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Student-directed Engagement in Community-Linked STEM Engagement Through Collaborative Challenge-Based Learning

This paper will be co-authored by a team of participating Year 10 students who are working on a challenge-based learning project in their TIDES (Technology Innovation Design Enterprise Sustainability) class at Peter Carnley Anglican Community School.

They are considering a problem derived from the theme of National Science Week 2021 (Food: Different by Design). The focus on issues relating to Food Security has enabled them to create a body of work that supports deep engagement and a scope of learning that exceeds most traditional content-delivery models. They have been able to generate work that can be submitted across a variety of contexts and to enable entry to several external programs for recognition.

With their teacher, the students will describe and evaluate the processes and ways of working they have adopted, as well as highlighting how their work has produced interdisciplinary artefacts that can be used to guide and assess learning across a range of subject areas within their regular school timetable. They will also consider the benefits of student agency and external audiences in building engagement and focus in their learning. The students will discuss how programs such as Game Changer Awards, ANSTO National Science Week Hackathon, STEM4Innovation and think tank events provide platforms for the practice and application of their collaborative human-centred design-thinking process to enhance their learning in STEM and other areas across the curriculum.

Too often student experience of learning is not reflected in education conferences. As one of the most important voices in the whole system, they often struggle to be heard. This paper will provide insights into student perceptions of integrated STEM as an approach to meaningful learning that provides scope and depth of learning across many parts of the broader K-100 curriculum. Content and capabilities will be considered and the students along with their teacher will endeavour to unpack the benefits and challenges they encounter.