

Panel on Teacher Education

ICMI Study 23 Primary Mathematics Study of Whole Numbers

Macau, China • 3 – 7 June 2015

Chair: Jarmila Novotná, Czech Republic

Panelists:

Maria G. Bartolini Bussi, Italy

Sybilla Beckmann, U.S.A.

Maitree Inprasitha, Thailand

Berinderjeet Kaur, Singapore

Xuhua Sun, Macau, China

Hamsa Venkat , South Africa

Discussants:

Mike Askew, South Africa

Deborah Loewenberg Ball, U.S.A.

Two core challenges across all 7 countries represented on the Panel

1. To prepare and support primary teachers who:
 - Understand the foundations of whole number arithmetic
 - Know the content from a pedagogical viewpoint
 - Have skills for instructional practice
2. To improve practice in schools, not just prepare teachers to continue the way things have been

In some countries, additional challenges

1. Primary teachers' lack of mathematical content knowledge
2. Inadequate opportunities to practice, get feedback, improve instructional skill

Some approaches to managing these challenges

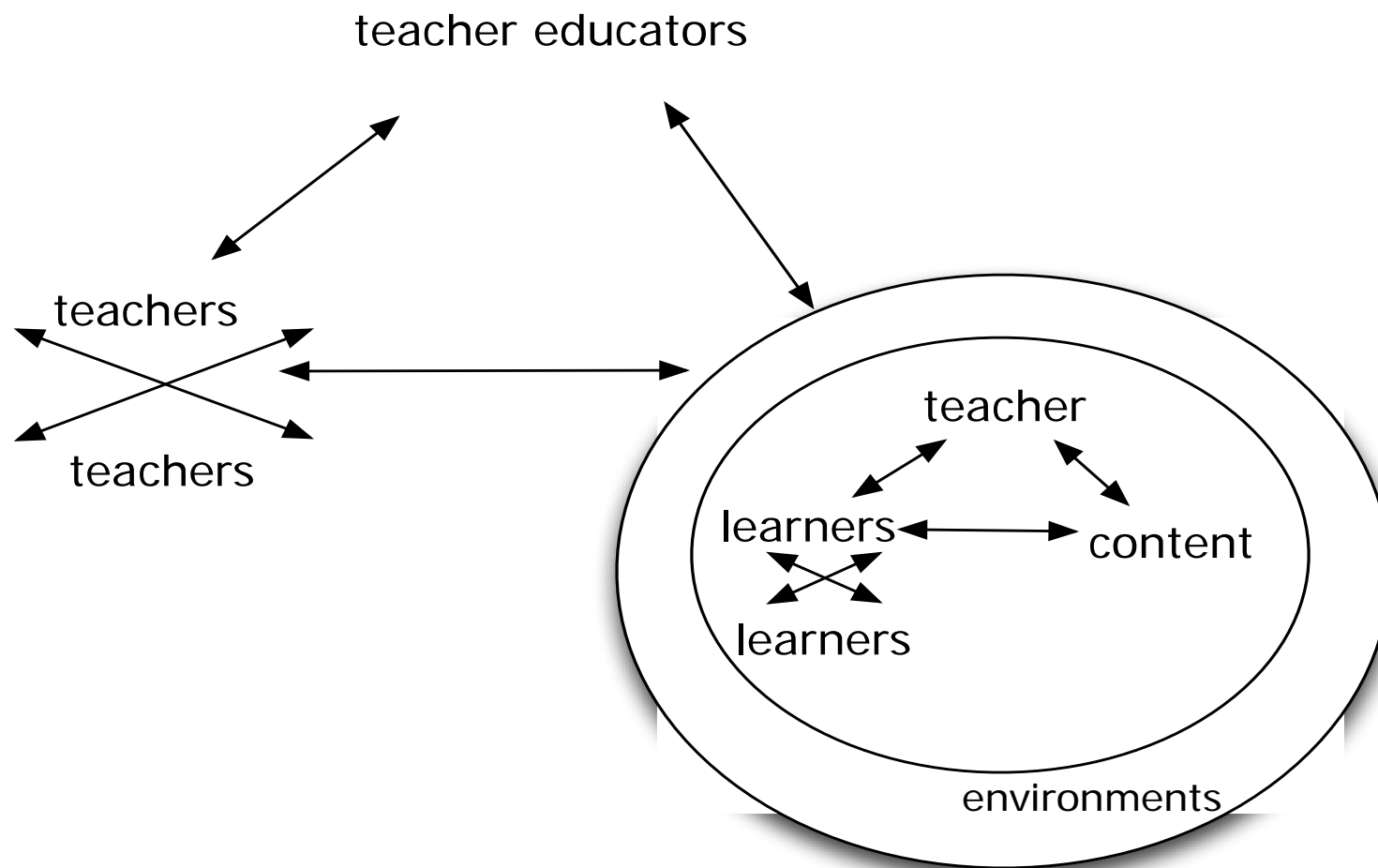
- Using multiplicative conceptual field to develop content knowledge and mathematical argumentation (Beckmann, U.S.A.)
- The open-class approach, using public teaching for professional learning together (Bartolini and Sun, Italy and China)
- New structure for teacher education, focus on core values and integrating mathematical knowledge for teaching with instructional practice (Inprasitha, Thailand)

. . . and more approaches

- The model method (Kaur, Singapore)
- Specialization in primary maths (Sun, China)
- Focusing on specialized content knowledge (SCK) with representations and explanations (Venkat, South Africa)

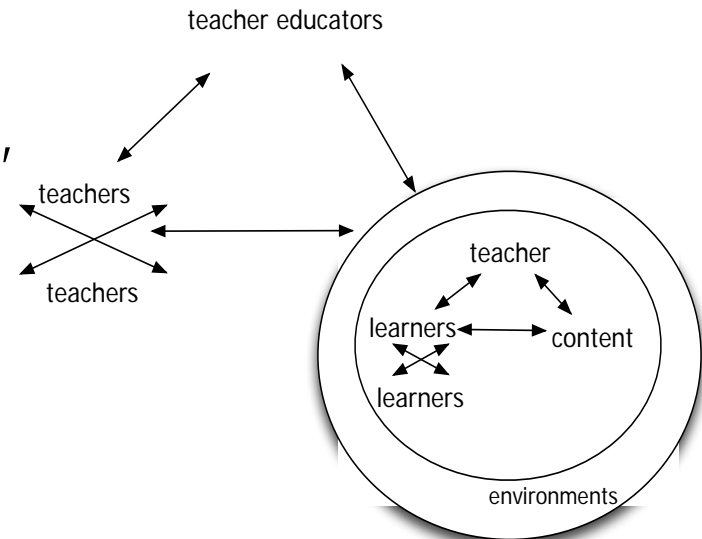
What do these innovative approaches have in common?

Centering teacher education in practice



Centering teacher education in practice

- All of these approaches situate teachers' preparation and development *in* the practice of teaching.
- All of these approaches give pedagogically-oriented attention to the mathematical detail of whole number arithmetic, reasoning, and discourse.
- The approaches are also tailored to the particular challenges and needs of the cultural and societal contexts.



Questions for the study and continued improvement of primary maths teacher education

1. How do we choose the highest leverage mathematical content and instructional skills to prepare beginning teachers to be good enough at the start?
2. How do we support teachers to teach maths to children of diverse ethnic, linguistic, and cultural backgrounds, both when the teachers share the same background and also when they do not?