Linking theory and practice to support young children's emerging numeracy skills

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Today:

- ❑ **How did this collaboration come about?**
- ❑ **Time constraints, so**
  - Focus on 3Ps: problem solving, positional language and perseverance
  - One learning trajectory, mapped from the VEYLDF to the Victorian Curriculum F-10
- ❑ **Application to practice: video observation**
- ❑ **Paired discussion**
- ❑ **Theory and research**
- ❑ **Re-view the video, with reflection on own practice**

How did this collaboration come about?

- **Mapping the VEYLDF (2016) to the Victorian Curriculum F-10 (2016)**
  - What?
  - Why?

    'Emphasis is placed on continuity of learning for young children as they move between various settings in the early years, including home, early childhood services and schools' (VEYLDF, p. 2).
  - How?

One learning trajectory mapped

VEYLDF
Learning Outcome: Learning

VIC Curriculum
F-10

Children develop a range of skills and processes such as problem solving, **inquiry,** experimentation, hypothesising, **researching** and **investigation**

This is evident, for example, when children:

- explore their environment
- contribute constructively to mathematical discussions and arguments

Mathematics

Describe position and movement (F) (VCMMG082)	Give and follow directions to familiar locations (L1) (VCMMG099)	Interpret simple maps of familiar locations and identify the relative positions of key features (L2) (VCMMG122)

Application to practice: Video

Purposeful observation:

Look for evidence of children's spatial thinking and spatial visualisation.

Reflect:

How could you use the VEYLDF and/or the Victorian Curriculum F-10 to support your planning for learning?

Paired discussion

- Discuss your observation with the person sitting nearest to you

Theory and research

- Mathematics learning occurs along a trajectory. It begins in the home environment, occurs simultaneously across multiple strands (Clements & Sarama, 2014) and continues through formal early childhood education, school education and beyond.
- Children demonstrate spatial reasoning in diverse ways.
- If we fail to recognise children's spatial thinking when it occurs, we miss opportunities to scaffold concepts and language to extend learning.
- This is important because spatial thinking and representations of spatial thinking are influenced by the environment (National Research Council, 2009; Uttal, Miller, & Newcombe, 2003) – us!

What do we need to focus on?

- Names of shapes – and variations of the same type of shape
- Attributes of objects and shapes
- Positional language
- Directional language
- Spatial relationships
- Transforming objects and symmetry
- Visualisation and spatial reasoning
- Encouraging children to explain their thinking

Re-view the video

Points for discussion

- **By finding out more about what to be looking for, did you observe more evidence of intentional teaching and learning:**
  - through the learning experience itself,
  - in the questions asked by the educator and
  - in the children's demonstrations of conceptual understanding?

- **Provocation** – what does this mean for *your* teaching practice?

Thank you for joining us!

References

Clements, D. H., & Sarama, J. (2014). *Learning and teaching early math: The learning trajectories approach* (2nd ed.). New York, NY: Routledge.

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Uttal, D. H., Miller, D. I., & Newcombe, N. S. (2013). Exploring and enhancing spatial thinking: Links to achievement in Science, Technology, Engineering and Mathematics? *General Directions in Psychological Science, 22*(5), 367–373.