In other words, STEM, as understood currently, is no longer adequate to deal with the complexity of the future.

Given the advent of “post-material science” as another paradigm shift ahead of us, STEM remains vulnerable unless it is streamed along.