

Getting Started on Implementing Graphics Calculator Technology in your School

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Quick Start Activity

Function Machine

- The secret rule in the function machine performs a mathematical operation on whatever number is put into the machine.
- Input a value and see what output it produces.
- Try another value or more.
- Can you work out the secret rule?
- Press “Y=” to see if you’re right.

This session tells the story of a successful professional development initiative in NSW.

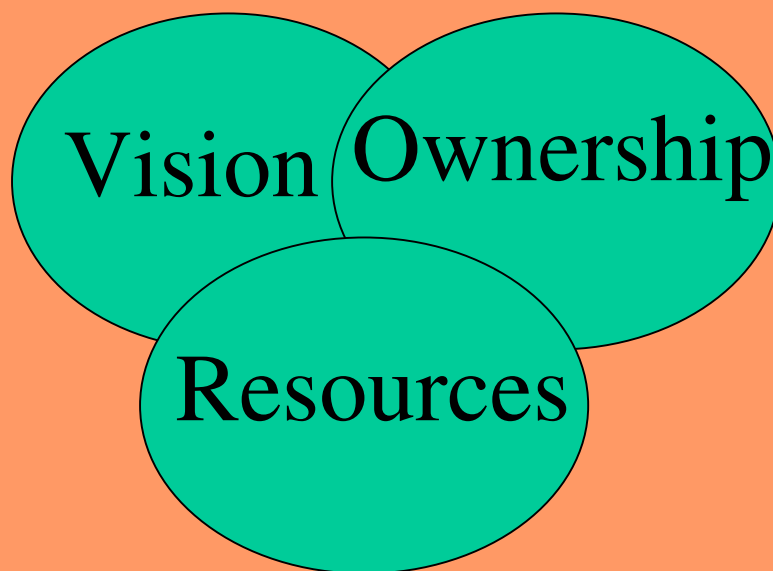
It is intended for school leaders of professional development and/or teachers who wish to seize the initiative for their own professional development.

You don't need to be a mechanic to drive a car or Bill Gates to operate a computer.

You have the ability to use graphics calculators right now.

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What are the essential ingredients for effective professional development?



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Essential Criteria for Teachers

Access to:

- View screen calculator
- View screen. (projects calculator screen to white board)
- Class set of graphics calculators.
- Overhead projector
- Appropriate classroom, white board (preferred) or screen.

Essential Criteria for Teachers

- Initial training.
- Have time to reflect and trial activities.
- Desire to use the calculator.
- An “expert” to help when things go wrong.

Essential Criteria for Teachers

- Willingness to enhance students learning
- Collegiate sharing of ideas
- Faculties need to discover the calculators capabilities and the capabilities of available APPS (applications)
- Faculties need to decide “where the calculator may be used, in teaching the Mathematics or Science, program.

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Implementation Stages

- Program planning meeting at school defining the goals, personnel involved and support from TI.
- Introductory workshop day for cluster of schools
- 12 month equipment loan – class kit and Viewscreen
- Trainer assigned to schools for:
 - 4 days in-class coaching and demonstration
 - continual email and phone support from the trainer throughout the program.

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Newton's Method for roots of functions

```

Plot1 Plot2 Plot3
\Y1=X^3+X-1
\Y2=X-Y1/nDeriv(
Y1,X,X)
\Y3=
\Y4=
\Y5=
\Y6=
    
```

nDeriv(is
found in the
MATH menu.

$$a = x - \frac{f(x)}{f'(x)}$$

```

TABLE SETUP
TblStart=
ΔTbl=1
Indent: Auto
Depend: Ask
    
```



X	Y2
2	2.0741
2.0741	2.0697
2.0697	2.0697

X=

- Building on the “function machine” idea
- Finding the numerical derivative at a point
- Feeding the output value back into the formula
- Observing the same iterative process the that calculator uses.

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Mixing with other technology

- Angle properties  Cabri Junior
- Distance-time graphs  C.B.R.

Essential Criteria for Students

Ownership or access to graphics calculators ?

Access

- School purchase of a class set.
- Possible losses & damage could be overcome by:

Student ownership

- With P&F buy back scheme.
- Or direct Student ownership with
- P&F facilitating, Year 7 or Year 10 purchasing of leaving Year 12 students calculators.

Students Gain

- Ownership of their discoveries through teacher guided activities.
- Students explore, generalise and discover
- Student motivation
- Students write “flash cards” and down load to each other.

Positives

- Student Ownership creates student Responsibility
- Student interest in the purchase.

Negative

- Cost may prohibit some students gaining access.
- P&F could provide some assistance so calculators may be “rented”

Anecdotes from teachers & students

Confidence is my biggest concern. I need to master something before I use it with my students.

I gained most of my useful classroom activities through the in-school support.

I now see this more as a tool for junior classes as well as senior.

I'm now using the stats and the Apps a lot.

I still see the cost as a major concern.



What ever way you look at it, the program has promoted a lot of professional dialogue.