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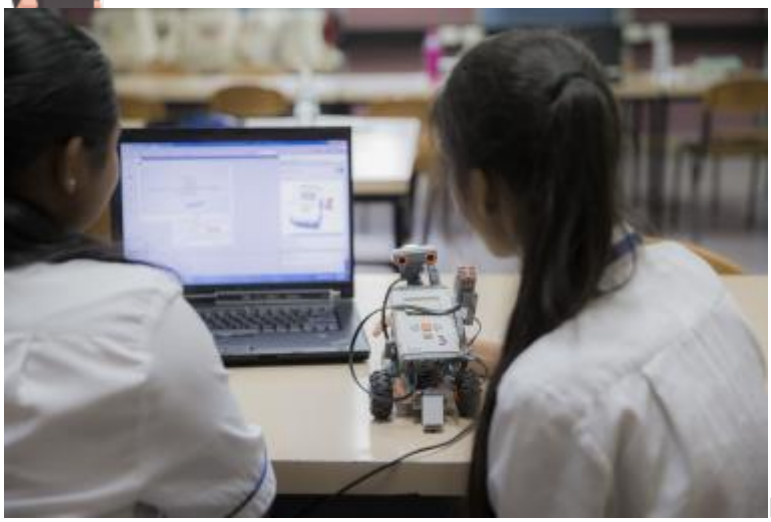
The STEM train

by Greg Whitby



It seems almost everyone is aboard the STEM train and it has left the station. Governments have been extolling the virtues of STEM across K-12 schooling and the need for it to be taught in engaging and interesting ways. In my four decades of working in education, I've never seen an acronym like this that has fundamentally changed the educational landscape. So with such intense focus on STEM or its variant STEAM, I wonder whether anyone has unpacked it?

The origins of Science, Technology, Engineering and Mathematics (STEM) came from the US in the late eighties when there was a considerable decline in the number of students taking up science disciplines. While the STEM label is relative new, schools have always recognised the importance of teaching mathematics and science. Technology and engineering though have largely been the preserve of universities.

While STEM is a worthwhile pursuit, we are misguided if we think that it is the silver bullet for making schooling more relevant in today's world or for solving the big challenges our global community faces. As Bybee (2010) stated, if STEM education is going to move beyond a 'slogan', than educators will need to unpack what STEM means in terms of educational policy, programs and practices.

We are living in a world where knowledge, ideas and people are becoming increasingly interconnected and STEM is part of this broad ecosystem. The way forward as people like David Christian (Big History Project) has shown is an interconnected, interdisciplinary real-world approach because once disciplines are separated, the value of STEM is lost.

In the context of pre-post schooling, the value of STEM is its holistic approach to interdisciplinary and scientific thinking. We know this needs to start early - as early as preschool and it needs to be inclusive of all learners no matter their gender or cultural background. Schools must see STEM through a multidimensional lens - an integrated learning framework that promotes all STEM for all not some STEM for all. This translates in practice to an experiential learning paradigm that is driven by an inquiry

cycle where students are working collaboratively on challenging real-world tasks. It has to be whole of school, driven by inquiry and advanced through practical professional learning.

We need a major rethink if we are to move beyond the fashionable STEM label in education to a definition that reflects the interconnectedness of the real-world and the dynamic range of careers and industries evolving in light of advancing technologies and scientific discoveries.

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