Oral feedback in mathematics classroom: patterns and characteristics

Jorge Pinto e Leonor Santos

School of Education of IPSetúbal, Portugal; Institute of Education, University of Lisbon, Portugal

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The formative assessment has assumed over the last few years a recognized importance in several curricular documents (NCTM, 2000). However, these orientations haven't always had a correspondence on the teacher's practice, although the research results point it out that this is a powerful way to the learning process (Black & Wiliam, 1998; Wiliam, 2007). There are several reasons that explain this situation, as the nature of the formative assessment, strongly connected with the teaching and learning perspective of the teacher, and the fact that this way of assessment has to happen in the everyday life of the classroom. It is often seen as something to add to what has already been done. Furthermore, the interactive quality between pupils and teacher is not always itself intentional and critical in the teacher's behavior.

In Portugal, the Project AREA (PTDC/CED/64970/2006) pretends to develop, to put into practice and evaluate assessment practices, integral to the teaching and learning process. The project team is composed of teachers from various levels of teaching and researchers.

One of the focuses of this project is to study feedback, in particular, the oral feedback that happens in the day life of the work between teacher and students. It is possible to have evidence that different teachers develops different feedback, either in different tasks (Santos & Pinto, 2008), either in a same task (Santos & Pinto**,** 2010). The present study pretends to understand: (i) the main characteristics of the oral feedback during a learning task; and (ii) the existence of patterns of feedback related to different moments during the classroom work.

Feedback is a key element of the assessment practices for learning (Sadler, 1989). Feedback is perceived as the information that shows how apart is the "performed" to the "expected" trying to minimize that difference. However, giving feedback is not a

learning guarantee. The type of feedback and the way it is given can be differentially effective (Hattie & Timperley, 2007). It is the quality of feedback and not just the quantity that deserves our attention (Sadler, 1998). For example, feedback can help improving the students´ learning performance when: (i) feedback focuses what needs to be done, (ii) more detailed information is given on how to proceed; (iii) the student is given time in advance to think and work on a certain task (Santos, 2002; Wiliam, 1999). Closed questions, such as specific diagnosis questions, when repeated, might lead pupils to change their opinion quickly, looking only into finding the expected answer by the teacher without deeply thinking about it (Gipps, 1999). This way, the asking of direct and closed questions tends to have superficial answers, with low probability that the pupils think about them (Black *et al.*, 2003). The opened and adapted questions about a specific subject might help the students to change their way of thinking and find new answers in a more comprehensively way, increasing the learning environment's complexity. This practice, however, demands of the teacher a solid professional knowledge (Moyer & Milewicz, 2002).

Methodology

This study follows an interpretative methodology as it seeks to provide a picture of practical pedagogical analysis about oral feedback. We select a mathematics classroom of 50 minutes, with students of twelve years old. The task proposed is about the axels of symmetry of quadrilaterals. The teacher distributed several colorful papers to be pack. This class was audio tape and transcribe.

The analysis grid was developed from the theoretical framing and the reading of diverse episodes of classroom. It includes three dimensions: dynamics (who produces it and to whom it's aimed at), its focus (the area of activity), and the meaning (the pedagogical direction).

- Dynamics
Who produce it? Teacher (T); Students (S); Group of students (Ss)
To whom it's aimed at? Teacher (T); Students (S); Group of students (Ss)

- Focus:Conceptualization (C); Process (Pr); Product (Pd); Classroom management (CM)

- Meaning: Question (Q); Answer (A); Explain (E)

Findings

The first analysis carried out, over 350 interactions, evidences that, from the view of the dynamics, the number of interventions of the teacher is identical to the students. The teacher speaks mainly to the class, the students especially to the teacher. There exist a reduced number of interactions between students and students.

The focus of the interactions is essentially centered in the task, where predominates the conceptualization' questions, followed by the processes one. There seems to be a tendency to be the teacher "questioning", the student "reply", and "explanation" to be done by both. The questions are centered over all in the results or the reorientation of the reasoning. The reply goes in the direction of the resolution and the validation. The presented explanations are partial, not complete. Thus, these results point to the development of a learning environment with a multilateral interaction, centered over all in the conceptualization and the processes (Wiliam, 1999), looking for the teacher to help the student rethinking the task and continue their work (Hattie & Timperley, 2007).

One second analyzes, still in course, will compare the type of interactions found at three moments of the classroom: presentation of the task, development and discussion.

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