

## Lesson Study in the Context of Curriculum Reforms in Singapore

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SINGAPORE

## Role of Education in Singapore

- Nation-building
- Economic Development
- Social Cohesion



Government Investment in Education  
- 3.5% of GDP in 2004/05

## Outline of Presentation

- Brief about recent curriculum reforms in Singapore
- Power of Lesson Study in transforming teaching and learning – the heart of curriculum reform
- Lesson Study in action – 2 cases from a primary school in Singapore
- Concluding remarks

## Educational Achievements

- ✓ High level of achievement in Math & Science – top scorer (TIMSS)
- ✓ Scored well in international test of reading skills (Netherlands-based International Association of Educational Achievement)
- ✓ Performed well in international competitions (Math & Science Olympiads)

## So Why the Need for Curriculum Reforms?

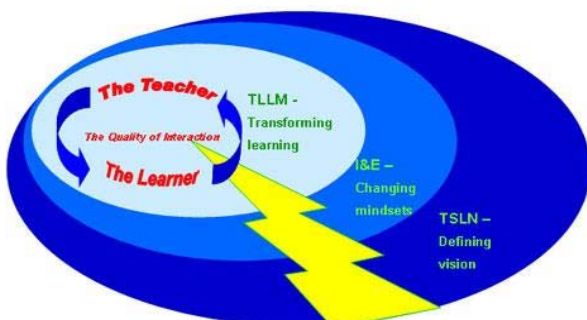
- ✓ Current state may not serve as well in the future
- ✓ 21<sup>st</sup> century competencies and capacities in response to globalisation and knowledge economies
- ✓ CRPP research on classroom practices – *classroom pedagogy mainly teacher-centred with high levels of students on task behaviour, reliance on textbooks and worksheets*

## Teach Less, Learn More

A call from PM Lee Hsien Loong during his inaugural National Day Rally in 2004 for schools and teachers to:

- *teach less*
- *improve the quality of interaction between teachers and students*
- *equip students with the knowledge, skills and values to prepare them for life*

## Teach Less, Learn More (TLLM)



Source: MOE Website

## Support from MOE

- Give teachers more time and space  
– *Reduce curriculum content*  
– *Creation of white space*
- Provide additional resources to schools ready to prototype their ideas for TLLM and bring in new school practices
- Enhance professional development and mentorship of teachers



## Extent of LS in Singapore

Beginning Stage: Just do it

- ❑ Use of Lesson Study in “Communities of Practice in Cooperative Learning (CoPCL)” professional development programme (2005)
- ❑ CRPP-funded research in a pilot project in 1 primary school (school – university partnership) (2005)
- ❑ Individual schools exploring LS (2006)



## A Mixed Model of LS to Fit Singapore’s Context

Our model is informed by

- ❑ Japanese Lesson Study procedure (Lewis, Akita & Takahashi)
- ❑ Hong Kong Learning Study (Lo Mun Ling)
- ❑ Careful study of Singaporean context- Local Adaptation



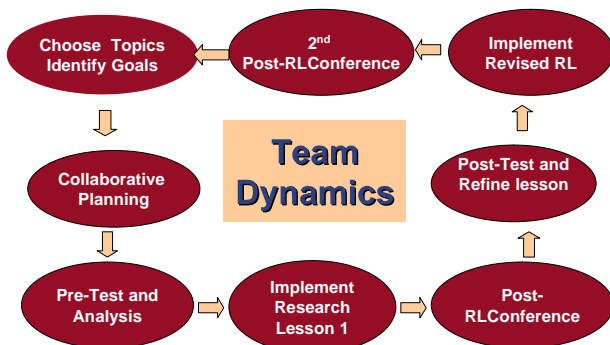
## LESSON STUDY IN ACTION IN SINGAPORE SCHOOLS: A CASE OF A PRIMARY SCHOOL



## Context of Lesson Study @ Cedar Primary School

- ❑ Pilot project started in Jan 2006 at the invitation of the school principal.
- ❑ CRPP/NIE funded research with the involvement of 3 staff members facilitating 3 LS teams.
- ❑ Two Lesson Study Cycles generating 3 research lessons for each cycle
- ❑ School – Wide Sharing at the end of Cycle 1
- ❑ Open House (Cluster level) at the end of Cycle 2

## Process of First Lesson Study Cycle



Social Studies (Grade 4) Maps



Social Studies (Grade 2) Neighbourhood



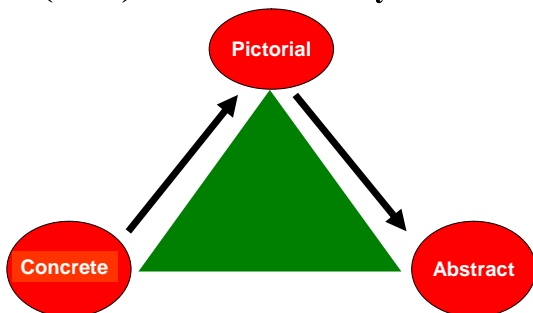
Mathematics (Grade 3) Long Division with Remainder

## Selected Video Segments of RL 1 and Revised RL



- Use of authentic problem situation (divide 7 books between 2 pupils)
- Group task - use of manipulatives ( $27 \div 2$ )
- Revision of division with no remainder using magnetic squares ( $15 \div 3$ )
- Group task - use of manipulatives ( $23 \div 4$ )

### Concrete-Pictorial-Abstract (CPA) Model – MOE Syllabus



MOE Syllabus. With reference to the Math textbook "My Pals are Here"

## What Varied from Research Lesson 1 to Revised Research Lesson?

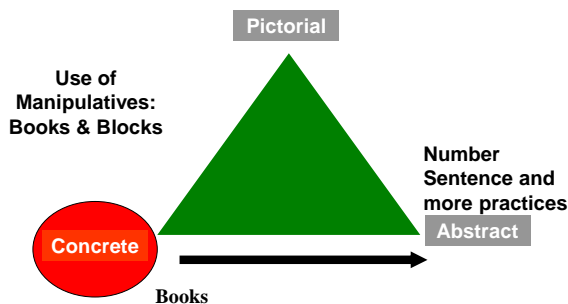
RL One

- Systematic teaching of concepts of equal sharing and equal grouping with the use of magnetic squares and paper circles

RL Two

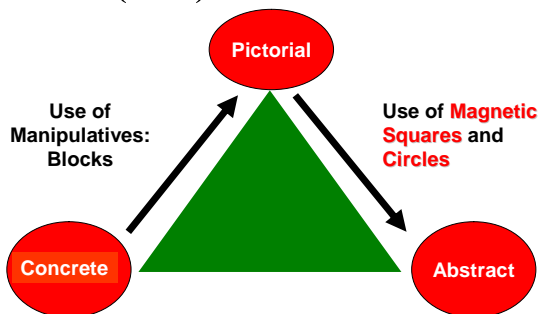
- Concretely corresponding divisor (circles) and 2-digit integer (blocks) with manipulatives

### Concrete-Pictorial-Abstract (CPA) Model (RL1)



MOE Syllabus. With reference to the Math textbook "My Pals are Here"

### Concrete-Pictorial-Abstract (CPA) Model – RL2



MOE Syllabus. With reference to the Math textbook "My Pals are Here"



### Emerging Findings of Cycle 1

- ❑ Gained a better understanding of the concepts and subject matter through the first cycle of lesson study.
- ❑ More aware of the complexity in teaching these topics and the importance of paying attention to student thinking and ways of learning.
- ❑ With variations made in the revised research lessons, students' understanding of the topics improved as shown in post-test and video data.



### Emerging Issues

- ❑ Need to strengthen planning at a unit level
- ❑ More focus needed on pupils and not just the teacher during observation
- ❑ Severe time constraint and lack of resources



### LESSON STUDY CYCLE 2 July – September 2006





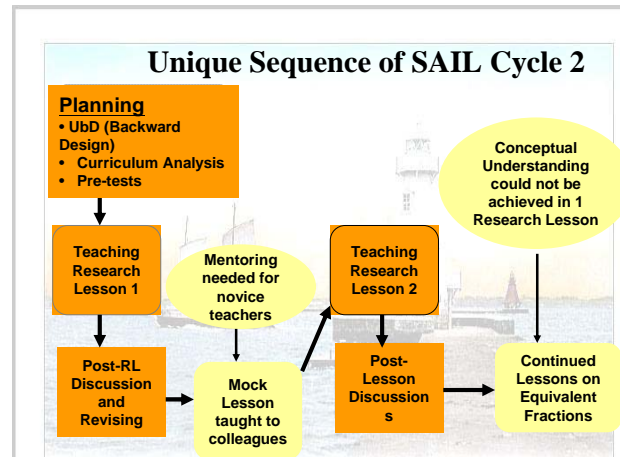
## Improvements in Cycle 2 (July – Sept 2006)

- Linked LS to school visions and goals
- Used Backward Design (UbD) to guide planning
- Conducted curriculum analysis, reviewed the literature and critiqued the habit of following-the-textbook pedagogy



## Improvements in Cycle 2 (con't)

- Used diagnostic tests & interviewed students
- Involved subject experts in the planning stage
- Consciously used C-P-A Model to guide planning, revising and reflection in the math lessons



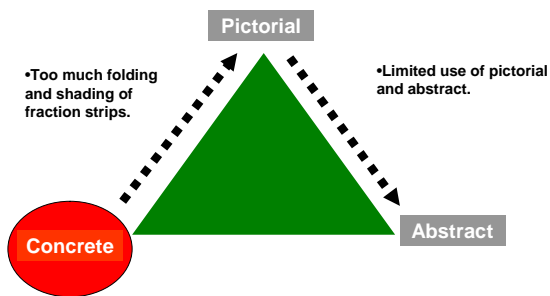
## Teaching of Research Lesson 1



## Weaknesses of RL1 (Post-RL Discussion)

- Planning paid too much attention to manipulate the concrete
- The lesson had too much folding of circles and strips – limited introduction of the core concept
- Questions asked were too general – students were not asked to explain why
- Therefore, limited movement from Concrete to Pictorial and Abstract

## Concrete, Pictorial, Abstract Model



MOE Syllabus. With reference to the textbook "My Pals are Here"

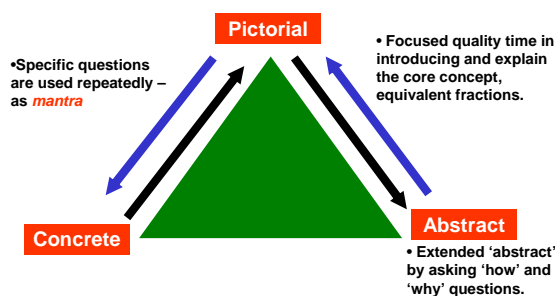


## Improvements in RL2

- Draw on students' prior knowledge of fractions. focused on equivalent fractions
- Teach students to observe, identify and compare the patterns before teaching concept of equivalent fractions
- Represent fractions in concrete terms as well as symbolically
- Capitalize on teachable moments, such as reiteration of the reason why equivalent fractions are represented differently although they are of the same value.



## Concrete, Pictorial, Abstract Model



MOE Syllabus. With reference to the textbook "My Pals are Here"



## LS develops teacher curriculum, pedagogical & assessment capacities

- By bringing the intended curriculum to life through a collaborative design, analysis, improvement process.
- By drawing resources (material and expertise) together to ground theory in practice.
- By bringing teachers together to forge strong professional commitment to children's learning.



## Power of Lesson Study in the Context of Curriculum Reform

- Teachers see themselves as being able to effect change through their own deliberations and actions.
- It provides the opportunities for teachers to inquire together and support each other in facing the challenges of curriculum reforms both locally and globally.
- Teachers develop "the eyes to see children" and understand their learning.
- Teachers become researchers of their own practice.

## Concluding Thought

The metaphor of an airplane cockpit



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