

### 3. Researcher's Comments (English)

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[00:01:17](#) There are three outside interruptions in this lesson. The first is here, as some students enter late. The other two interruptions are at 2:52 and 5:05, when the teacher is attending to noise in the hallway. Thirty-two percent of Dutch lessons contained at least one outside interruption (Hiebert et al., 2003, *Teaching Mathematics in Seven Countries: Results from the TIMSS 1999 Video Study* [hereafter Video Report], figure 3.14).

[00:01:59](#) The mathematical work in the class begins by going over three homework problems, for a period of 11½ minutes. On average, 12 homework problems were reviewed in each Dutch lesson and approximately 16 minutes per lesson was spent on these problems (Video Report, table 3.9).

[00:07:53](#) The teacher compares the solutions of two of the problems just completed [ $y = x(4x + 12)$  and  $y = 4x(x + 3)$ ]. He points out that students should always check the terms between the brackets to see if they have a common factor. The problems are therefore considered to have a summary. This period of time is considered to be a non-problem segment that provides mathematical information.

Problem summaries were present in, on average, five percent of problems per Dutch lesson (Video Report, table 5.4). On average, four percent of Dutch lesson time was devoted to non-problem segments (Video Report, figure 3.3), and 69% of non-problem segments were coded as providing mathematical information (Video Report, table 5.5).

[00:14:32](#) The problem that begins here [i.e., "Re-write  $h = -3s(\text{squared}) + 9$  in the form  $\_\_ (\_\_ + \_\_)$ "] is considered to have a "using procedures" problem statement. However, the conversation following a student's request for more explanation gave the problem a "making connections" implementation. The connections between the act of factoring and the meaning behind it (reducing parts of the expression into its prime distribution) are made explicit.

On average, 57% of problem statements in each Dutch lesson were coded as using procedures (Video Report, figure 5.8). Of these problems, 18% per lesson, on average, were implemented as making connections (Video Report, figure 5.10).

[00:34:21](#) The students start individual work on a set of problems that are to be completed as homework. They work on these problems through the remainder of the lesson (approximately 13 minutes).

It was common for Dutch students to work individually during periods of private interaction. Individual work accounted for 90% of private work time per lesson, on average (Video Report, figure 3.10).

Across the Dutch data set, there were, on average, 10 minutes per lesson spent on problems to be completed as homework (Video Report, table 3.8).

The problems involve repeating previously learned procedures. On average, 74% of private work time per lesson in the Dutch data set was spent repeating procedures (Video Report, figure 5.13).

Several of the problems assigned are set in a real-life context. These problems include: "A farmer has a piece of land that is 40m by 70m. He enlarges the size of his land on three sides with strips that are  $x$  meters wide. The farmer wants to put barbed wire around all but a 70m stretch of his field. Show as short an equation as possible for the length of the barbed wire (in meters). How many meters of barbed wire does the farmer need if  $x=20$ ? If the farmer needs 204 meters of barbed wire, how big is  $x$ ? Make an equation for the area of the field with brackets and without brackets (in square meters)."

The use of real-life connections within problems was relatively frequent in the Dutch data set (42% of problems per lesson, Video Report, figure 5.1).

[00:47:07](#)

Forty-nine percent of the time in this lesson is spent in public interaction and 51% is spent in private interaction. There is one shift between the two. On average across the Dutch lessons, 44% of lesson time was public and 55% was private (Video Report, table 3.6). There were, on average, three classroom interaction shifts per lesson (Video Report, table 3.7).

The lesson ends without a public discussion of the problems students were assigned to work on. It was common in Dutch lessons not to publicly discuss the answers to problems assigned as a set ("concurrent problems"). Answers to only 16% of the concurrent problems per lesson were shared publicly in the Dutch data set (Video Report, figure 5.7).

This entire lesson is considered to be review. On average across the Dutch data set, 37% of lesson time was spent in review (Video Report 3.8). Twenty-four percent of the Dutch lessons were entirely review (Video Report, figure 3.9).