Martin Levins
ACARA
martin@levins.net

How the Integration of STEM in Other Learning Areas can Fit & Enhance Learning

STEM is frequently taught as an optional offering, or outside the teaching day. It is rarely reported on and many "can't find the time" or don't perceive themselves as sufficiently knowledgeable to make a STEM offering viable. The lack of time is a symptom of a single disciplinary approach. Often the lack of knowledge is really a lack of understanding of possibilities that a STEM approach offers to enhance the existing curriculum. The very acronym relegates the STEM approach to specific subjects, which clouds the vision for inclusion opportunities outside Science, Technologies and Mathematics. In addition, the lack of a STEM approach in Mathematics and Science can rob the learner of discipline relevance.

In secondary schools, the natural sciences can tend to be taught as discrete topics that are discipline based. This simplification and uniformity of teaching content enables deep exploration of the disciplinary concepts through discipline-specific practical activities. However, to represent the tendency for scientists to work in transdisciplinary teams and highlight the relevance of science and mathematics to everyday life, there is a need to design practical activities that incorporate concepts and practices from a number of disciplines.

The proposed workshop provides an opportunity for educators to experience and undertake a range of transdisciplinary practical activities and collaborate with others on designing for real-world problems or contexts that would benefit from such practical activities.

Participants will: examine the difference between the general capability, ICT Capability and the Australian Curriculum: Digital Technologies engage in hands-on activities to learn how simple Technologies activities can enhance Science, Mathematics and HASS learning, for example using micro:bits to design practical activities such as smart gardens, monitoring earthquakes, finding gold, designing wind turbines, designing crash barriers build an understanding of the relevance of computational, systems and design thinking, and of the opportunities for student agency and entrepreneurship.

Following a brief introduction, participants can tour a variety of stations illustrating exemplars from Year 3 to Year 8, where devices are set up ready for connection to their computer, with printed instructions (documents will be made available online). There will be some demonstrations of more complex projects.

Participants will then engage in roundtable discussions about:
equipment acquisition
student agency
STEM connections.

Note: Participants will be encouraged to use their own computer.