Reality

Abstraction

Critical Reflection

Maths

RAMR CYCLE
Perceived Reality

Creativity & problem solving
Symbolic language & structure
Cultural bias

Critical Reflection

Abstraction

Invented Mathematics
• Identify local cultural and environmental knowledge that can be used to introduce the idea.

• Ensure existing knowledge prerequisite to the idea is known.

• Construct kinaesthetic activities that introduce the idea (and are relevant in terms of local experience).
Abstraction

• Develop a sequence of representational activities (physical to virtual to pictorial materials to language to symbols) that develop meaning for the mathematical idea.

• Develop two-way connections between reality, representational activities, and mental models through body → hand → mind activities.

• Allow opportunities to create own representations, including language and symbols.
• Enable students to appropriate and understand the formal language and symbols for the mathematical idea.

• Facilitate students’ practice to become familiar with all aspects of the idea.

• Construct activities to connect the idea to other mathematical ideas.
• Lead discussion of the idea in terms of reality to enable students to validate and justify their own knowledge.

• Set problems that apply the idea back to reality.

• Organise activities so that students can extend the idea (use reflective strategies – being flexible, generalising, reversing, and changing parameters).
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