

# **SOCIAL SERVICE RESEARCH NETWORK (SSRN)**

## **“Building a Conducive Ecosystem for Research in the Social Service Sector: From Findings to Solutions”**

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**Civil Service College**

# Scaling of Innovative Practices in Education: From Future School to More Schools

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# Scaling of Innovative Practices in Education: From Future School to More Schools.

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# Overview

- How do we perceive scaling? What is our scaling model like?
- Teacher's reflective learning journey in scaling
- Leadership support to teachers

# Scaling Metaphors



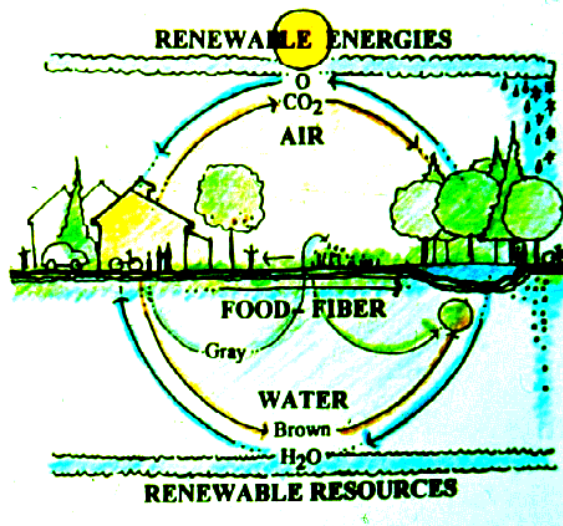
Pipeline



Tree

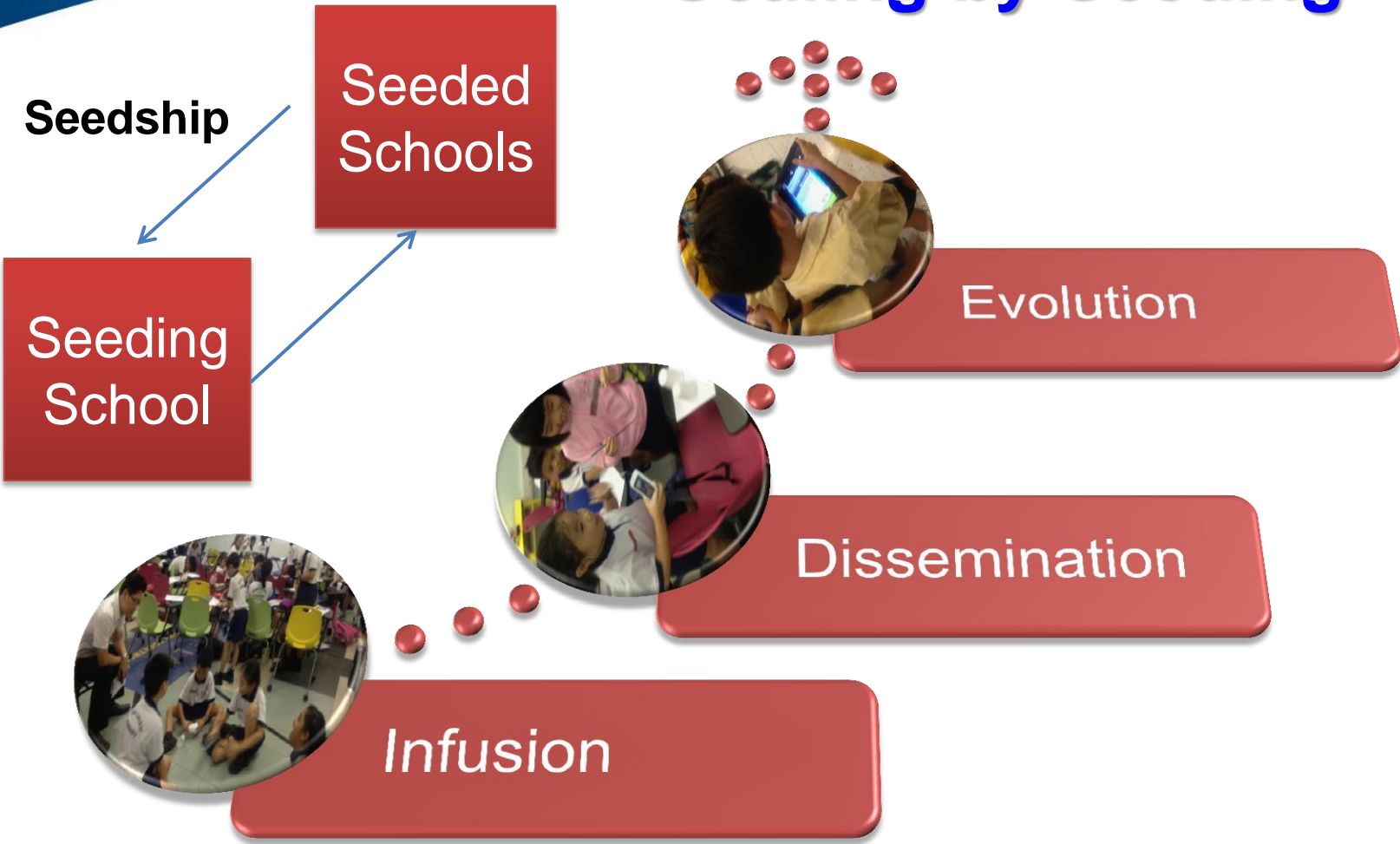


Urban Planning



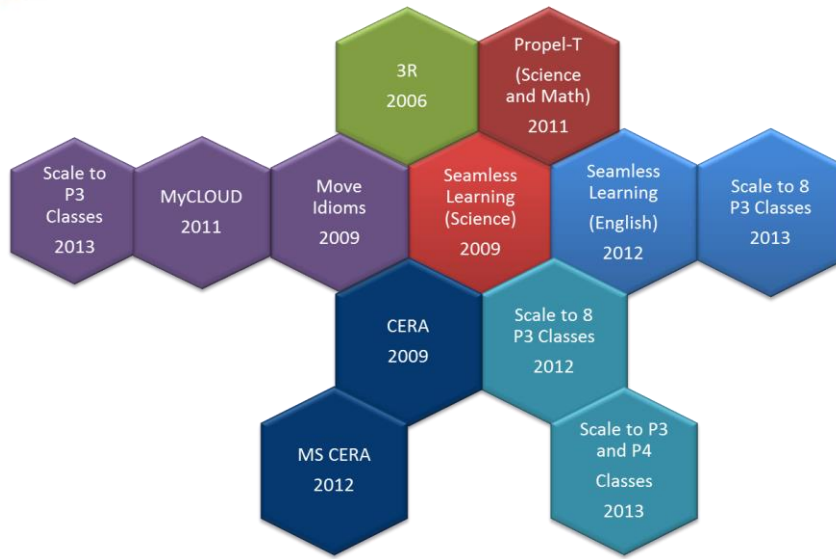
Ecological Planning

## Scaling by Seeding



School-level scaling:  
spreading the innovation from one school to cluster schools

# Research, Implementation and Scaling



南侨小学

Founded 1947 NAN CHIAU PRIMARY SCHOOL

Innovative Practice from a Future School  
(2009 -)



ANDERSON PRIMARY SCHOOL

A School of Distinction Nurturing Future Ready Citizens of Character.  
19 Ang Mo Kio Avenue 9 Singapore 569785 Tel : 6456 0340/64580062 (General Office)



Huamin Primary



NorthSpring  
Primary School



SENG KANG  
PRIMARY SCHOOL

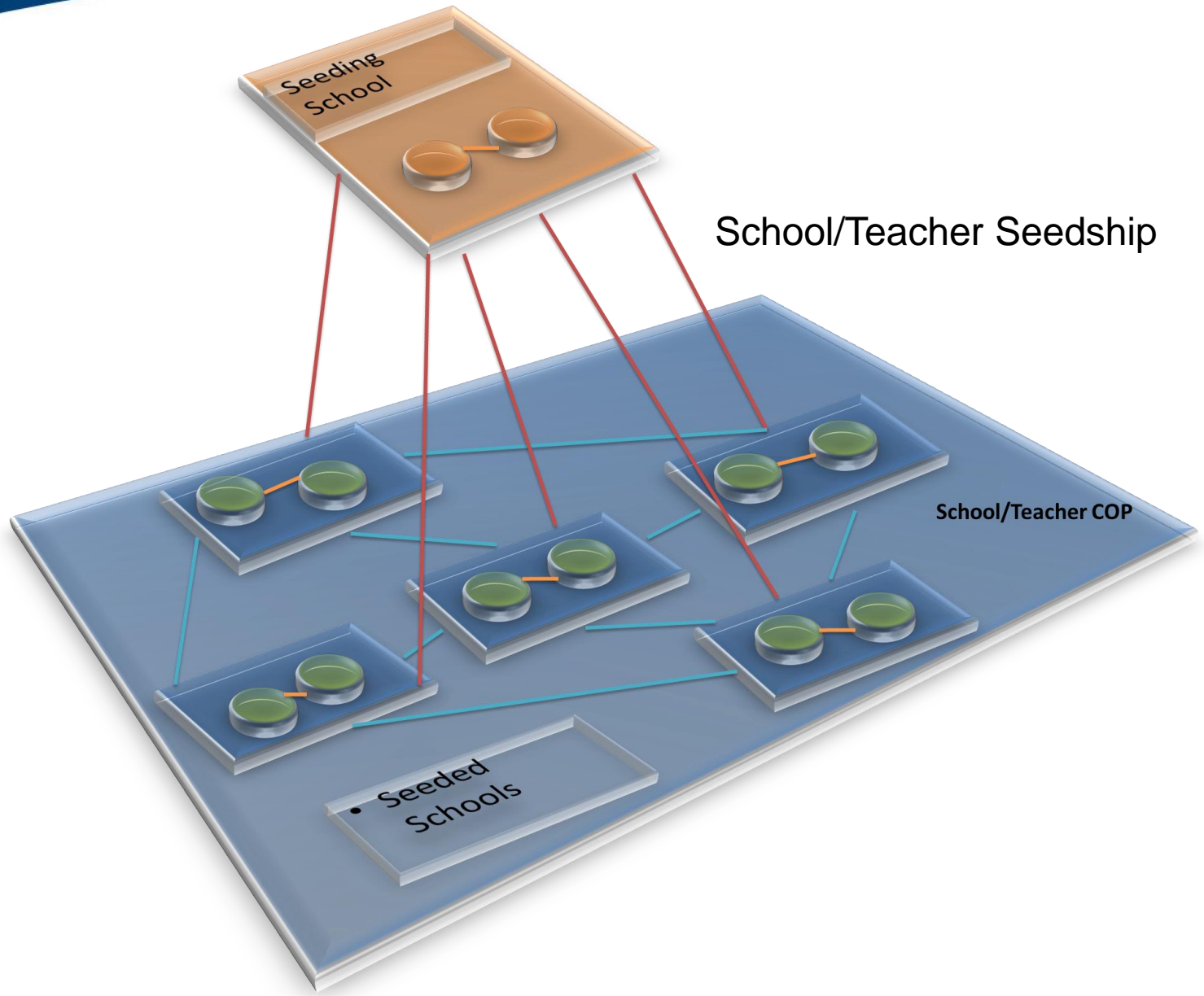


XISHAN  
PRIMARY SCHOOL

Scaling across schools (2013 -)



# Scaling Framework





# Teachers' Learning Journey in 2013

- Researchers and early adopters' introduction of the innovation
- Effectiveness of the innovation
- Objectives of the diffusion

- Collaborative learning
- Use of mobile phone applications
- Classroom management
- Differentiated instruction

- Syllabus
- Learning objective
- Misconception
- 5E model to design activities
- Lesson plan drafting

- Understanding of innovation
- Project implementation understanding
- Concerns

Enculturation

Lesson Observation

Curriculum Co-design

Consultative Inquiry

Seeded Teacher

Preflection: reflection-for-action  
"the process of being consciously aware of the expectations associated with the learning experience"

(Jones & Bjelland, 2004  
Makinster, Barab, Harwood, & Anderson, 2006)

Buy-in of the innovation  
On-board of the scaling

# What Have Teachers Learnt from the Experiences

- Teachers' Understanding Seamless Learning and Extent of Buy-in
  - inherent or intensive use of technology (8)
  - student-centered and teacher as facilitator (4)
  - self-directed (4)
  - beyond classroom, or in and out of classroom (4)
  - life-long learning (1)
  - 21<sup>st</sup> century skills (1)
  - enhance students' interests in science learning (1)

# Teacher Learning Model

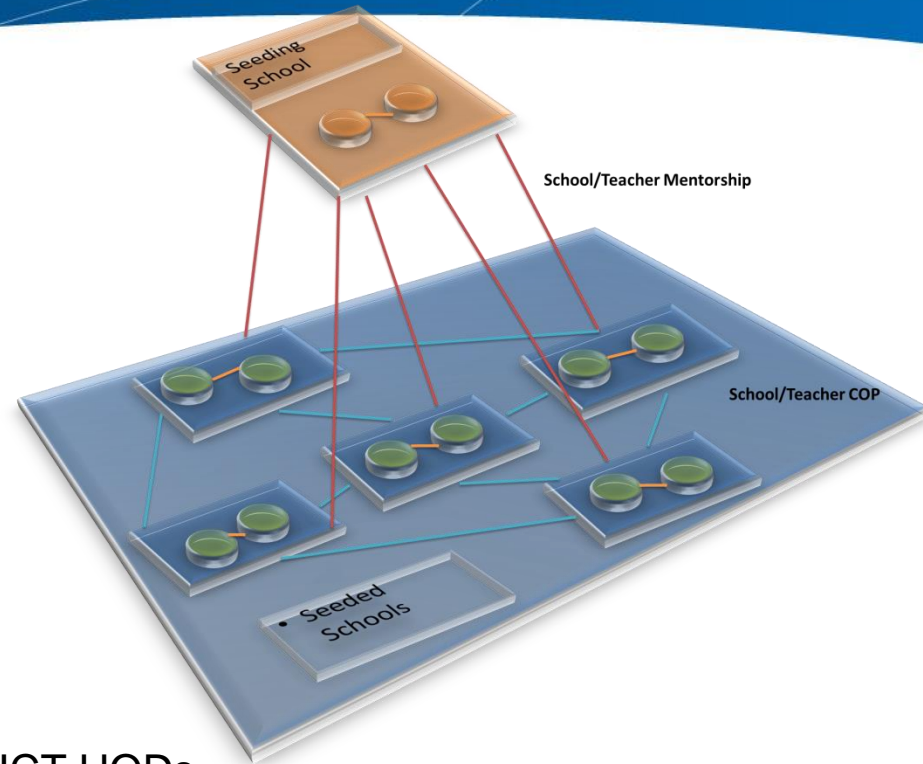
- Participative
- Embodied
- Reflective for action
- Community of practice
- Highlight professional learning rather than technology
- Practitioner to practitioner-to-be

# We have achieved

- Teachers' perceptions of the five attributes of innovation (Roger, 2003) through the prelective learning model, which leads to high degree of buy-in
  - *Relative advantage*: students' significant improvement in answering open-ended questions and their engagement, enthusiasm, and scientist-like mind of thinking in the classroom
  - *Compatibility*: ownership of curriculum design to customize for their own students
  - *Simplicity*: the innovation highlights more on the pedagogy and teachers' capacity building rather than technology
  - *Triability*: baby-step approach of adopting, one experimental class first, and with systemic supports
  - *Observability*: the results of the innovation can be visualized by students' performance in learning

# We are achieving..

- Teacher community of practice
  - To share success and failures
  - To share resources
  - To reflect teaching practices
- Systemic supporting system
  - School Principals, Science HODs, ICT HODs
  - Within school teacher learning community
  - Across six schools teacher community
  - AED and IT technician support



# How A Teacher Is Ready to Implement?


**Tangible  
Vertical/Horizontal  
Support**

Are my school  
leaders supportive?

**Visible Fidelity**

Do I have a  
community to  
support me?

Do I get enough  
support from  
researchers to  
maintain fidelity to  
the innovation?



Am I ready to teach  
in a student-  
centered way?

**Implicit Self-  
Perception**

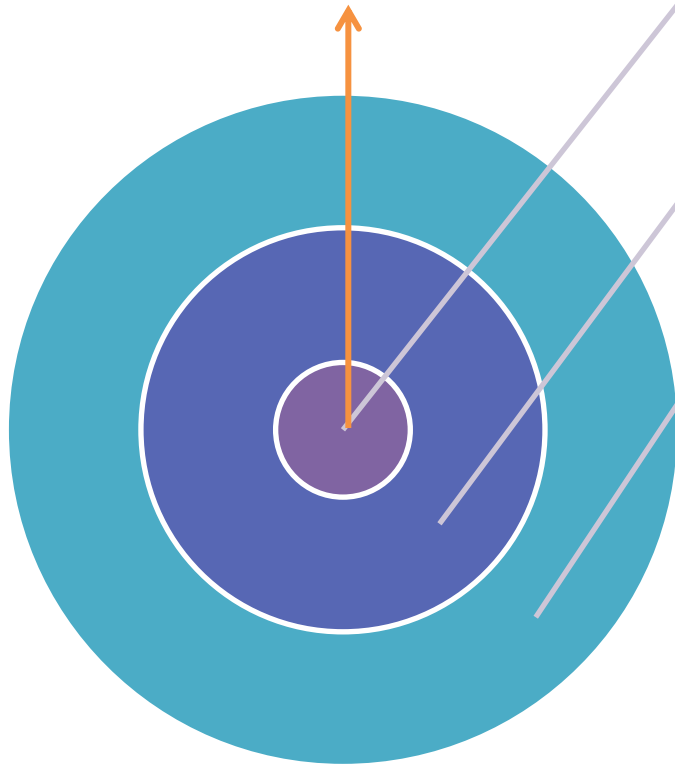
**Explicit Effectiveness**

Will it meet my  
students' needs?

Are my students  
ready?

# Teacher's Readiness at Present

## Lesson Package



Pedagogy

- Willingness to change from teacher-centered way to student-centered way
- Some teachers lack of lower-primary teaching experiences

Curriculum

- Use of 5E as a framework
- Resources shared within COP
- Fidelity to the innovation, lack of researchers' training

Technology

- Lack of hands-on experiences of the gadgets and application

# A Reflective Journey for A Teacher

Pre-Implementation

## Reflection-for-Action

(Preflective learning)

- Perception of the innovation
  - What is the innovation?
  - Does it suit my students' needs?

Implementation

## Reflection-in-Action

- Evolved understanding of the innovation
  - Is the innovation what I expected it to be? If not, what are the differences?
  - What are the core elements that

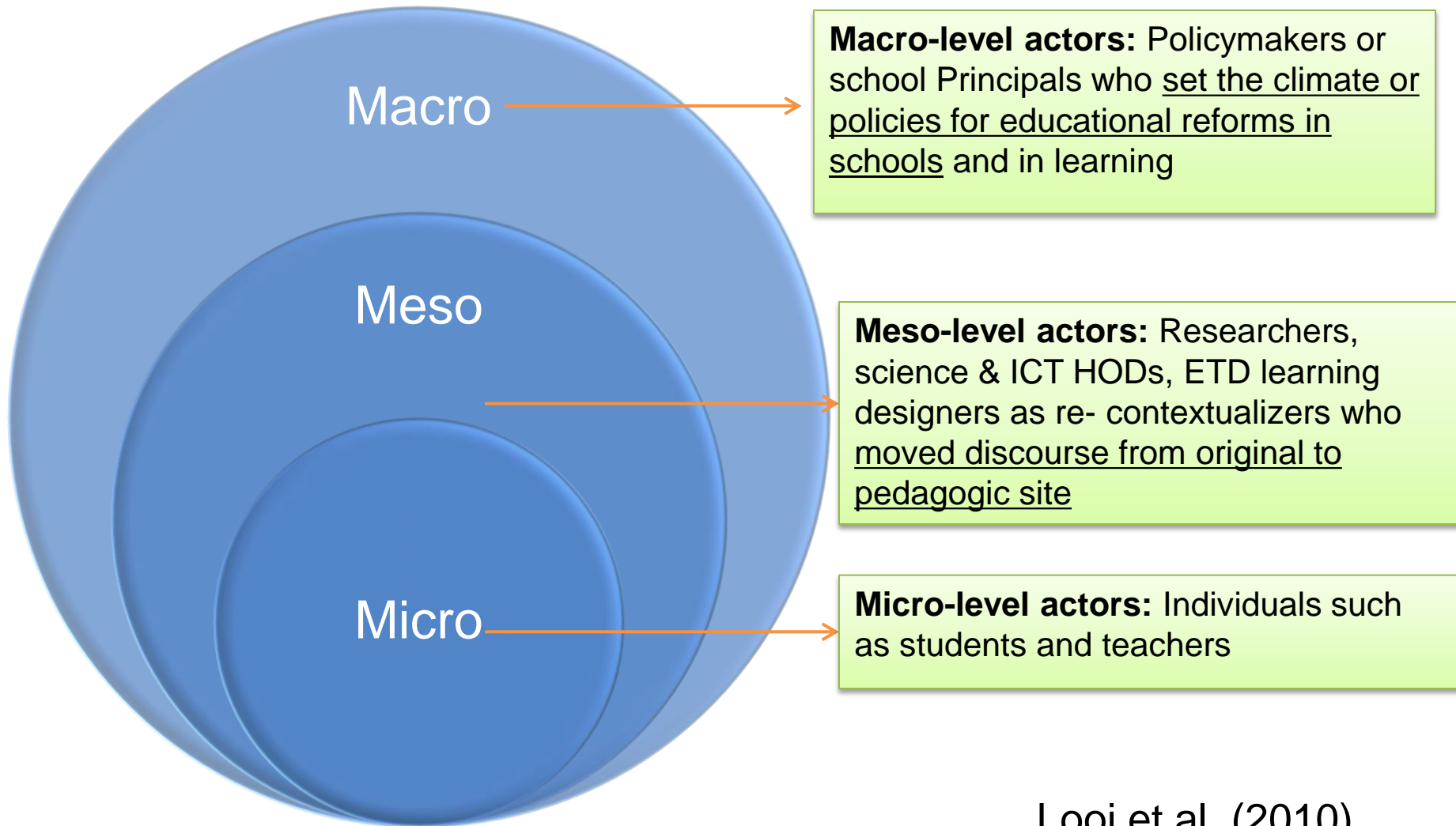
Post-Implementation

## Reflection-on-Action

- Reflective understanding of the innovation
  - Was the innovation worthwhile?
  - What are the strength and drawbacks of the innovation?
  - Do I want to continue and share with my other colleagues? How?
- Curriculum and Instruction
  - What have I learnt from the process?
  - What were the factors that led to the success/failure?
  - Were students' learning improved (in exams and )
  - What are the changes I want to make if I continue to do it?
- Supports
  - Do I need more supports?
  - What kinds of PD do I need?



# Systemic Framework for Enabling Innovative Practices



Looi et al. (2010)

# How Can We Provide Supports to Teachers?

	Pre-Implementation	Implementation
<b>Macro-Level</b> (Policy makers and Principals)	<ul style="list-style-type: none"><li>• Understand the innovation</li><li>• Set expectations and objectives</li></ul>	<ul style="list-style-type: none"><li>• To partner the teachers with HOD/IP on the classroom issues</li><li>• Time/Trust/Opportunity for reflective dialogue among teachers</li><li>• Recognition of their work</li><li>• Implementation dip</li><li>• PD opportunities</li><li>• Support to AED/TA</li></ul>
<b>Meso-Level</b> (ETD learning designers, HODs ICT & Science, and researchers)	<ul style="list-style-type: none"><li>• Understand the innovation</li><li>• Curriculum Planning<ul style="list-style-type: none"><li>• Teacher employment</li><li>• Curriculum adjustment</li><li>• Assessment adjustment</li></ul></li><li>• Predict inter-related tensions and understand teachers' concerns</li></ul>	<ul style="list-style-type: none"><li>• Offload teachers</li><li>• Observe lessons and provide feedback</li><li>• Mediate inter-related tensions</li><li>• Build up inter- and intra-community for sharing, reflection and improving</li></ul>

# Summary

- Teacher capacity building is key in the implementation process
- But we cannot solely rely on teachers for the scaling implementation, a community is needed.
- Systemic support and effort for the “seedship” model to benefit all our participating schools
- A flourishing ecology with iteratively accommodating more innovative practices, and more intra- and inter- teachers and schools





Thank you!