Plan Lessons

> *Researcher: Is 3 < 8 a true statement?*
>
> *First Grade Student: If you have three really big units and 8 really small ones, 3 could be greater than 8. But if you're working on a number line, then you know that 3 is less than 8 because all the units are the same." **

Since the focus of this work is to learn about Teaching Through Problem-solving, we recommend that you base your lesson on the Japanese textbook excerpts and video provided, rather than devote time to writing a lesson from scratch. For most students at the elementary or middle school level, (re-)introducing fractions using the linear measurement model found in the Japanese textbook (and in Dr. T.'s lesson) is likely to help them build important new insights into fractions. If you worry that the initial activities will be too simple for your students, you can move more quickly to the activities included in lessons two and three: finding non-unit fraction mystery strips, constructing fractions, and connecting to the number line. However, the initial experience of seeing, for example, that 1/3 goes into a meter 3 times will be important for the subsequent activities.

The remainder of the planning of your research lesson can occur as you flesh out the lessons within the unit plan template. To strengthen the elements of TTP as you work on your research lesson plan, consider (re-)visiting Steps 4-7 from support for lesson study cycle 1:

- Neriage
- Board organization
- Teacher questioning
- Student journals

You can see how Dr. T. built students' journal writing skills by reviewing this 2-minute video clip from the beginning of the first fractions lesson. Dr. T. asks students to look at examples of student journals from the prior day (a lesson about calendar numbers) and to add to their own journal-writing. Would a strategy like this be useful to your students?

Three additional linked resources may be useful as questions arise about fractions content:

- Translations of the Japanese teacher's manual related to the 3B and 4B fractions units.
- List of Fractions Units in Japanese Elementary Curriculum
- *Common Core State Standards*, which can be searched for the word "fraction" to read about the trajectory of fraction learning in the U.S.

When you have a final draft of your research lesson plan, please post it (at post & discuss, assignment 3) so the TTP community can see it and respond.

* Dougherty, B. J. & Zilliox, J. (2003). Voyaging from theory to practice in teaching and learning: A view from Hawai'i. In N. Pateman, B. J. Dougherty, & J. Zilliox (Eds.), *Proceedings of the 2003 joint meeting of PME and PMENA* (pp. 17–31). Honolulu, HI: Curriculum Research & Development Group, University of Hawai'i. pp. 19-20. For additional information on the "Measure Up"

curriculum, see Slovin, H. & Dougherty, B. J. (2004). Children's conceptual understanding of counting. In M. Johnsen-Hoines & A. B. Fugelstad, *Proceedings of the 2004 psychology of mathematics education, volume 4* (pp. 4-209–4-216). Bergen, Norway: Bergen University College.