

Primary Mathematics Study on Whole Numbers

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The goal, roles, and transposition: Chinese open-class approach

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Why: roles of open-class

- Several panelists above discuss the mathematics content knowledge , pedagogical content knowledge, and curriculum knowledge needed for effective primary mathematics teaching (Shulman ,1986).
- The unity of them in action is unasked and is supposed it could be automatically realized in West. It is the missing gap addressed by lesson study (or learning study, open-class) in the east.

Why: A typical Belief in Asian teachers

- Professional knowledge must be **public and communicated** among colleagues through collaboration.
- Professional knowledge must be **storable and shareable**.
- Professional knowledge requires a **mechanism for verification and improvement**. (Hiebert et al., 2002)

Why: Primary Mathematics teacher in mainland China are commonly **specialist**

- Confucius established a tradition of **deep respect for teachers** in China, similar to lawyers and doctors in the west.
- Teachers are expected to be **specialist** with professional knowledge .
- Primary mathematics teacher in mainland are commonly not generalist but specialist.
- It is **not common** in other countries.
- It is attached to **exam-driven** teaching or learning culture.

Open-class roles in Primary teacher professional life

Subject

- Research office /group in China(教研室/組) :
 - Research group in province
 - Research group in city
 - Research group in district
 - Research group in school
- Professional ranks (three levels):
 1. Subject research (practical) paper
 2. Open-class
 3. Working-time is less
 4. Reseach time is more

The roles of open-class

- Has exploited the Chinese conception of teaching as **a public activity** with norms and structures that favour a **collaborative spirit**;
- Has exerted a major influence in the **professional development** of teachers in China for many years.
- Has played a major role in fostering **learning communities** within Chinese schools.
- Has proven to be an effective way to induct **new and inexperienced teachers** into the teaching profession.

The **difference**: open-class vs lesson study

- These open-classes generally require :
- Single cycles (planning -designing -teaching – reflecting) vs multiple cycles
- Within teachers or its research group vs outside teacher/researcher
- More frequency daily practice
- Simpler/more economical



1950

The Chinese MOE established open class approach to organize teacher study groups in school

1999



Macau (Portuguese colony for more than 400 years) returned to China – **transposition** of open class

2012



Small size experiment of **transposition** of open class (from the Chinese model) started in Reggio Emilia .

Transposition in Macau :

‘same content-different-approach’

open-class

Goal:

**Inquiring Pedagogical
Reasoning by Comparison
and Judgment**

‘same content-different-
approach’ 同課異構

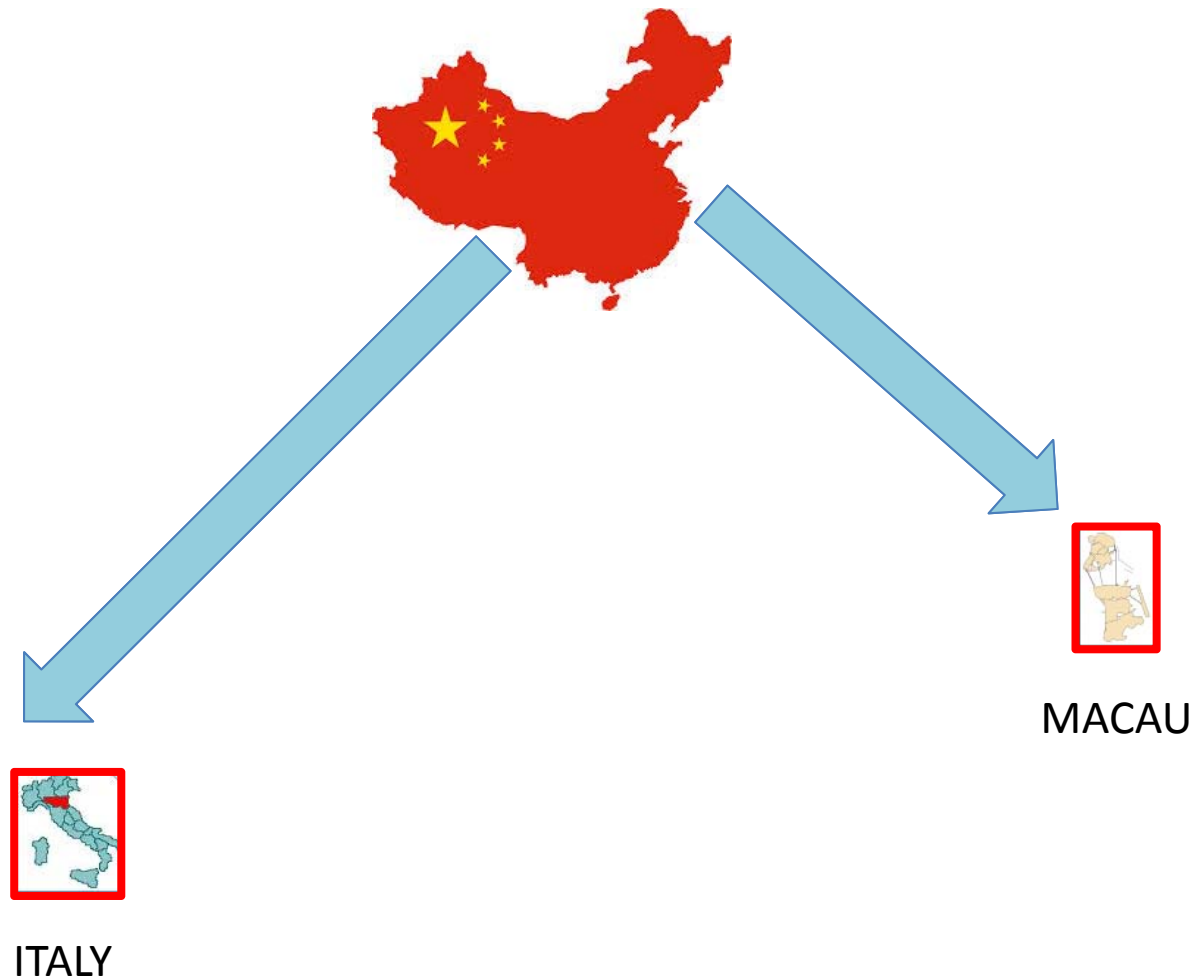
**The Pedagogical
Reasoning in Explaining
Why or Why Not**

Experienced teacher vs
pre-service teacher

The relationship vs shapes/colors



Two different cultural transpositions
of this complex and culturally biased model
in (primary) mathematics teacher education

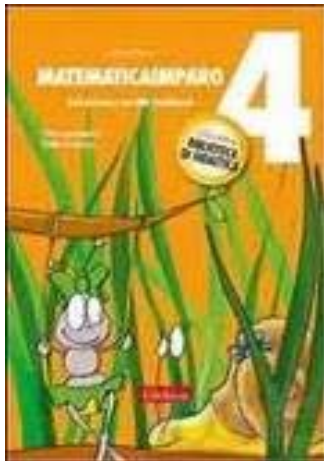


A sketchy comparison

	CHINA	MACAU	ITALY
Language	Chinese (Mandarin / Cantonese)		Italian
Standard	National (centralized) Standard Strong control	Fragmented curriculum	National (centralized) Standard Weak control
Primary Teachers' beliefs	Teaching as public activity	Teaching as private activity	
	specialist	generalist	

Italy: fragmentation
two different textbooks

Additive problems are usually classified
and considered separately
Mixing them is not considered appropriate.



addition



subtraction

Open class transposition in Italy: the research group

- 5 teachers (2 senior / 3 junior)
- 4 educators (1 senior; 3 junior);
- 1 scientific advisor, 1 University professor;
- 1 pedagogist from the public pre-primary schools of Reggio Emilia;
- 1 educator from Officina Educativa, a public organization in Reggio Emilia
- Strong involvement of school principals

Open class transposition in Italy: the schedule

14 hours Meeting

I: activity design

II: in-class activities (1 hour)

III: analysis, sharing and redesign

Transposition is important

- Teaching is cultural activity with own tradition
- Transposition in Macau need to cut /adapt own system (from in-service to pre-service)
- Transposition in Italy need to cut /adapt own system and **challenge teachers' beliefs** (combine in-service and pre-service program)

To challenge teachers' beliefs
“similar” solutions in Italy and Macau

Open class approach

for both

Practicing teachers

and

Prospective teachers

(teacher development/teacher education
/internship)