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Lesson Study: Nice-to-have, or Must-have?

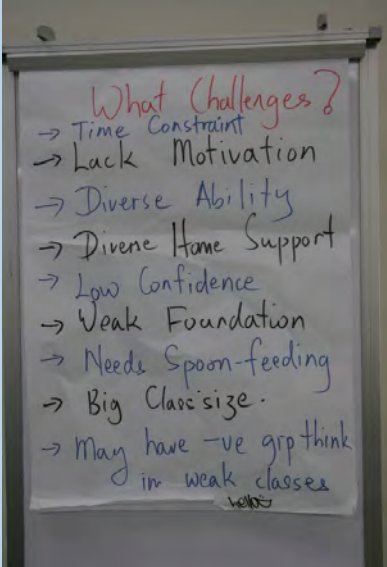
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What Challenges?

- Time Constraint
- Lack Motivation
- Diverse Ability
- Diverse Home Support
- Low Confidence
- Weak Foundation
- Needs Spoon-feeding
- Big Classsize.
- May have -ve grp think
in weak classes

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NCTM's view of problem solving

- Problem solving means engaging in a task for which the solution method is not known in advance.
- Problem solving is an integral part of all mathematics learning, and so it should not be an isolated part of the mathematics program.
- Choosing worthwhile problems and mathematical tasks
 - There are many, many problems that are interesting and fun but that may not lead to the development of the mathematical ideas that are important for a class at a particular time.

One of the major challenges in mathematics education

- Stigler and Hiebert argue that Japanese mathematics lessons better exemplify current U.S. reform ideas than do typical U.S. mathematics lessons (1999).
- U.S. teachers are essentially teaching the same way they were taught in school, because most teachers in the U.S. have not studied to be a teacher and they teach students with their mental pictures of what teaching is like, which they have acquired as students (Stigler and Hiebert, 1999).



Knowing the content that is written in the textbooks is the most important foundation to be a teacher, however it is not enough to be an effective teacher.

- In order to improve the teaching of math in the United States, we need to engage students in exploring mathematical relationships and wrestling with key mathematical ideas. Unfortunately, it's not possible to achieve this goal simply by identifying best practices.
- Listening to experts during special professional development days does not translate into improved teaching. Effective teacher learning must be built into teachers' daily and weekly schedules. Schools must become the places where teachers, not just students, learn.

(Closing the Teaching Gap, 2009)

Three Levels of Teaching

- Level 1: Teachers can tell students important basic ideas of mathematics such as facts, concepts, and procedures.
- Level 2: Teachers can explain the meanings and reasons of the important basic ideas of mathematics in order for students to understand them.
- Level 3: Teachers can provide students opportunities to understand these basic ideas, and support their learning so that the students become independent learners.

“teaching the textbook” and “teaching mathematics using the textbook”

- All teachers should be able to teach mathematics using the textbook effectively.
- What knowledge and expertise are teachers expected to develop in order to use the textbook effectively?
- When and how do prospective teachers and novice teachers acquire that knowledge and expertise to teach using the textbook effectively?

Two major types of professional development

- Phase 1 professional development focuses on developing the knowledge for teaching mathematics,
 - through reading books and resources, listening to lectures, and watching visual resources such as video and demonstration lessons.
- Phase 2 professional development focuses on developing expertise for teaching mathematics
 - teachers should plan the lesson carefully, teach the lesson based on the lesson plan, and reflect upon the teaching and learning based on the careful observation. Japanese teachers and educators usually go through this process using **Lesson Study**

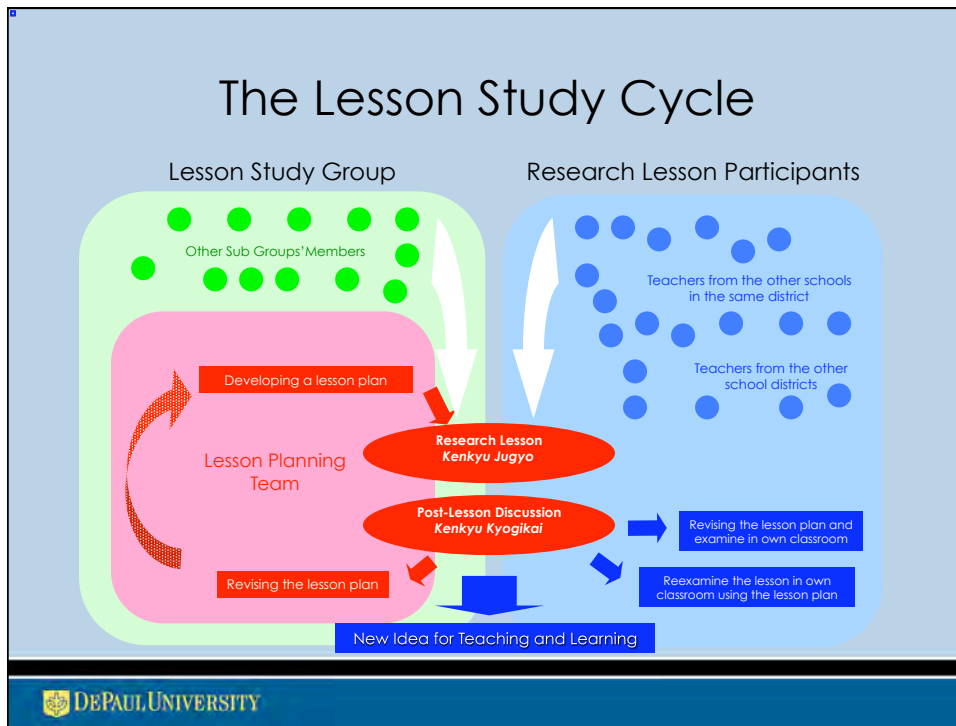
A framework for developing programs and resources
for mathematics teacher education

	For becoming level 1 Teacher	For becoming level 2 Teacher	For becoming Level 3 Teacher
Phase 1 Professional Development	Reviewing the contents for teaching <ul style="list-style-type: none"> •Workbooks •Online courses 	Undergraduate courses for prospective teachers <ul style="list-style-type: none"> •Books •Online resources •Classroom videos •Classroom observation 	Undergraduate courses for prospective teachers <ul style="list-style-type: none"> •Books •Classroom videos •Classroom observation Professional development programs for practicing teachers <ul style="list-style-type: none"> •Workshops •Summer Institute
Phase 2 Professional Development	Developing lesson plans Mock up lessons	Lesson Study Student teaching	Lesson Study School based District wide

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APEC HRDWG Knowledge Bank Wiki

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School-based lesson study

Description	Main Purpose
<ul style="list-style-type: none"> Usually all teachers from a school participate Establish a school lesson study goal Form several sub-groups that engage in a lesson study cycle 	<ul style="list-style-type: none"> Achieving systematic and consistent instructional and learning improvement in the school as a whole Develop a common vision of education at the school through teacher collaboration

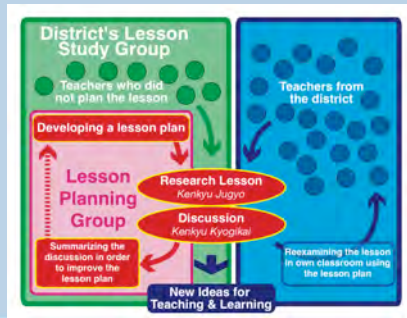
The diagram shows a 'Lesson Planning Group' (pink box) with 'Developing a lesson plan' and 'Summarizing the discussion in order to improve the lesson plan' steps. It includes 'Teachers who did not plan the lesson' (green dots) and the core cycle: 'Research Lesson Kenkyu Jugyo' and 'Discussion Kenkyu Kyogikai'. The final outcome is 'New Ideas for Teaching & Learning'.

A photograph showing a classroom with several teachers and students. One teacher is standing at the front, and others are seated at desks, observing the lesson.

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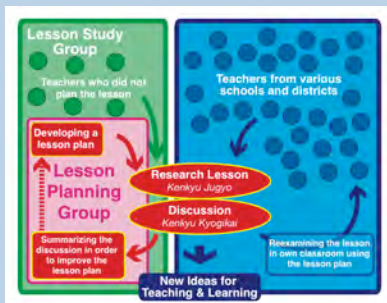
District-wide Lesson Study

Description	Main Purpose
<p>Organized as an intra-school lesson study group Usually subject oriented groups (e.g., math teachers from each school in the district gather to conduct lesson study) Meet once or twice a month</p>	<p>Developing communication among the schools in the district. Exchanging ideas between the schools. Improving instruction and learning in the district as a whole</p>



Cross-district Lesson Study

Description	Main Purpose
<p>Usually a voluntarily organized group Group of enthusiastic practitioners with purpose of improving teaching and learning or curriculum in a certain subject Meet once or twice after school on off-school days</p>	<p>Developing new ideas for teaching chosen topics. Investigating curriculum sequences and contents. Developing curriculum</p>



Essentials for Lesson Study

- Well planed lesson plan with clear hypothesis
At least more than a month for planning
- Live lesson observation with various participants (fresh eyes)
With understanding of the goal of lesson study
- Focused post-lesson discussion based on participants' observation