Innovative Teacher Education
: How to Bridge the Gap in Teacher Education

Nisakorn Boonsena Ph.D., Maitree Inprasitha Ph.D., Narumon Changsri Ph.D.
Mathematics Education Program, Faculty of Education,
Institute for Research and Development in Teaching Profession for Asian (IRDTP),
Khon Kaen University, Thailand

Topics for today

1. Important of teacher education
2. Background of teacher education in Thailand
3. Innovative teacher education

1. The Important of teacher education

Sustainable Development Goal 4 highlights the necessity of augmenting the pool of **skilled educators** through **global collaboration**, thereby underscoring the vital role of **high-caliber teacher education** (United Nations, 2015).

Consequently, there has been **a paradigm shift** in such programs towards **lifelong learning** as a cornerstone of the teaching vocation. These programs are now geared not only towards **equipping pre-service teachers** for their initial roles but also towards **providing ongoing professional development** throughout their careers (Loughran & Hamilton, 2016).

There is also a growing recognition of the value of **collaborative engagement** in teacher education, encompassing **peer learning**, the exchange of **effective practices**, and joint efforts in **curriculum development**.

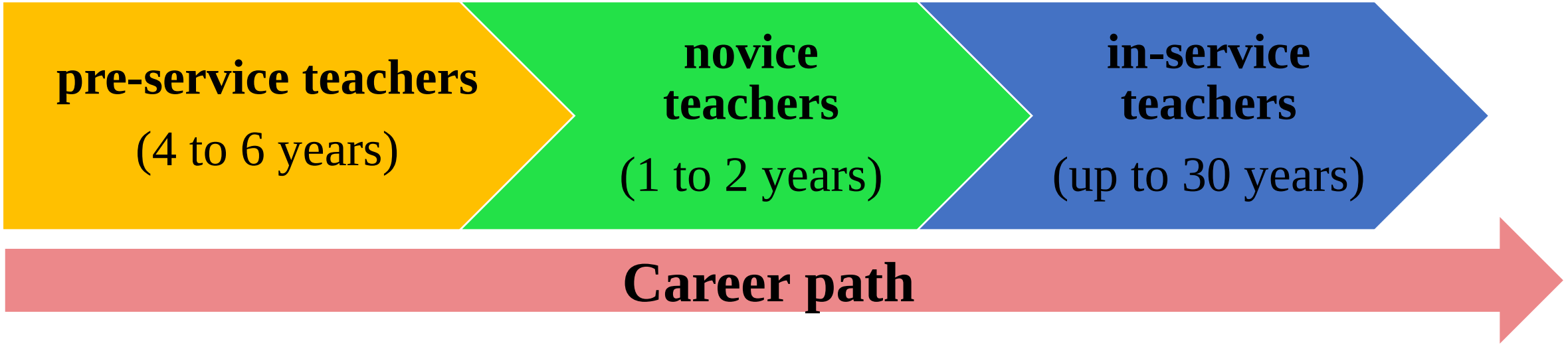
Despite these advancements, **a divide persists** between the **training of pre-service teachers** and the **continuing education of in-service teachers** (Office of the Education Council of Thailand, 2015; Inprasitha, 2006, 2017).

Moreover, teaching strategies in numerous contexts tend to focus on the **short-term enhancement of teachers' knowledge** through workshops that often **separate educators from their actual teaching environments**, **lack innovation**, and **fail to bridge the gap between theoretical knowledge and practical classroom application** (Office of the Education Council of Thailand, 2015; Takahashi, 2015; Inprasitha, 2017).

2. Background of teacher education in Thailand

Teacher education in Thailand encompasses three levels (Inprasitha, 2004, 2015)

- pre-service teachers (4 to 6 years institutional training)
- novice teachers (1 to 2 years teaching experience)
- in-service teachers (up to 30 years teaching experience).



Before 2004, teacher education program was a 4-years program.

In 2004, the government reformed the teacher education program to a 5-years program which 4 years of course works and 1 year for teaching practicum in a school.

Then, 2019 changed back to a 4-years program.

3. Innovative teacher education

Developing innovations in teaching and learning mathematics by focusing on the **process of developing** and **sharing good practices** was more important than importing good practice from other places (Inprasitha, Isoda, Wang-Iverson, & Yeap, 2015).

Therefore, Khon Kaen University's mathematics education program attempts to **reform teacher education** program to meet the emergent demands for knowledge and skills pertinent to the 21st century (Levy & Murnane, 2004) and align with the OECD's 2023 projections for future education and skills (OECD, 2019) in our context.

The curricular structure and professional development, identifying **three principal components** essential for the construction of an effective teacher education program.

- Community of Practice (Lave & Wenger, 1991; Wenger, 1998)
- Reflective Thinking (Dewey, 1933) and Metacognition (Flavell, 1979)
- Teacher's Knowledge (Shulman, 1987)

Teacher's Knowledge

Initiative Courses

Y 1 Y 2 Y 3 Y 4

Total 133 credits

GE 30 credits

Specific Subjects 97 credits

Elective Subjects 6 credits

University Mathematics (18 credits)

- Calculus for Physical Science I
- Linear Algebra I
- etc

School Mathematics (12 credits)

- Numbers and Operations in School Mathematics
- Algebra in School Mathematics
- Measurement and Geometry in School Mathematics
- Statistics Education in School Mathematics

Mathematical Process (10 credits)

- Proficiency in Conceptual Understanding Through Problem Solving
- Proficiency in Procedural Fluency
- Proficiency in Strategic Competence and Adaptive Reasoning
- Mathematics Proficiency in Productive Disposition

- Computational Thinking in School Mathematics

Initiative Courses

Y 1 → Y 2 → Y 3 → Y 4

Total 133 credits

- **GE 30 credits**
  - Languages----12 credits
  - Sciences and Mathematics----15 credits
  - Humanities and Social Sciences----3 credits
- **Specific Subjects 97 credits**
- **Elective Subjects 6 credits**

GE 341 511 Computational & Statistical Thinking in Digital Era — **Y 1-First Semester**

GE 341 512 ABCD: Digital Innovation for Life — **Y 1-Second Semester**

KKU มหาวิทยาลัยขอนแก่น
KHON KAEN UNIVERSITY

Computational Thinking in School Mathematics

Unplugged Computational Thinking Using Colouring Book

Teacher: Dr. Narumon Changsri

Reflection

Expert: Prof. Roberto Araya

Reflective Thinking and Metacognition

KKU มหาวิทยาลัยขอนแก่น KHON KAEN UNIVERSITY

Initiative Courses Y 1 Y 2 Y 3 Y 4

Total 133 credits

- **GE 30 credits**
- **Specific Subjects 97 credits**
- **Elective Subjects 6 credits**

University Mathematics (18 credits)
- Calculus for Physical Science I
- Linear Algebra I
- etc

School Mathematics (12 credits)
- Numbers and Operations in School Mathematics
- Algebra in School Mathematics
- Measurement and Geometry in School Mathematics
- Statistics Education in School Mathematics

Mathematical Process (10 credits)
- Proficiency in Conceptual Understanding Through Problem Solving
- Proficiency in Procedural Fluency
- Proficiency in Strategic Competence and Adaptive Reasoning
- Mathematics Proficiency in Productive Disposition

- Computational Thinking in School Mathematics

14

Building Core Values through Social Activities

17

Reflection in every parts

Community of Practice

Pre-service teacher's teaching practice program (Inprasitha, 2019)

Y-1

- Familiarize with two types of classrooms (traditional classroom and innovation classroom)
- Tool: observation form
- One week

Y-2

- Teacher's work such as how to prepare the lesson plan
- Tool: framework for observation such as Didactic Triangle, interview
- Two weeks

Y-3

- School Culture
- Classroom Culture
- Student's life
- Micro teaching
- Tool: framework for observation such as Didactic Triangle, interview
- Three weeks

Y-4

Teaching practicum

One year

Thailand Lesson Study incorporated with Open Approach (TLSOA)

Faculty of Education in school, School-based training

Pre-service teacher as a key element who bring innovation into school and bridge the gap between production phase, using phase and professional development phase.

Classroom observation

Classroom reflection