



# Designing Effective Science/STEM Instruction

## A 9-day FREE Professional Learning Program for Primary School Teachers, F-6

A FREE workshop open to all Government School Primary Teachers

**Session 1: 21-23 March 2018**

**Session 2: 21-23 May 2018**

**Session 3: 23-25 July 2018**

**Venue:** Victorian Space Science Education Centre,  
400 Pascoe Vale Road, Strathmore, 3041

**Total Cost:** \$135 plus GST per person (for catering only)

### Seeking ...

35 primary teachers (including STEM teachers and science specialists) to participate in a year-long professional development program

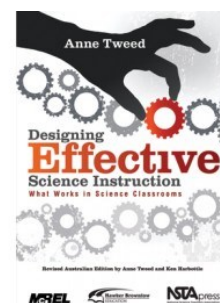
### Energize...

your teaching with effective instructional strategies to

- improve your **CONTENT** instruction by learning and applying a **GVC (Guaranteed and Viable Curriculum)** process to create and/or revise science/maths curriculum maps based on the Victorian Standards to create content storylines and determine performance expectations
- use the curriculum maps to identify/revise sample lessons to build your capacity to effectively support student **UNDERSTANDING** through inquiry, formative assessment and **STEM** practices. (The PL will link the learning experiences to research findings that form the basis for *Designing Effective Science Instruction (Australian Version)*)
- support the development of a positive classroom **ENVIRONMENT** in which students are engaged and motivated to learn by integrating **STEM** project-based lessons into each of their units of study.

### Expect...

- a copy of the *Designing Effective Science Instruction (Tweed, 2014)*
- opportunities to work with others to align curriculum maps with the Victorian Standards
- ongoing learning experiences that include engaging in model pracs, sample lessons and activities that support **STEM** learning, intersession online learning sessions and formation of a professional learning community to help sustain the program implementation.



### ABOUT THE PRESENTER

Anne Tweed is a Science and STEM Consultant with STEM Learning Solutions. Her work supports professional development in the areas of effective science and maths instruction, inquiry-based instruction, formative assessment, high quality instructional practices, and STEM implementation. Ms. Tweed is a past president of the National Science Teachers Association (NSTA, 2004-2005) and a 30-year veteran science and maths educator and supervisor. Ms. Tweed received the Distinguished Service Award and the Distinguished Science Teaching Award from NSTA. She is the author of *Designing Effective Science Instruction*; *Hard-To-Teach Biology Concepts: A Framework to Deepen Student Understanding* and co-author of *Teaching Science through Inquiry-Based Instruction*.

# SESSION DESCRIPTIONS

## Session 1 (3 days)

Create curriculum maps featuring essential **content** that aligns with the Victorian Standards for science and mathematics. The documents will guide lesson planning for teachers by identifying the essential unit learning goals (key concepts), the lesson level learning targets, the success criteria that identifies what students should be able to do to demonstrate mastery and activities that link to the targets and reflect the guidance in the Victorian Curriculum. The participants will, with guidance:

### Content:

- Analyse the standards to clearly articulate what all students must know, understand and do to meet the standards. Determine units and a scope and sequence for primary or secondary year levels and generate a proposed timeline by year level that provides opportunities for students to learn the essential concepts.
- Write the unpacked standards as measurable learning goals and targets with clear, specific language. (Example: Topic – Probability: Understand that the number of trials in an inquiry can produce a wide variation in results)
- Identify the key concepts and learning goals and targets as declarative knowledge or procedural knowledge. (Example: Topic – Probability: Understand that organisms can be grouped based on physical characteristics – Declarative Knowledge; Through discussion compare observations with predictions – Procedural Knowledge)
- Generate a list of lesson activities that form the basis of lessons aligned to the learning targets. Include one STEM project-based lesson for each unit.
- Identify an initial list of important vocabulary from the standards. This list may be associated specifically with content or with process. (Example: organisms, non-living, prediction, observe)

The curriculum maps will be used during the professional development sessions 2 and 3.

## Session 2 (3 days)

Teachers and administrators will participate in hands-on science/STEM lessons focusing on maths and science content aligned to the Victorian Curriculum. Using everyday phenomena and links to grade level relevant learning experiences, participants will develop their content knowledge as well as participate in collaborative lesson planning experiences. Using an inquiry approach, teacher experiences will focus on lessons that help their students **understand** the world around them. The CUE framework introduced in the region with the *Designing Effective Science Instruction* for maths and science will provide structure for the workshop:

### Understanding:

- Each session will address strategies for making student thinking “visible.”
- Scaffolded inquiry approaches will be modelled.
- Technology, mathematics and engineering will be included in the lessons.
- Discourse and sense-making will be integral to each session.

The understanding component of this session will address the Victorian standards with the purpose of increasing the student’s ability to “think mathematically” and “think scientifically”. (Inquiry, discourse and sense-making)

## Session 3 (3 days)

Teachers and administrators will participate in additional hands-on science/STEM lessons focusing on maths and science content aligned to the Victorian Curriculum. Participants will share relevant implementation experiences and continue with their collaborative lesson planning experiences. Additional professional development experiences that support positive learning **environments** will focus on formative assessment, feedback strategies (including peer and self-assessment) and engaging in reasoning processes including arguing from evidence.

### Environment:

- Learn how our behaviors can support learning for all students.
- Learn strategies to help students feel safe to ask questions, give and receive feedback, and ask for assistance
- Science safety and student grouping will be discussed and modelled. (Motivation, safety and classroom environment)

## For more information & bookings contact

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# BOOKING FORM



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for Primary School Teachers, F-6**

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**Session 1: 21-23 March 2018**

**Session 2: 21-23 May 2018**

**Session 3: 23-25 July 2018**

**Time** : 8:30am - 3:30pm

**Cost**: \$135 plus GST per person (for catering only)

**RSVP** : Friday 2nd March 2018

**vicky.scicluna@vssec.vic.edu.au or fax : 03 9374 3855**

**School:** \_\_\_\_\_

**Address :** \_\_\_\_\_

**Telephone :** \_\_\_\_\_ **Fax :** \_\_\_\_\_

**Teacher Name (s) :** \_\_\_\_\_

**Email (s) :** \_\_\_\_\_

**Special Dietary Requirements:** \_\_\_\_\_

**Yes, I /we would like to attend the 9 Day  
Teacher Professional Learning Program**

**Number of places**