

Instrumental orchestrations of mathematical situations in technological environments: deepening the concept through concrete examples

Paul Drijvers, Freudenthal Institute, Utrecht University, the Netherlands

Mathematics teachers are aware of the need to carefully choose or design mathematics problems which take advantage of available technological environments (Guin et al., 2005). An essential question is how to ‘make the task work’ in the classroom: how to organize students’ work in time and space, how to combine individual and collective phases within problem solving, how to integrate each student’s instrument in the orchestra as a whole? To address these questions, Trouche (2004) introduced the notion of *instrumental orchestration*. The strength of the metaphor is that it stresses issues of whole-class management, even if ‘individual’ technology is used.

An instrumental orchestration is defined by its didactical configurations, its exploitation modes and its didactical performances. Figure 1 provides an example from Trouche (2004); other examples are addressed in Drijvers’ key note presentation (Drijvers et al., in press).

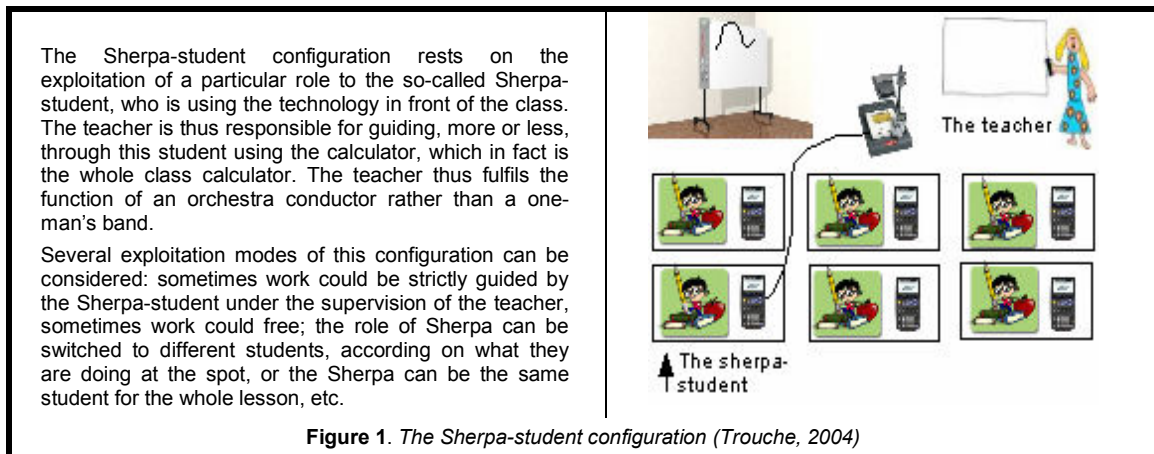


Figure 1. *The Sherpa-student configuration (Trouche, 2004)*

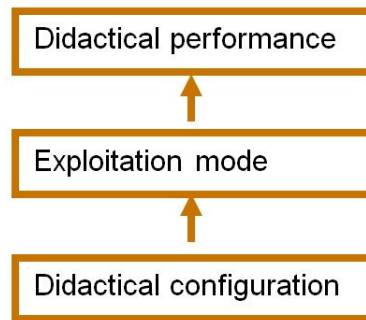


Figure 2. A three-level model of an instrumental orchestration

The aim of this workshop is to elaborate on the concept of instrumental orchestration, and to make it tangible through concrete examples and in interaction with the participants. The model presented in Figure 2 will frame the workshop activity, which includes:

- sharing experiences and experiments with instrumental orchestrations, in order to enrich a common repertoire of configurations and exploitations modes;
- analysing a given instrumental orchestration;
- sharing experiences about co-designing instrumental orchestrations with teachers, or within a given community, or in the context of teacher training;
- discussing the concept itself, particularly the link between the design of mathematical situations and the design of orchestrations.

References

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