ELEMENT
3.2

Domain 3 - Develop Expert Mathematics Learners

Element 3.2 - Foster deep understanding and skilful action

The following suggestions for practice are extracts from the 'Transforming Tasks' module on the Leading Learning resource:

Strategy	From Procedural to Problem Based
Technique	**Providing insufficient information (at first):** Give a perplexing problem and slowly provide information as needed.

Level	Before	After
Primary	This bucket holds 10 litres when filled to the top. The dotted line shows the water level in the bucket. How much water do you think is in the bucket?	Roughly how much water do you think was poured over this man? What information do you need in order to find out? What else?
Secondary	The radius of the London Eye is 60m. Calculate: a. The diameter of the wheel. b. The circumference of the wheel. c. The time taken for one revolution of the wheel if it travels at an average speed of 0.3m/s	In the year 2000 the London Eye became the world's tallest Ferris wheel. Approximately how long do you think a journey on the London Eye might take? Convince me/someone who thinks differently to you. What do you need to know to be sure of your accuracy? (Teacher: As students identify the need, release information about the radius of the wheel and the speed that it travels at.)

How do you think the technique Providing insufficient information (at first) might support *Element 3.2 - Foster deep understanding and skilful action?*

There are many ways to articulate this relationship. One response to this question has been provided on the next page.

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Domain 3 - Develop Expert Mathematics Learners

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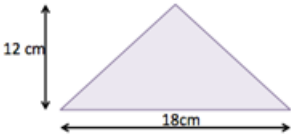DEPARTMENT FOR EDUCATION AND CHILD DEVELOPMENT
OFFICE FOR EDUCATION

How does the technique Providing insufficient information (at first) support *Element 3.2 - Foster deep understanding and skilful action?*

We would expect a student with deep understanding and skillful action in mathematics to be able to apply thier mathematics to the world around them (to be numerate). To be able to do this students must be skilled in identifying nesessary information. They develop skills in identifying the necessary information when they are challenged to work in this way during their mathematics learning.

ELEMENT

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Domain 3 - Develop Expert Mathematics Learners

Element 3.2 - Foster deep understanding and skilful action

The following suggestions for practice are extracts from the 'Transforming Tasks' module on the Leading Learning resource:

Strategy	From Procedural to Problem Based
Technique	**Include some irrelevant information:** Give additional information that is not required to do the task.

Level	Before	After
Primary	What is the value of 500 + 60 + 4	Which of these is worth 564? Tick as many boxes as you need to. 5 + 6 + 4 ☐ 50 + 60 + 40 ☐ 500 + 40 + 6 ☐ 500 + 60 + 4 ☐
Secondary	Calculate the area of the triangle. 12 cm, 18cm	Calculate the area of the triangle. 12 cm, 15 cm, 18cm

How do you think the technique Include some irrelevant information might support *Element 3.2 - Foster deep understanding and skilful action?*

There are many ways to articulate this relationship. One response to this question has been provided on the next page.

Domain 3 - Develop Expert Mathematics Learners

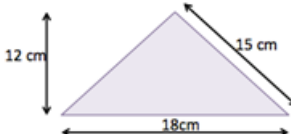# Element 3.2 - Foster deep understanding and skilful action

How does the technique Include some irrelevant information support *Element 3.2 - Foster deep understanding and skilful action?*

When students are given a range of information, some relevant and some irrelevant, they are challenged to stop, notice, think and consider which information they want/need to use. Considering which information is relevant/irrelevant can support students to identify what they don't know. In the triangle example, the irrelevant information could support students to become aware that they don't really understand which two measurements are used in calculating the area of a triangle. Identifying the need for new learning or clarification does not in itself achieve deep understanding and skillful action, but it is a powerful starting point in the learning process.