Embedding career education in the Victorian Curriculum F–10

Mathematics, Level 7

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 level:** Mathematics, Level 7

**Relevant content description:** Investigate, interpret and analyse graphs from real life data, including consideration of domain and range [(VCMNA257)](https://victoriancurriculum.vcaa.vic.edu.au/Curriculum/ContentDescription/VCMNA257)

**Existing activity:** Tabulating and graphing sample data into a line graph.

**Summary of adaptation, change, addition:** Investigating real-life professions that use line graphing to make informed decisions.

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 |
| Teacher provides students with sample data tables from a textbook, simulated data or online sources such as the Bureau of Meteorology [temperature tables](http://www.bom.gov.au/climate/averages/tables/cw_087166.shtml).  Students review sample data tables and manual or electronic line graphing of tabulated data and discuss comparisons and variations in data in tables and graphs.  Students observe methods for deriving both domain and range from data tables and graphs provided. | Teacher explains that line graphs show trends and patterns in real-world phenomena, enabling professionals to make accurate predictions and provide advice.  Teacher provides examples of real-world data that might be used to make predictions and inform professional advice; for example, share or commodity prices over time; changes in average monthly temperature; blood pressure by age.  Students discuss: ‘Why would using data be a better approach than guessing or going on instinct?’  Students review examples of data tables and line graphs in several different professional or occupational contexts. |
| Teacher demonstrates manual and/or electronic line graphing of sample tabulated data. Teacher discusses comparisons and variations in data and demonstrates calculation of range (i.e. difference between highest and lowest *y* value, such as ‘38° – 14° = 24°) and domain (i.e. spread of *x* values, such as from Jan. average. to Dec. average.)  Teacher discusses the relationship between tabulated data and the line-graphed representation and demonstrates calculation of range and domain for each data set. | Teacher lists a range of jobs or careers that regularly use line graphs (for example, financial analyst, stockbroker, nurse, climate scientist) to make predictions and provide advice. |
| Students tabulate and graph sample data into a line graph and then calculate domain and range for data set. | Students investigate a profession of interest and consider how data represented in a line graph might assist decision-making.  Students tabulate sample data (actual or simulated) and construct line graphs related to their chosen profession; then they calculate domain and range for chosen data sets. |
| Students discuss meanings of data variations with class as led by teacher.  Teacher marks work by reviewing individual students’ data tables, line graphs and data calculations.  Students revise work based on feedback from teacher. | Students present data to peers in class including line graphs and analysis of domain and range. Students discuss what kinds of predictions and professional advice might be provided based on the data observed.  Students peer review data and revise graphs and/or advice as necessary. |

Considerations when adapting the learning activity

* A key focus of this activity is the use of data and line graphing as an important tool to assist making predictions and decisions in real-world contexts, rather than basing decisions on guess or instinct.
* To help guide students in selecting a profession that uses graphing as a tool, teachers could have students brainstorm things that they’re interested in that grow or change over time. For example, teacher could explain that the growth in sales of a favourite product correlates to expenditure on marketing of that item.
* Students can be extended through applied activities, such as comparisons of long-term climate graphs and use of spreadsheet graphing tools. Students can use spreadsheet tools to graph real-world data.

Additional resources to help when adapting the learning activity

* [2 Degrees Institute](https://www.2degreesinstitute.org/) (climate science graphs)
* [Share prices at the Australian Stock Exchange](https://www.asx.com.au/asx/markets/equityPrices.do) (select a company, then select ‘Chart’ in the table that appears)

Benefits for students

Know yourself – self-development:

* Capability with digital tools such as graphing and spreadsheeting packages is a valuable skill and learning various programs will assist students in their future careers.
* The activity assists students to use analysis of data and statistical evidence to make sound decisions based on evidence, rather than relying on hearsay or unsubstantiated opinion.

Know your world – career exploration:

* Students explore the ways in which digital technologies can be used to represent data. This allows them to use technology and information effectively to research and organise information.
* Developing skills in using data to help make decisions in a work context allows students to recognise the types of skill sets that are appropriate to various professions and thus better understand work.

Manage your future – be proactive:

* The activity assists students to use analysis of data and statistical evidence to make informed decisions based on evidence, rather than relying on hearsay or unsubstantiated opinion.