Embedding career education in the Victorian Curriculum F–10

Design and Technologies - Engineering principles and systems, Foundation–Level 2

An existing learning activity linked to a particular learning area or capability in the Victorian Curriculum F–10 can be easily adapted to incorporate career education, enriching students’ career-related learning and skill development.

1. Identify an existing learning activity

**Curriculum area and levels:** Design and Technologies - Engineering principles and systems, Foundation–Level 2

**Relevant content description:** Explore needs or opportunities for designing, and the technologies needed to realise designed solutions ([VCDSCD018](https://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCDSCD018))

**Existing activity:** Producing an electronic greeting card using light-emitting diodes (LEDs) and adhesive copper tape.

**Summary of adaptation, change, addition:** Reflecting on and exploring the roles and responsibilities of Electronics Engineers in proposing designed solutions.

2. Adapt the learning activity to include a career education focus

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| Existing learning activity | Adaptations, changes or extensions that can be made |
| Prior to commencing this activity students must be taught about the basics of circuits. They can make simple circuits with wires, a battery and LED to understand how a circuit works.  Teacher sets the task of making electronic greeting cards with a wire, LED and adhesive copper tape. See ‘Additional resources’ for a suggested YouTube tutorial.  The task has two parts: students designing and producing a card for themselves, and then designing and producing a card for someone else.  Part 1 –Students follow the instructions given by teacher to create a card that incorporates a circuit. They reflect on what they wanted to achieve, how they feel they went, and what steps they might do differently in the future.  Part 2 –In pairs, students ask each other about what they would like in the card. This could include specific colours, decorations, LED placement, etc. Students then design and make the card for their partner according to their specifications. Their partner provides feedback on the finished product. | During the exploratory part of the activity, teacher guides general curiosity and discussion on the types of people who might use circuits in their work lives (e.g. electronic engineers).  Teacher can use this opportunity to provide more accessible terminology so that students understand the work of an engineer. For example, greeting card maker = electronic engineer. Teacher introduces the work of electronic engineers through the following questions: In real world whose job is it to create a circuit? Who is an electronic engineer? What does an electronic engineer study?  Students brainstorm other things in their lives that engineers may have designed or built. They identify qualities that an engineer might need to be successful in their job. |
| After producing and making the two cards, students reflect on the process of designing for oneself versus designing for someone else. Teacher guides a discussion on what skills are needed to design a card for someone else. What were some of the challenges? Where might scenarios like this arise in other parts of life? | Students think about what jobs might involve creating something to someone else’s specifications. This could include building custom furniture, baking cakes for customers, or even making cards and other art professionally. They extend the reflection in the existing activity to consider how they would feel if it was their job to make something for other people. What might they do if they didn’t like what their customer wanted? What skills or traits would someone need to be successful in that sort of job? Students reflect on what traits like this they already have, and what they would need to develop if they wanted to work in a job like that. |

Considerations when adapting the learning activity

* Teacher may want to plan an extra lesson to allow peers to review designs and give feedback.
* Teacher should be prepared to introduce the work of engineers at an appropriate level for students. They should also be able to scaffold discussion around other designed solutions that engineers create using circuits.

Additional resources to help when adapting the learning activity

* Melanie STEMdola, [Cupcake Paper Circuit Card with LED Light](https://www.youtube.com/watch?v=7hb-9eUpfbQ)
* Open Universities, [Electronics engineer](https://www.open.edu.au/your-career/engineering/electronics-engineer)
* RaiseMe, [Electrical and electronics engineers](https://www.raise.me/careers/architecture-and-engineering/electrical-and-electronics-engineers)

Benefits for students

Know yourself – self-development:

* Students learn to work with others and interact cooperatively, and develop communication skills by listening to partner requests and feedback.
* Students develop self-awareness by reflecting on their learning about an engineer’s job and skills, and considering the traits needed in other jobs that involve making things to specifications.

Know your world – career exploration:

* Students gain insight into the world of work by discussing the skills that an Electronics Engineer requires, acting as an Electronic Engineer to design an electronic greeting card and reflecting on whether they would be interested to know more about engineers.
* Students explore the labour market by discussing the types of roles that involve engineering and/or designing products for other people.

Manage your world – be proactive:

* Students use creative thinking and incorporate new information to aid decision-making by reflecting on the process of designing cards for themselves and others, and considering how they would make changes in the future.