

Mathematical Problem Solving as a Problematising Journey

Robyn Gandell



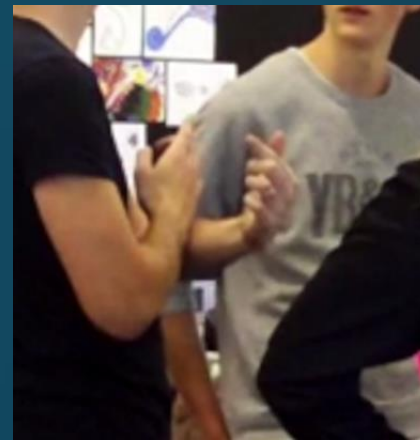
- Background
- Historical paradigms
- My research
- Problematising
- Results



THE UNIVERSITY OF
AUCKLAND
Te Whare Wānanga o Tāmaki Makaurau
NEW ZEALAND

Paradigms:

1. Mind and Body



2. Problem solving

Polya:

- Understand
- Plan
- Carry out
- Look back

Carlson and Bloom (2005)

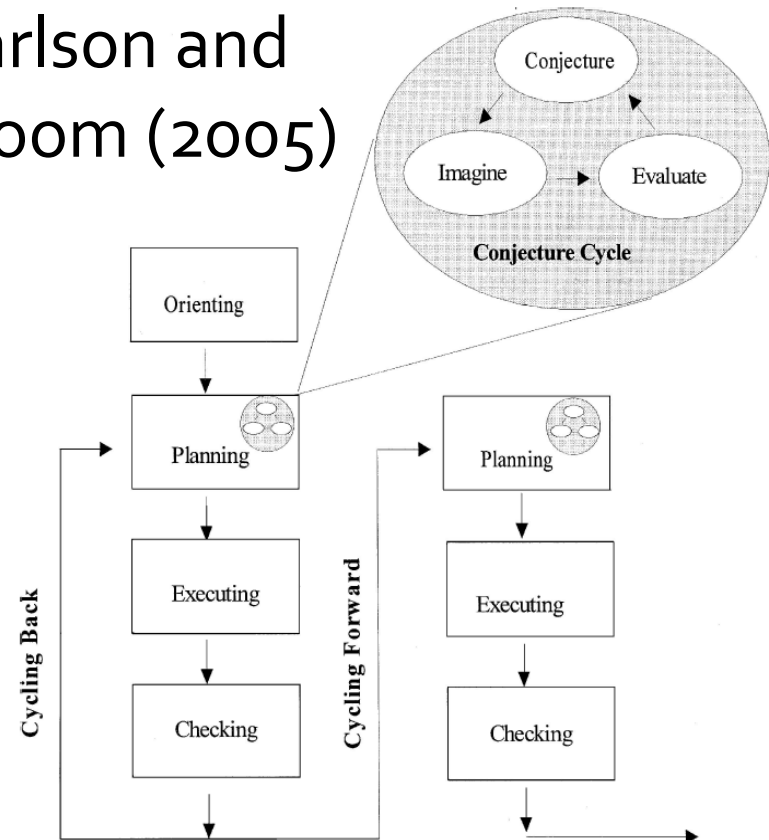


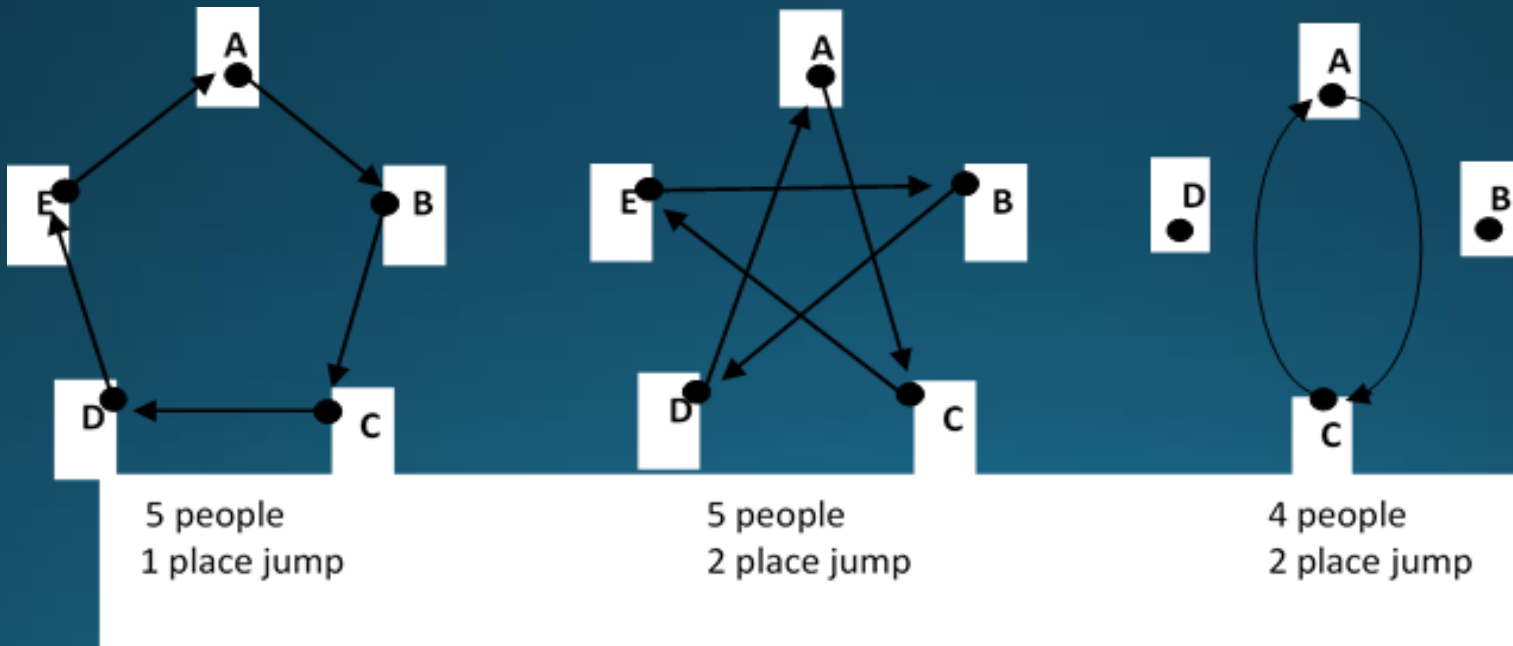
Figure 1. The Problem-Solving Cycle.

My Research

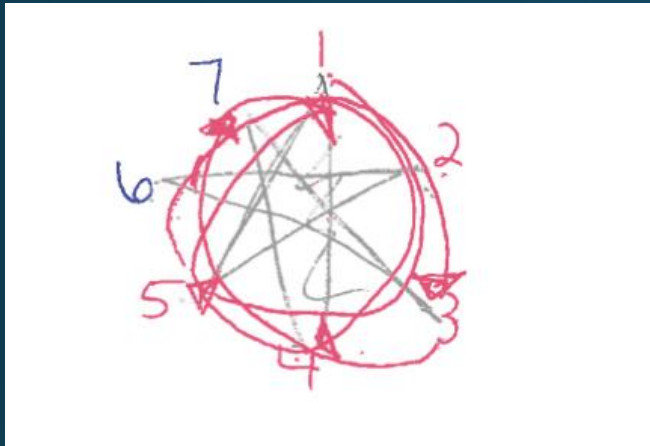
What is the lived experience of a group of students solving a mathematical problem?



The prompt:

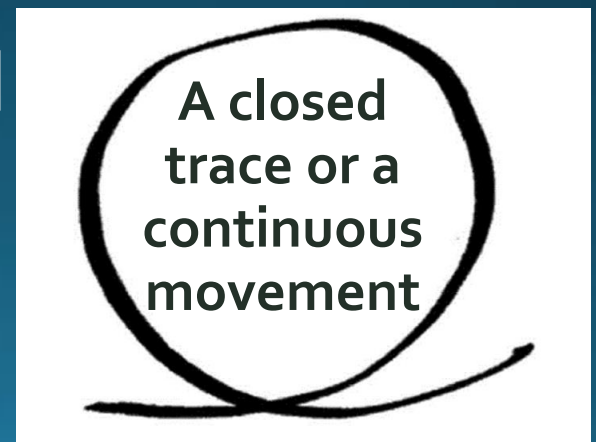


Data



Data Analysis

- Enactivism
- Micro-analysis of student's "problematizing" Proulx and Maheux
- Framework Ingold's "pathways, meshwork and knots"



Example: wandering pathways

- Ala: [*gestures as if to throw the counter*] Can you catch, Paige?
- Chas: But it's a three-person jump, right?



- Ala: [*As the counter is thrown, she points upwards with her right index finger*] Hang on, I thought it was three people.

Example: emerging and enmeshed traces and knots

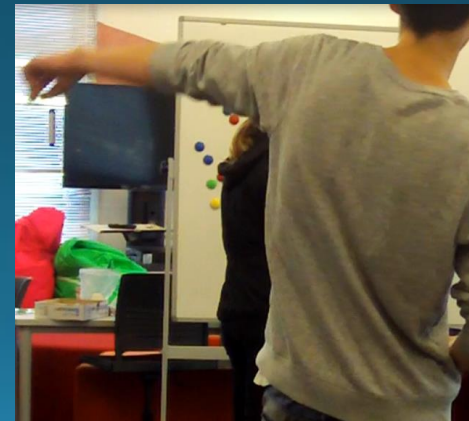
Discrete pointing
indicating positions



Continuous circle
gesture indication
direction



Two different
gestures indicating
two different
variables



Results:

“Problematizing: The lived journey of a group of students doing mathematics” Gandell and Maheux

Students mathematical problem solving is a journey of problematisations



- Emergent wayfaring pathways
- Interact forming knots and a meshwork
- Towards an ever changing horizon