

3. Researcher's Comments (English)

[00:00:17](#) The teacher briefly mentions that in today's lesson the class will learn about polygons. This kind of goal statement was found in 53% of Hong Kong lessons (Hiebert et al., 2003, *Teaching Mathematics in Seven Countries: Results from the TIMSS 1999 Video Study* [hereafter Video Report], figure 3.12).

The lesson starts with a review of convex and concave polygons, and then new material (regarding the sum of the interior angles in polygons) is introduced and practiced. The distribution of lesson time on review, new, and practice material is in the ratio 34%: 52%: 14%.

On average in the Hong Kong data set, the distribution of lesson time on review, new and practice material was 24%: 39%: 37% (Video Report, figure 3.8).

[00:04:07](#) In this problem, the teacher asks students to tell the difference between the two polygons on the board. This is considered to be a "stating concepts" problem statement since the students are expected to illustrate a concept. Indeed, as they solve the problem, the discussion focuses on mathematical properties and definitions. Therefore, the problem implementation is also considered to be "stating concepts."

On average in the Hong Kong data set, four percent of the problems per lesson had a stating concepts problem statement (Video Report, figure 5.8). Of these, 78% were implemented as stating concepts (Video Report, figure 5.11).

[00:08:23](#) Here the teacher assigns a set of four problems. These are classified as "concurrent problems" because they are assigned as a group. This is the first of three sets of concurrent problems assigned during the lesson. Altogether, the class spends 35% of the lesson time working on independent problems (i.e., single problems) and 46% working on concurrent problems. The remainder of the lesson time (19%) is spent on non-problem segments (that is, mathematics presented outside the context of a problem).

The amount of time spent on concurrent problems in this lesson is somewhat higher than usual. On average, Hong Kong teachers devoted more time to independent problems (49% of the lesson time) than they did to concurrent problems (33% of the lesson time) (Video Report, figure 3.4). However, the amount of time devoted to non-problem segments is similar to the Hong Kong average of 15% (Video Report, figure 3.3).

[00:28:13](#) After students work out the problem on the board, the teacher summarizes what the major steps are that they used and how they arrived at the answer. Summaries were provided for 13% of the problems in a Hong Kong lesson, on average (Video Report, table 5.4).

[00:29:11](#) Here the teacher assigns five problems for students to work on at their seats. The

problems lead up to the formula for the sum of interior angles in a pentagon. These problems, like all of those in the lesson, involve a drawing or diagram. On average, 30% of the problems per lesson in the Hong Kong data set contained a drawing or diagram (Video Report, figure 5.2)

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This sequence of problems, as a collection, is considered a mathematical proof. Here the class is verifying that the sum of the angles in a pentagon is 540 degrees. Twelve percent of the lessons in the Hong Kong data set included at least one proof (Video Report, figure 4.4).

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The teacher only has time to go over four of the five problems, so he assigns the last one as homework to be completed for the next lesson. On average in the Hong Kong data set, students work on future homework problems for approximately three minutes during the lesson (Video Report, table 3.8).

Target results are publicly presented for 14 problems (four independent problems and 10 concurrent problems). This represents 100% of the independent problems and 91% of the concurrent problems assigned during the lesson.

On average in the Hong Kong data set, 94% of the independent problems and 61% of the concurrent problems had a solution presented publicly (Video Report, figure 5.7).