Learning Design
Design the teaching and learning plan

Aligning what and how of teaching and learning STEM

What is the intended learning and why is it important?
- What concepts from the Science, Mathematics and Technologies Australian Curriculum, Early Years Framework or SACE do I want my learners to learn?
  - Where do we see these concepts combine in real life?
  - What are some real world issues or problems that we need to address? What are the science, mathematics, and technologies concepts in these real world issues?
  - Why would my learners want to solve this problem? Does the problem address real social, economic and environmental situations in their local and global communities?
  - Does the learning ask my learners to explore something new?

What could the intended learning look like at this level?
- Can my learners negotiate how they make meaning and communicate their learning in multiple modes?
- Are my learners free to do research, explore possibilities, generate ideas for solutions?
- Am I facilitating the learning rather than telling my learners what to learn?
- Does my STEM learning promote authentic assessments in determining learners’ team success?
- Can my learners determine the degree to which their products address the criteria and constraints? What does the quality and level of STEM and STEM related skills learning look like?
- Is the learning reflective of real world / industry?
- Can my learners share and receive feedback on their STEM learning with their teacher and peers, nationally and globally?

How will we engage, challenge and support their learning?
- What engagement hook can I use to engage my learners?
- Is the STEM learning designed to engage learners emotionally, behaviourally and cognitively?
- Is the issue a compelling and perplexing problem to solve?
- Is the problem reflective of the real world?
- How will I support learners’ to engage with industry/university/business so that it is authentic?
- Can learners generate ideas, research and explore possibilities, for solutions? How will I support learners to create something new?
- How will I support learners with special needs and exceptional learners?

So what will we do to get there?

What evidence will enable us to assess the intended learning?
- Am I using innovative tools that allow me to assess collaboration?
- How will I collect evidence to see their thinking and sharing of ideas?
- What evidence will I use to determine that my learners are able to communicate effectively during their problem solving?
- Am I able to capture and assess my learners thinking, values and work in progress rather than focusing on the end product (which may be unfinished).
- What evidence will enable me to assess if my learners are using metacognition, creative and critical thinking?

What do they bring?
- Have I created a climate to cater for diversity of dispositions to learning STEM?
- Does the STEM learning remove the fear of failure?
- Is the STEM learning designed to appeal equally to all learners? (inclusive of low SES, gender and Aboriginal learners)
- Is the STEM learning culturally responsive?
- What strategies will I use to find out what my learners bring?
- What experiences, knowledge, understanding and skills do my learners bring? What misconceptions do they have?
- Can my learners personalise their learning?
- Do the learners bring an humanitarian awareness? (eg empathy and ethical understanding)

How will we know if they got it?

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What worked well?
- Did it make a difference?
- What was the impact on the learning?

What will you keep doing?
- What will you change next time?
- What did you learn?

What did you learn?

REFLECTION