

2012

Effectiveness of professional learning: Enhancing the teaching of fractions in primary schools

Derek Hurrell

Follow this and additional works at: <https://ro.ecu.edu.au/crje>



Part of the [Science and Mathematics Education Commons](#)

Effectiveness of professional learning: Enhancing the teaching of fractions in primary schools

Postgraduate Research Colloquium
Derek Hurrell

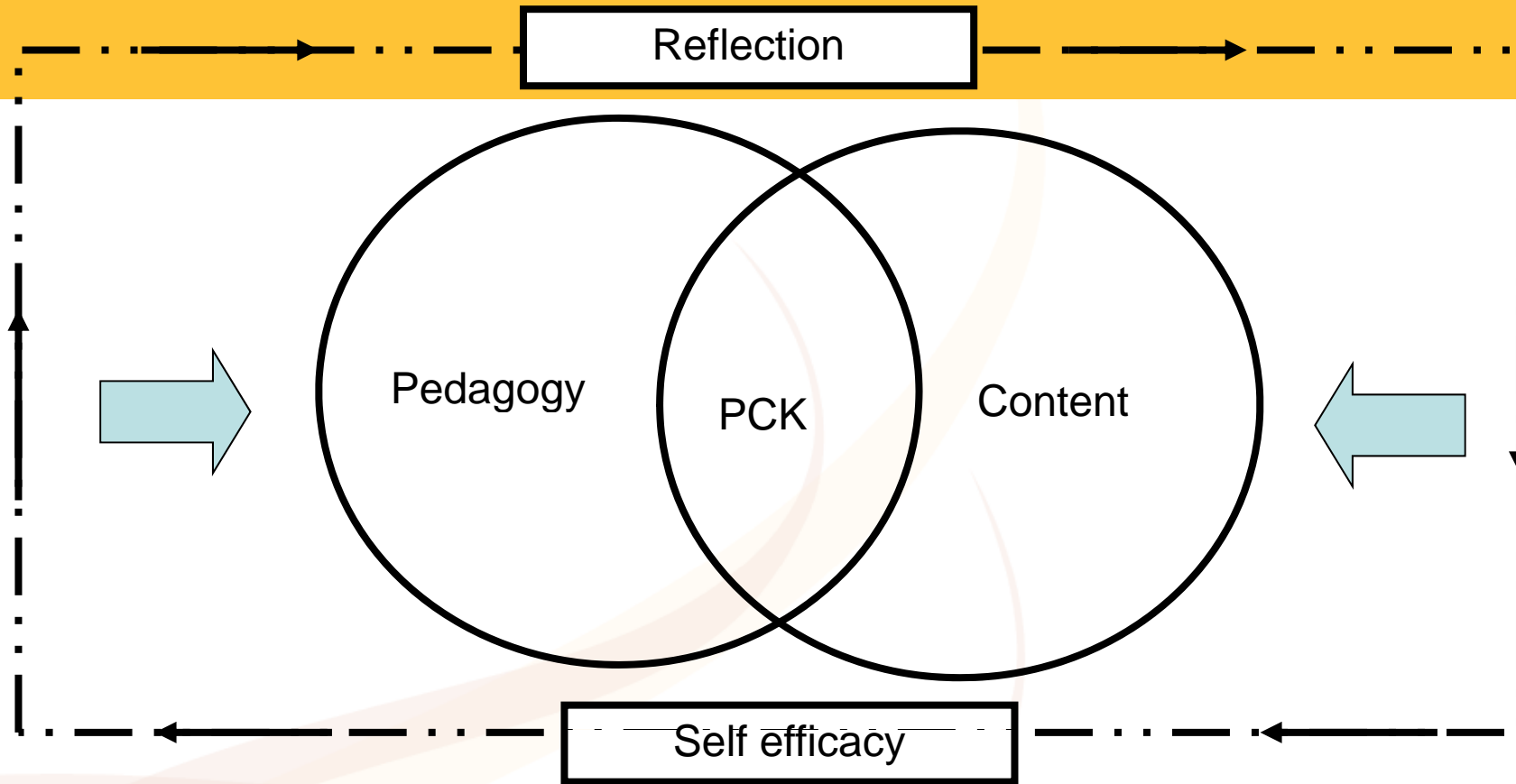
Effectiveness of professional learning: Enhancing the teaching of fractions in primary schools

Research Questions

- What is the current status of teaching fractions in middle and upper primary school classrooms in Western Australia?
- What impacts will well-structured, action research based, professional learning opportunities and reflective practice have on primary school teachers' content knowledge of fractions?
- What impacts will well-structured, action research based, professional learning opportunities and reflective practice have on primary school teachers' pedagogical knowledge of teaching fractions?
- What impacts will well-structured, action research based, professional learning opportunities and reflective practice have on primary school teachers' beliefs and attitudes with regards to teaching mathematics in general and fractions in particular?

Effectiveness of professional learning: Enhancing the teaching of fractions in primary schools - significance

- In the difficult topic of fractions can we positively influence the development of PCK by offering effective research based PL and reflective practices to:
 - Improve subject content knowledge
 - Improve pedagogical practices
 - Develop self efficacy?



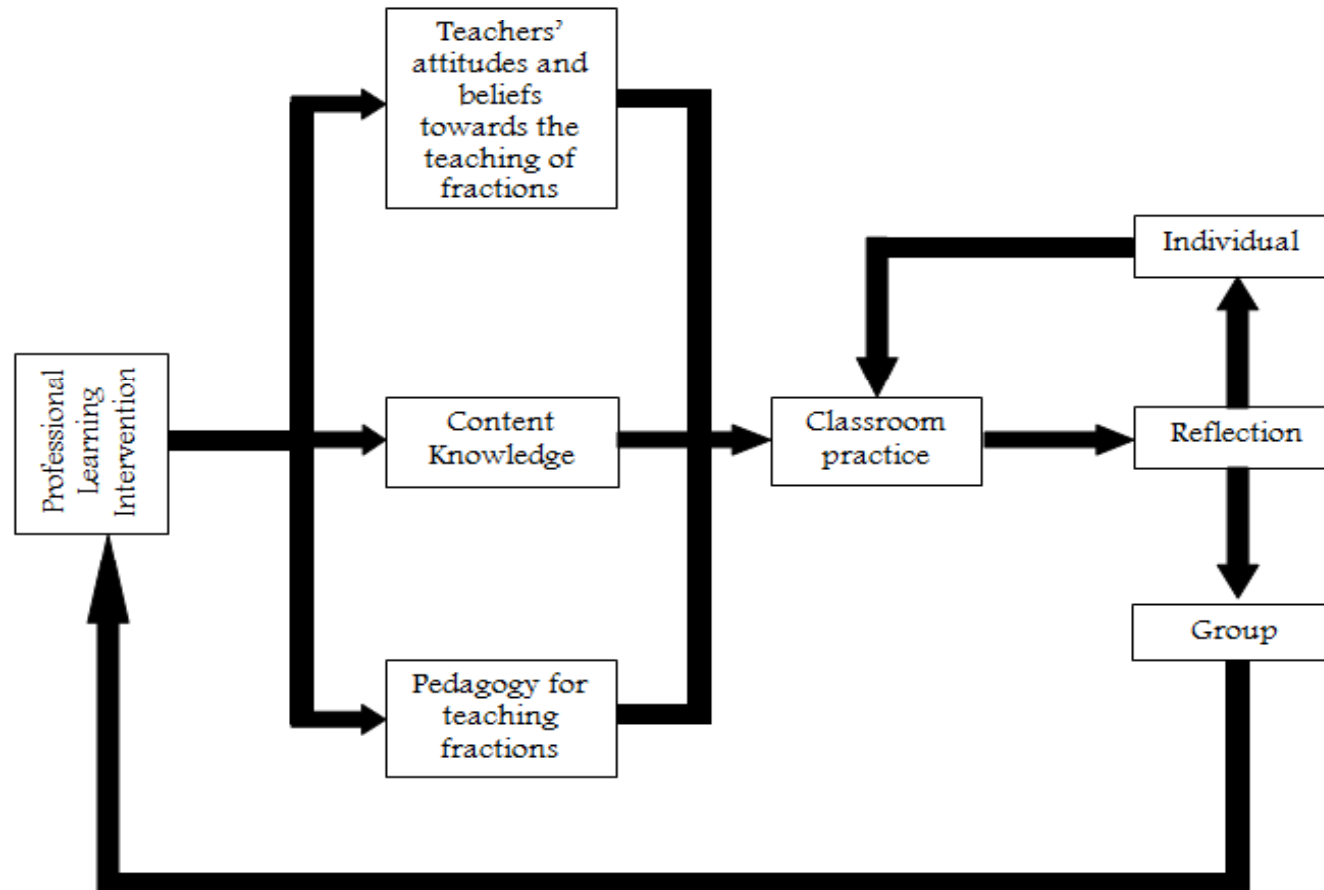
Pedagogical Content Knowledge Domains

Effectiveness of professional learning: Enhancing the teaching of fractions in primary schools - significance

- **Prior research into PCK**
 - Science education
 - focus - one topic in one lesson
 - analysis through single teacher 'lens'
 - More recent models
- **Generalisation**

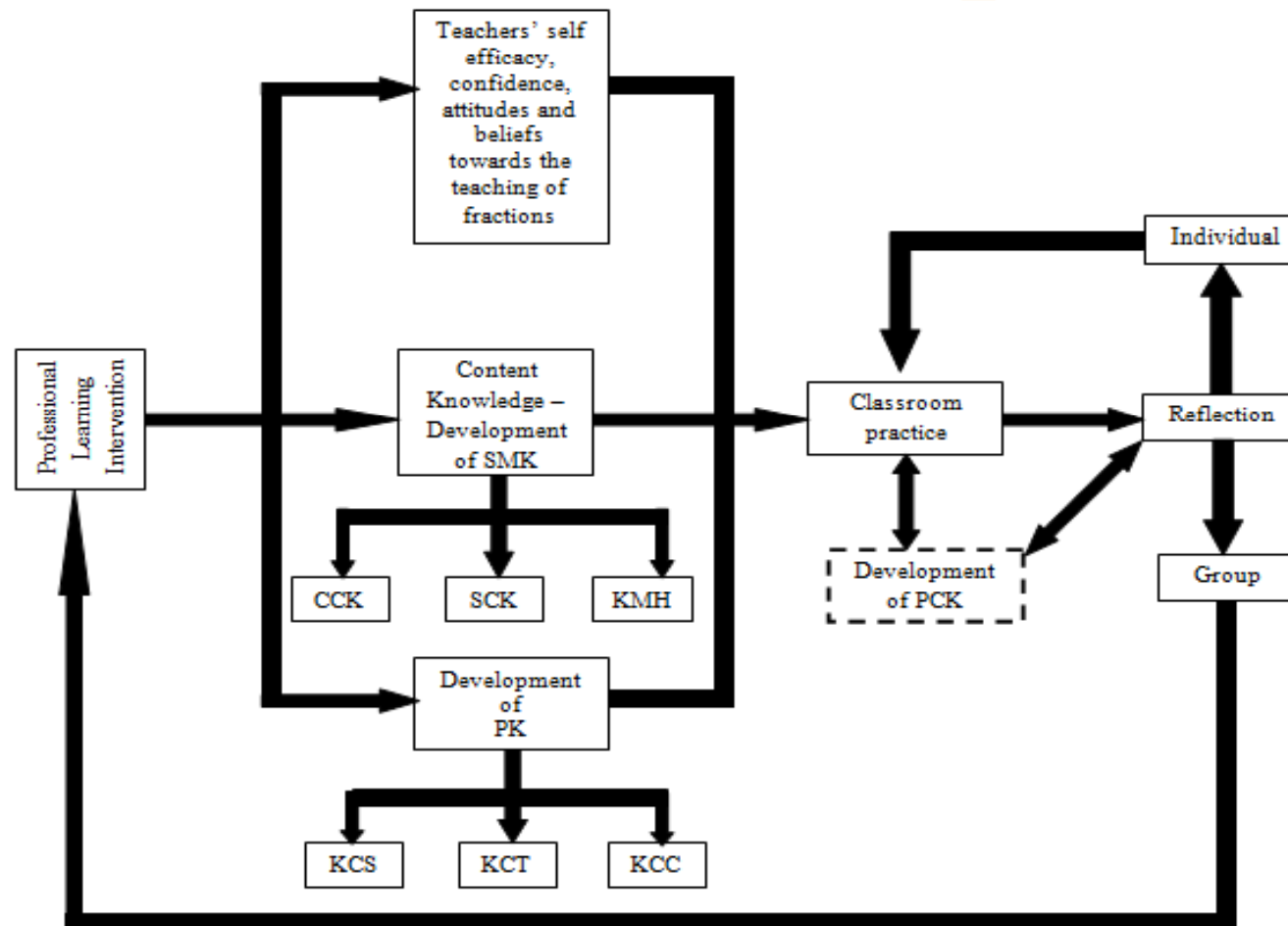
Effectiveness of professional learning: Enhancing the teaching of fractions in primary schools

- Original conceptual framework for the Study



Effectiveness of professional learning: Enhancing the teaching of fractions in primary schools

- Revisited conceptual framework for the Study



Effectiveness of professional learning: Enhancing the teaching of fractions in primary schools

- Mixed Method study

The data were collected through a combination of

- participant constructed concept maps
- application of an assessment tool to determine content knowledge
- Likert scales to determine attitudes and beliefs
- assessment tool to determine PCK (Clarke & Mitchell, 2008)
- the Rational Number Interview (Clarke, Roche & Mitchell, 2005)
- an exit questionnaire
- audio-recorded individual semi-structured interviews
- participant diary logs and researcher field notes

Effectiveness of professional learning: Enhancing the teaching of fractions in primary schools - Findings

- Status of the teaching and learning of fractions
- Content Knowledge of Teachers
- Increased MKT
- PCK

Effectiveness of professional learning: Enhancing the teaching of fractions in primary schools - Findings

- Confidence
- Beliefs
- Attitudes
- PL

Effectiveness of professional learning: Enhancing the teaching of fractions in primary schools

- **Limitations**
 - Size of cohort
 - Indicative nature of self selecting cohort
 - Duration
 - Choice of tools
- **Areas for future research studies**
 - Generalised PL practice
 - Informed PL participants
 - Model for MKT