Research Report on Teacher Training Programs Aimed at Pedagogical Innovation (Outline)

1. Purpose and Overview of the Research

(1) Purpose of the Research

For securing innovation of teaching methods such as active learning—students independently and collaboratively learn—in elementary and secondary school education, teachers themselves need to have sufficient skills of practicing teaching methods, based on an understanding of how people learn. This study aimed to clarify teacher training programs that help teachers and would-be teachers to acquire such practical teaching skills.

(2) Overview of the Research

In this research, we examined programs where teachers and would-be teachers are able to learn going back and forth between learning theories and teaching practice by collaboration among universities/graduate schools, boards of education and schools, and identified components of programs needed to foster "teachers as life-long learners" from a perspective of learning science. We have researched the teacher training programs executed in organizations in Table 1 below. We conducted various literature reviews, interviews with program executors and participants, and case studies integrating lessons and training visits, etc..

[Research Period: FY 2013-2014, Project Leader: OSUGI Akihide, Director, Department for Elementary and Secondary Education Research]

Table 1. Research Target

Overview	Organization	Person	Collaboration
Teacher Training Overseas	OISE, University of Toronto	Students/Graduates	University – School
Teacher Training at Teaching Profession Graduate Schools	University of Fukui, Teaching Profession Graduate School	Graduates incl. incumbent teachers	Univ./Grad school – Board of Education /Center – School
	Shizuoka University, Teaching Profession Graduate School	Graduates incl. incumbent teachers	
Teacher Training of Educational Boards	CoREF, Saitama Pref. & Tottori Pref. Educational Boards, etc.	Junior and mid-career teachers	

2. Overview of the Research Results

(1) Teacher Training Program Overseas: OISE, University of Toronto

As an example of teacher training programs overseas, we researched OISE at the University of Toronto that have multiple distinctive programs within one organization. Table 2 summarizes the overview of four programs with their features and achievements. The results have indicated that no.3

MA-CSE is most successful, since students (graduates) are able to learn by going back and forth between teaching practices and learning theories on development/cognition; it is especially effective in that they are able to practically learn a cycle of lesson design, teaching material development, ICT (learning support system) utilization and learning evaluation, while participating in cooperation between learning science researchers and teachers, at an experimental school with a new education philosophy "Knowledge Building."

Table 2. Features of Teacher Training Programs at OISE, University of Toronto

	Period	Number of students and licenses	Feature (Initiative)	Overview of the Achievement
(1) Consecutive Teacher Education Pro.	One year after graduating (Incl. remote teaching)	Approx. 1200 students (30-60 cohorts) BEd, Teacher license (Kindergarten-G6/G4-10/G7-12)	Practice and reflection (65 days practice + reflection, plan by intern)	After extending to two years =>> 2015 application closed
(2) Concurrent Teacher Education Pro.	5 years incl. Undergraduate (concurrent learning in other faculties)	Approx. 250 students Simultaneously acquire Bachelor, BEd, Teacher license (Kindergarten-G6/G7-12)	Focus on subjects knowledge (Enrichment of subjects knowledge from 1st grade; teacher training mainly in 3-5 grades)	Some students took jobs other than teachers =>> Application closed
(3) Master of Arts in **Child Studies & Education** Pro.	Two years after graduating	Approx. 45 students Teacher license (Kindergarten-G6), MA	Focus on learning science (Feedback between theory<Knowledge Building> and practice<experimental school>)	Highest rate of teacher adoption (low turnover rate), a model program after closing of (1) and (2)
(4) **Master of Teaching** Pro.	Two years after graduating	Approx. 130 students Teacher license (Kindergarten-G6/G4-10/G7-12),MT	Traditional graduate school of education	Low rate of teacher adoption (Low employment rate)

(2) Teacher Training Program at Teaching Profession Graduate Schools: University of Fukui, Shizuoka University

As examples of teacher training programs in Japan, we researched two contrasting organizations; Teaching Profession Graduate School of University of Fukui that focuses on practice, and the one of Shizuoka University (teaching method development area) that focuses on theories and teaching methods. University of Fukui, as illustrated in Figure 1, first divide incumbent teachers studying as graduate students (left in Figure 1) and graduates (right in Figure 1), and have them experience a whole school life including various issues at hub schools and write reports about it, share them at conferences (weekly, monthly, semi-annual) etc. and discuss them from different viewpoints, aiming to build up practical theories. Shizuoka University does not divide incumbent teachers studying as graduate students and graduates, as Figure 2, and aims to integrate theory and practice (right in Figure 2) by first learning theories and teaching methods (bottom in Figure 2), then learning design, practice and evaluate common lessons as a team in the first grade, and individually practicing action research in the second grade (top in Figure 2). As achievements, foundation of teachers such as

reflection and collaboration habits are acquired at the University of Fukui, and a fundamental understanding of teaching methods through collaborative lesson design is acquired at Shizuoka University.
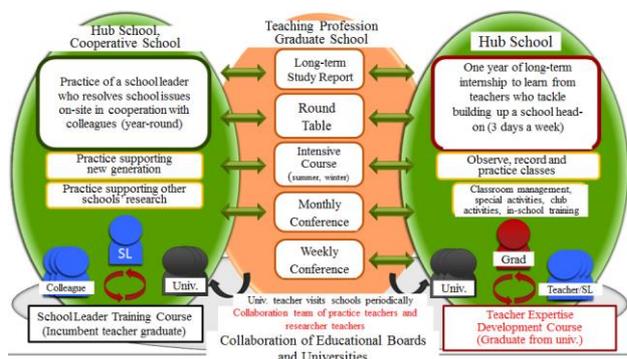

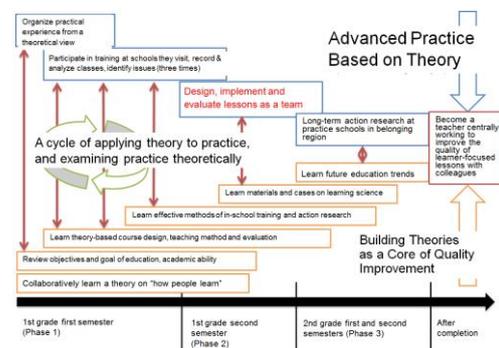Figure 1. Program Overview: University of Fukui, Teaching Profession Graduate School

Figure 2. Program Overview: Shizuoka University, Teaching Profession Graduate School

(3) Teacher Training Program by Cooperation between Educational Boards and Universities: CoREF, University of Tokyo

As examples of teacher training programs by cooperation between municipal boards of education/education centers and universities, we researched a training targeting high school teachers implemented by the Consortium for Renovating Education of the Future (CoREF) at the University of Tokyo, Saitama Prefecture and Tottori Prefecture. In this program, as shown in Figure 3, teachers build up teaching methods by giving lessons in their own subject class, in format of "Knowledge Building Jigsaw method", based on a learning theory of "Constructive Interaction" and acquire expertise through four face-to-face training sessions a year. The aim is to build a habit, through experiences, of designing lessons considering learners' perspectives, improving teaching materials and discussing them before/after class.

Saitama Prefecture helped increase supporters at schools or outside who understand and advise beginning teachers' practice or provide teaching materials for them, by providing training for supervisors, managers and mid-career teachers prior to or in parallel with bringing collaborative learning into compulsory training for beginning teachers, and provided on-line forums to discuss practices, which enables teachers to continuously learn collaborative learning after the completion of training.

Table 3. Example of "Training to Improve Teaching Skills" Program

for beginning high school teacher in Saitama Prefecture

Schedule	Overview
4/25	Short-time briefing on theory => jigsaw experience (Science for Arts students, Civics for Science students) => exchange results => video explanation
6/6 or 7/10	Create jigsaw lessons in subjects (per subject => among subjects)… persons with experiences join and advise
Summer vacation, etc.	Lesson creation and implementation (research study at one's own school)
10/17	Exchange lesson outcomes, further lesson creation… Advice by persons with experiences
1/23	Summarize "challenges" for next year, creating sustainable network

(4) Components Required for Teacher Training Programs

We have identified, as follows, components required for teacher training programs to secure pedagogical innovation considering research results summarized in Table 4 below.

- Components required for all programs (including program foundation):
  - ➤ Habit of collaboration and reflection (practice and review meeting, etc.)
  - ➤ Going back and forth between practice to theory and vice versa, and building of "theory and principles of designing lessons" by students themselves
  - ➤ Pedagogical content knowledge (e.g. teaching materials used in past practices etc.)
  - ➤ Collaborative lesson design as a core of three kinds of learning above
  - ➤ Cooperation among related organizations as a precondition
- Components with different focus per program:
  - ➤ Coverage of "practice" (practice of a whole school life or case study focusing on classes)
  - ➤ Action research intentionality (how much value is put on lesson design and objective assessment of implemented lessons)
  - ➤ How strongly "theory" limits lesson design and assessment methods

Suggested flow as teacher training package are, based on the items above, [know theory => class practice => use past teaching materials => reflect with results => feedback to subjects => reflect on learning beliefs => building network for continuous improvement of quality].

Table 4. Comparison of features among three organizations

Program Positioning and Focus	University of Fukui	Shizuoka University	CoREF, University of Tokyo
1. Inside or outside of school	Inside	Outside	Inside and outside
2. Theory or experience	Experience <=> Reflection (Theory)	Theory =>> Experience	Theory =>> Experience =>> Own theory
3. Observation (intervention) target	Whole school	Lesson first	Lesson first
4. Provision of lesson format	No	Yes	Yes
5. Designing or reviewing	Reviewing	Designing	Designing

6. Objective data or subjective understanding	Subjective understanding	Objective data	Objective and subjective
7. Common or individual subjects	Individual subjects	Common =>> individual subjects	Common format, individual lessons
8. Interaction among students	Different views, multiple layers	Different views on common subjects, multiple layers	Different views on common formats, multiple layers