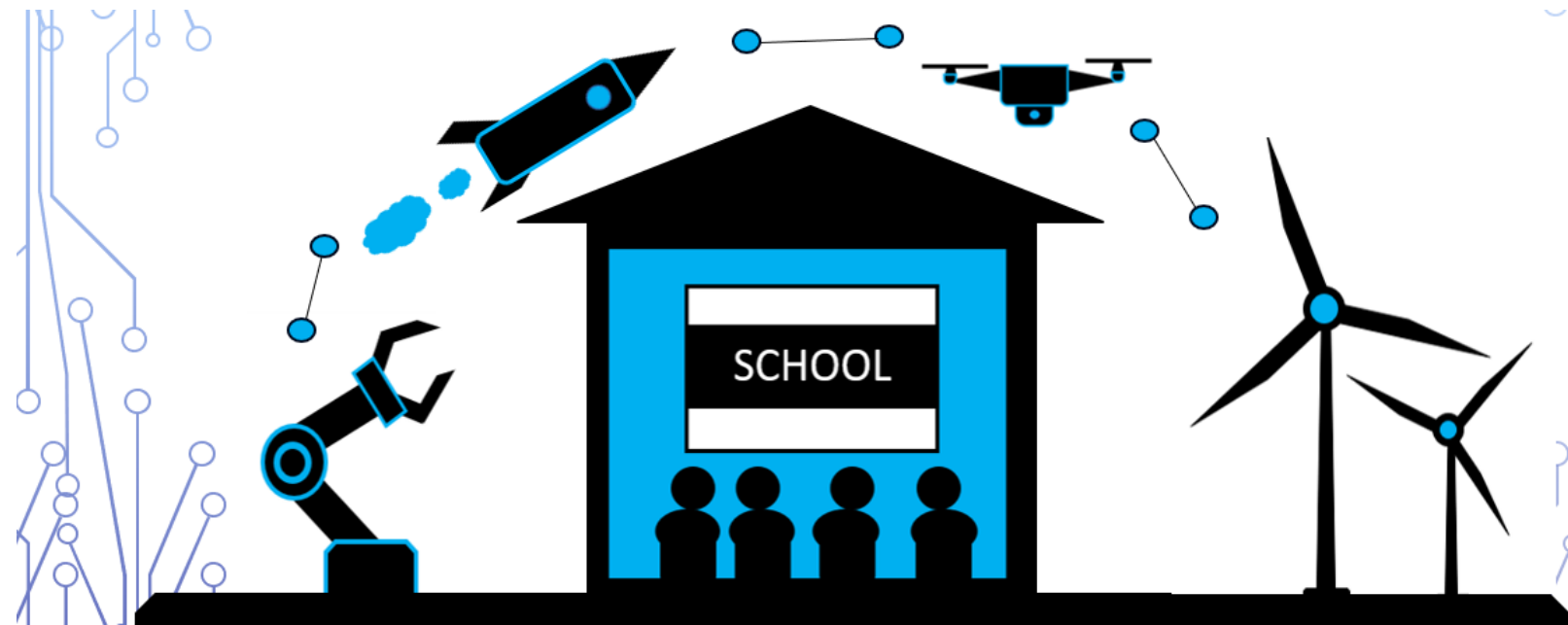


# Tech Schools mediating school-industry

## STE(A)M partnerships using design thinking



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# Research into School-Industry Partnerships

- School-industry partnerships provide authentic issues for STEAM projects
- Process needs to be coordinated to be sustainable for schools and industry (Australian Industry Group, 2017)
- Successful partnerships are scalable, brokered, include professional learning and have real world context aligned with curriculum (Education Services Australia, 2018, p.15)
- Tech Schools provide multiple approaches to building school-industry partnerships (Sacrez, 2020)
- Design thinking stages provide a structured approach to authentically connecting with industry

Australian Industry Group. (2017). *Strengthening school-industry STEM skills partnerships: Final project report*. Retrieved from [http://cdn.aigroup.com.au/Reports/2017/AiGroup\\_OCS\\_STEM\\_Report\\_2017.pdf](http://cdn.aigroup.com.au/Reports/2017/AiGroup_OCS_STEM_Report_2017.pdf)

Education Services Australia. (2018). *Optimising STEM industry-school partnerships: Inspiring Australia's next generation final report*. Retrieved from <http://www.educationcouncil.edu.au/site/DefaultSite/filesystem/documents/Reports%20and%20publications/Publications/Optimising%20STEM%20In-dustry-School%20Partnerships%20-%20Final%20Report.pdf>

Sacrez, A. (2020). Tech Schools, mediating contexts for new pedagogies. In M. A. Peters & R. Heraud (Eds.), *Encyclopedia of Educational Innovation* (pp. 1-8). Singapore: Springer Singapore.



Bendigo Tech School at La Trobe University

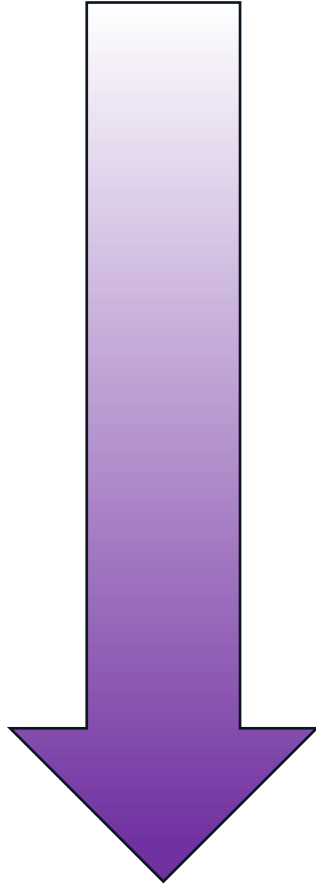


High-tech learning hub for STE(A)M capabilities



# Levels of Impact for Different Tech School Activities

Shallow  
impact



Deep  
impact

- Student engagement in Tech School programs and extra curricula activities
- Supporting teachers to adopt new pedagogies through immersive professional development and resource sharing
- Fostering community/industry involvement in the development of school projects
- Promoting a reformation to the delivery of the curriculum from subject-based to interdisciplinary project-based learning in schools

# Bendigo Tech School Design Thinking Stages

**Enterprise** Identify specific knowledge and capabilities relevant to key industries

**Empathise** Collect information about the potential user and their problem to be solved

**Define** Create a problem statement based on understandings of the user's needs

**Ideate** Generate a high volume of diverse and creative ideas, then refine to one solution

**Prototype** Construct a physical representation to help conceptualise the solution

**Test** Share the prototype with others to gain feedback for modification and redesign

**Present and reflect** Communicate the solution to the problem to an audience through a pitch

BENDIGO  
TECH  
SCHOOL



# Using design thinking to integrate industry links into STEAM programs

Design stages	Industry-Linked Activities	Key ideas for teachers
<b>Enterprise</b>	<p>Connect with an industry</p> <p>Co-design program</p>	<p>Evaluate opportunities from curriculum and real-world issue</p> <p>Research industries, contact and gauge levels of commitment</p> <p>Utilise an intermediary organisation or join existing programs</p>
<b>Empathise</b>	<p>Interviews &amp; excursions</p>	<p>Classroom discussion and student research to design questions</p>
<b>Define</b>	<p>Guest speakers &amp; student research</p>	<p>Virtual tours, zoom and pre-recorded interview are digital alternatives</p> <p>Utilise industry web sites and resources to examine the issue</p>
<b>Ideate</b>	<p>Explore R &amp; D processes used in industry</p>	<p>Utilise creative and critical thinking capabilities from the curriculum</p>
<b>Prototype</b>	<p>Build low and high-tech prototypes</p>	<p>Industry tools and technologies can require training through PD and mentoring</p>
<b>Test</b>	<p>Market test and materials test</p>	<p>Evaluation criteria reflects industry practice and subject curriculum</p>
<b>Present</b>	<p>Show case event &amp; student pitch</p>	<p>Invite industry and community, lever digital platforms such as video and website</p>
<b>Reflect</b>	<p>Evaluation of the product &amp; process</p>	<p>Consider the sustainability of the product and the process</p>
<b>Iterate</b>	<p>Next stage of designing and prototyping</p>	<p>Select teams for follow up visit to industry for advice and training</p>

# Tech School Co-design workshop with industry

Workshop theme: New energies, food and fibre



- Introduction to the design thinking process
- 10-minute design challenge using sensors
- Participants guided through the process of empathising, defining, ideating, prototyping
- Each group presented
- The final program required students to design an IOT farming solution







## Key insights for teachers

Co-design as a learning process for teachers



**Connect:** Co-design with teachers from different subject areas, industry representatives and students

**Design:** Use the design thinking process to develop the unit as a prototype for teachers to test

**Evaluate:** Student prototypes, student learning, the design of the unit/program and teachers' own professional learning

# Thales Design Competition

Integrating an industry competition in a school



- Student teams used sensor technology to “make life better or to keep us safer”
- Workshops and technology mentors were provided by the Tech School
- Some schools embedded the project into their STEM subject
- Prototype solutions were presented to a panel of industry experts through a five-minute pitch
- The winning team then refined their prototype and presented at a state-level pitch
- Some teams continued working on their prototypes to submit for a young inventors award



# Key insights for teachers

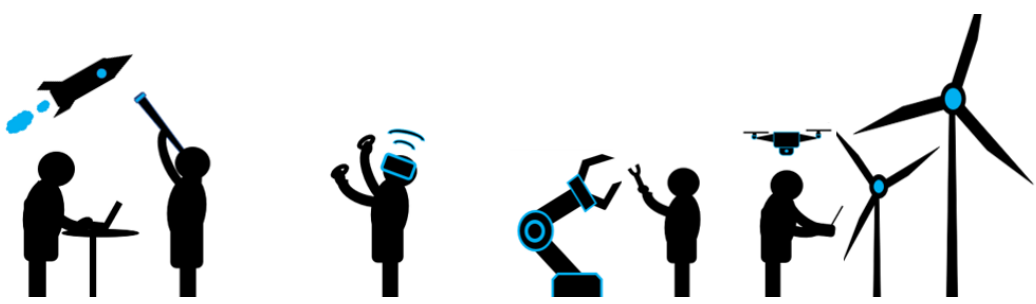


Design challenges: A structured approach to STEAM integration

**Integrate:** Tech School competitions are curriculum-aligned which promotes interdisciplinary units across all school subjects

**Showcase:** Provide a public platform for young people to present to industry and community

**Replicate:** The design thinking process is a template which can be used by teachers to design their own industry-based design challenges



# TECH SCHOOLS

Victorian Department of Education and Training

## Take away

- Involve industry and community, from co-designing to showcasing student solutions
- Tech Schools can provide resources and training to mediate between your school and local industries
- The Design Thinking stages provide a framework to connect with industry at key points of a STEAM project

## Lets connect!

Contact Aimé C. Sacrez  
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### Tech School Workshop

11.25 - 12.15

#### ROOM 1

**Ember Chittenden & Robbie Philpott** Integrating Real-World Skills Into the Classroom: Using an Industry Co-Design Process