

2012

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

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Postgraduate Research Colloquium  
Derek Hurrell

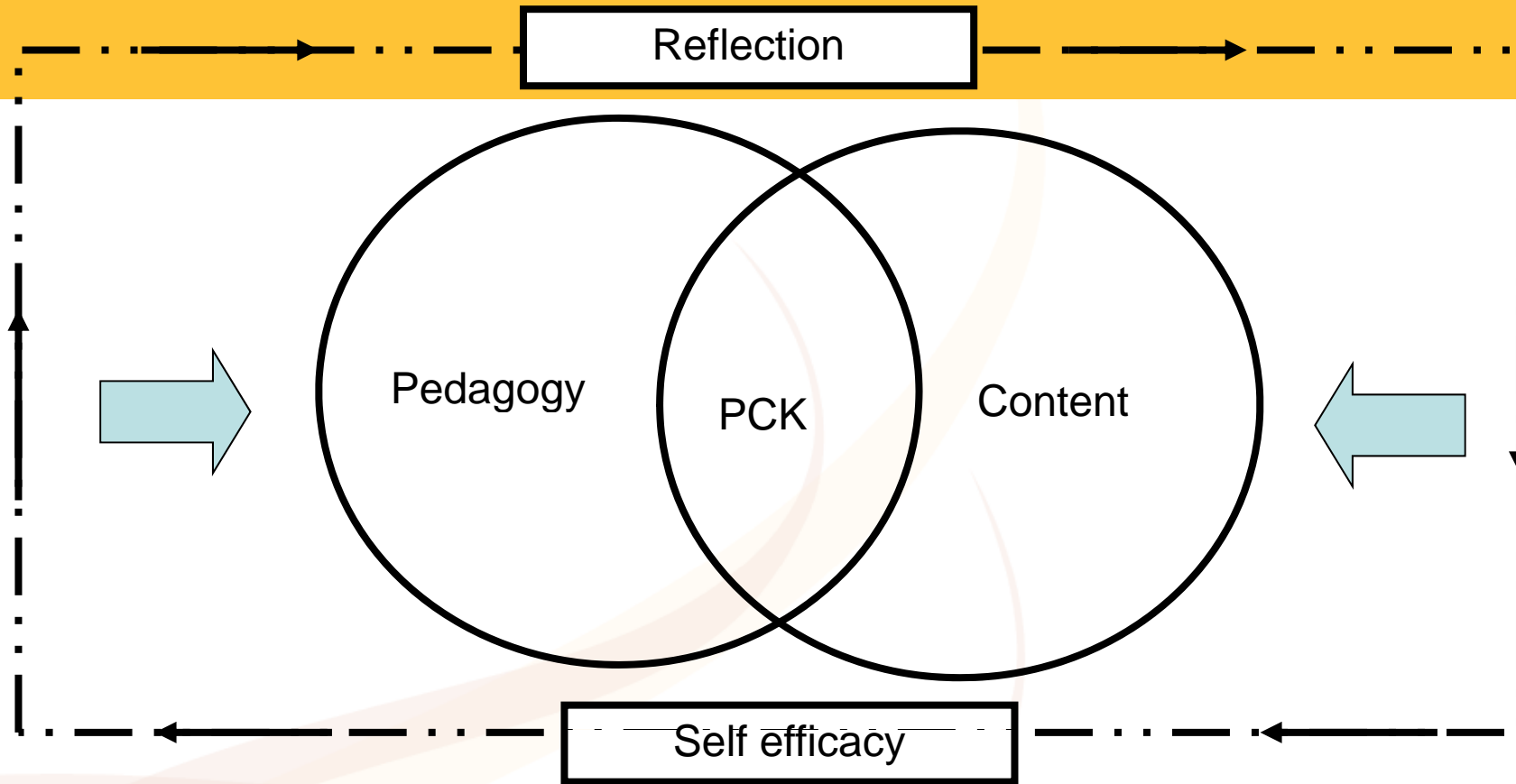
## Effectiveness of professional learning: Enhancing the teaching of fractions in primary schools

### 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?



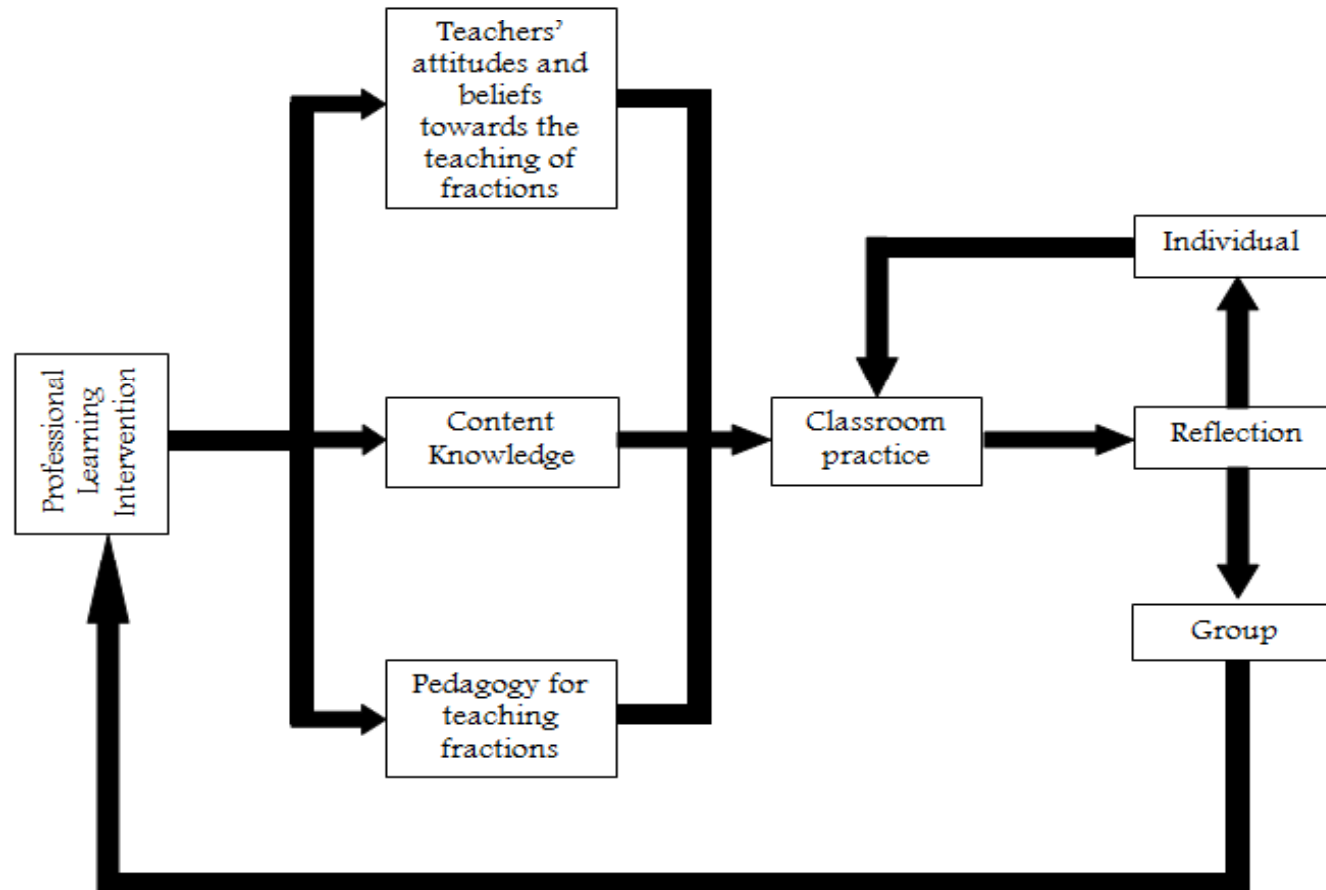
Pedagogical Content Knowledge Domains

## 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**

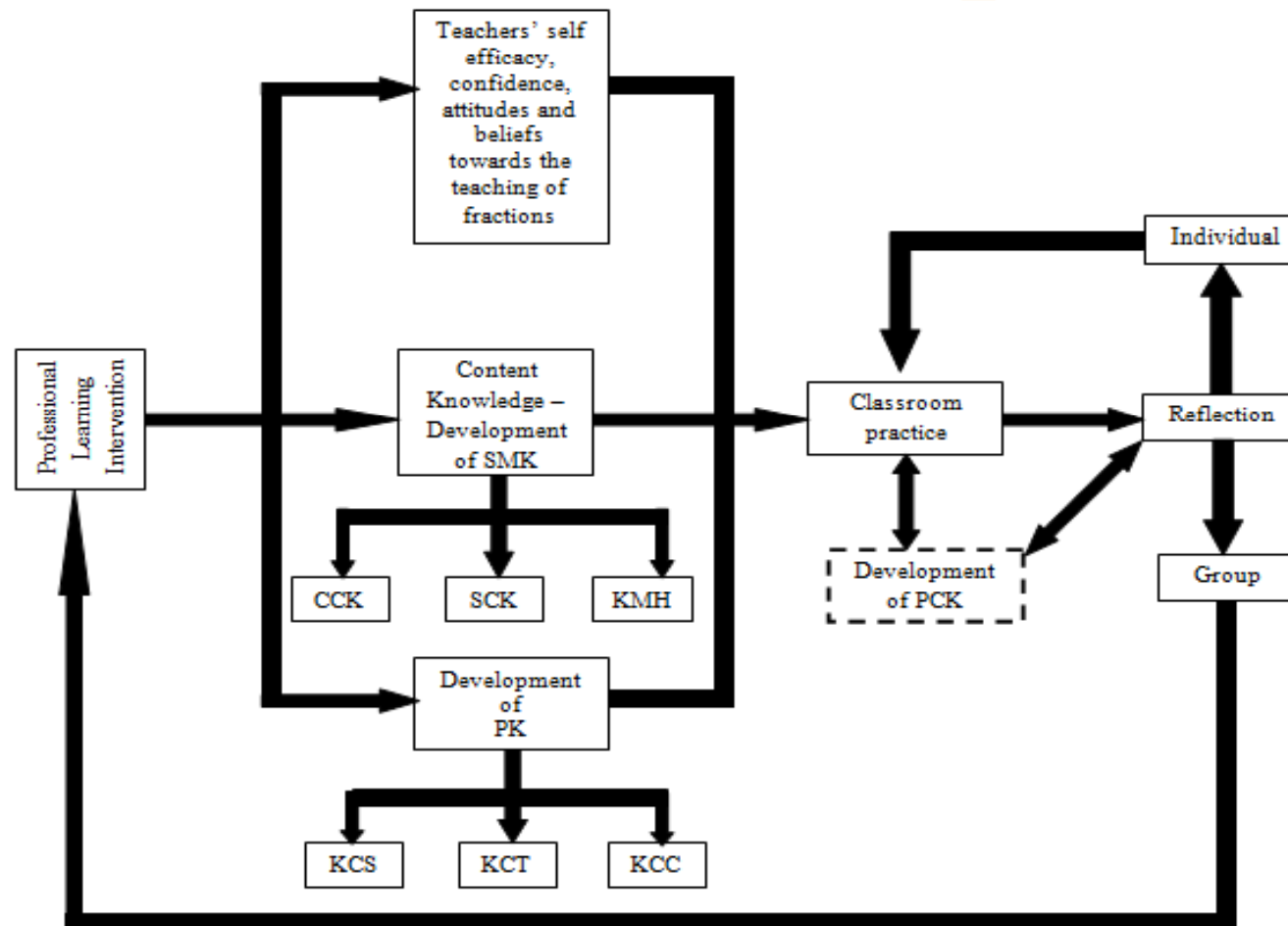
## Effectiveness of professional learning: Enhancing the teaching of fractions in primary schools

- 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