

2. Researcher's Comments

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The lesson begins with the teacher asking students several quick questions, many of which are mathematically unrelated to one another. Unrelated problems are those that require completely different sets of operations in order to be solved and are not thematically related.

Such problems were relatively rare in the Australian data set. On average, only four percent of the problems per lesson were unrelated (Hiebert et al., 2003, *Teaching Mathematics in Seven Countries: Results from the TIMSS 1999 Video Study* [hereafter Video Report], figure 4.6).

The remainder of the problems in this lesson were related to one another, mostly mathematically or thematically. On average, 13% of the problems per Australian lesson were mathematically related and eight percent were thematically related. The rest were repetitions (Video Report, figure 4.6).

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This problem is situated in a real-life context. On average in the Australian data set, about one-fourth (27%) of the problems per lesson were set up with a real-life connection (Video Report, figure 5.1).

The problem also involves the use of physical materials, in this case dice. Students throw the dice to determine which cookie will get a chocolate chip. Physical materials were used, on average, in 17% of the problems per lesson in the Australian data set (Video Report, figure 5.3).

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Here the teacher provides a goal statement, telling the students that they are going to work on a simulation exercise that is related to their study of statistics. Goal statements were found in 71% of the lessons in the Australian data set (Video Report, figure 3.12).

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At this point the classroom interaction shifts from public to private. This is the first of 12 shifts between public and private interaction throughout the lesson. Overall, 57% of the lesson is devoted to public interaction and 43% is devoted to private interaction.

In this segment, the students are working in pairs. However, during the private interaction segments that occur later in the lesson, the students work individually.

Across the Australian data set, on average, 52% of the time per lesson was devoted to public interaction and 48% was devoted to private interaction (Video Report, table 3.6). Australian lessons averaged five interaction shifts (Video Report, table 3.7). On average, 73% of the private interaction time per lesson in Australia consisted of students working individually, and 27% consisted of students working in pairs or groups (Video Report, figure 3.10).

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In this problem, in which students are asked to construct a box-and-whisker plot, they are given a choice of how to create the scale. Therefore the problem is considered one in which students are allowed a choice of solution methods. One-fourth of the lessons in the Australian data set included at least one problem in which students had a choice of solution methods (Video Report, table 5.2).

The problem also involves the use of physical materials, in this case rulers. As noted above, physical materials were used in 17% of the problems per lesson in the Australian data set (Video Report, figure 5.3).

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The students are led through an exercise in using their graphing calculators, although they do not have a chance to complete it during this lesson. A reliable estimate for the use of graphing calculators in Australian lessons could not be computed since they were used in less than three lessons (Video Report, chapter 5).

This time-point also marks the beginning of the introduction of new content in this lesson. Up to this point, the students have been reviewing previously learned content. Therefore, 81% of the lesson time is spent reviewing and 19% is spent introducing new content.

On average in the Australian data set, in a given lesson, reviewing accounted for 36% of the time, introducing new content accounted for 30% of the time, and practicing new content accounted for 26% of the time (Video Report, figure 3.8).