



ENCONTRO COM A CIÊNCIA E TECNOLOGIA EM PORTUGAL

O PAPEL DO FEEDBACK NA AULA DE MATEMÁTICA DO 1º CICLO DE ESCOLARIDADE

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INTRODUCTION

"learning is a social, active process involving others, and takes the form of a constant interplay between student and teacher that assists the learner in acquiring the necessary skills and knowledge. The learning process comprises a succession of steps that the student takes, building on the scaffolding provided by the teacher, ultimately leading to the learner's self-regulation and development through a process of internalisation (Vygotsky, 1978).

INTRODUCTION



- discourses invoked in classroom situations do not always support learning
- much of the class time is devoted to teachers' talk
- little time spent on teacher-students interactions
- classes often dedicated to teaching rather than learning
- classroom talk was found to be teacher-centred



INTRODUCTION

- Feedback is central to learning when teachers' comments enable students to enhance their learning strategies

FEEDBACK

- "...is information provided by an agent (e.g., teacher,) regarding aspects of one's performance or understanding that reduces the discrepancy between what is understood and what is aimed to be understood."



INTRODUCTION

- Effective feedback involves a dialogic process involving both student and teacher, and it is essential that students understand the meaning of teachers' feedback and use that information to close the gap between what they know and what they are expected to know



Feedback is most effective when teachers told students:

1. Where am I going?

2. How am I going?

3. Where to next?

(What to do to improve? How to go about it?)



Hattie & Timperley (2007)

Focus of teacher's feedback

Task

Process

Self-regulation

Self

1st AIM

To analyse the relation between the focus of feedback (task, process and self-regulation) and:

- the person responsible for the opening move (teacher or student)
- through the learning process or pedagogical moments (instructional, practising group work, practising individual work, and verification).



INTRODUCTION

- Teachers made statements or asked factual questions 84% of the time
- little time is provided for students to consider their answers
- surface questions promote surface knowledge
- teachers' classroom level of questioning and the complexity of the question, was directly related to students' achievement



2ND AIM

to investigate whether there were variations in the focus of feedback (task, process and self-regulation) related to the student's answer (correct or other than correct) and the type of question (closed or open) posed by the teacher.



Method

Participants

- 5 teachers and their 82 students
- 57.8% male
- They attend the 3d grade of elementary school in Portugal.
- they were 8.07 years old on average ($SD = 0.34$) and range from 7 to 10.



Analysing feedback: Pedagogical moments

Two learning units in the mathematics domain were videotaped: 2 segments of 30 minutes' were analysed from four different pedagogical moments in each learning unit:

- 1) the introduction of new content at the beginning of the lesson (**instructional**);
- 2) a moment of practising new content through small group work (**practising – group work**);
- 3) the last moment of practising new content through individual work (**practising – individual work**);
- 4) verification of the last individual work (**verification**)



Analysing feedback: Patterns of talk

The classroom interactions were analysed in conformance to Sinclair and Coulthard's (1975) pattern of talk:

- Teacher opening move, (T-R-F). (Teacher Opening - Student Answering - Teacher Feedback)
- Student opening move ,(S-F). (Student Initiation - Teacher Feedback)



Analysing feedback: Focus

- **At the level of Self (FS):** Personal feedback typically expresses positive or negative evaluations and effect about the student

Ex: *Praise the students; make them feel welcomed to the class and worthwhile as learners.

- **At the Task level (FT):** is more information focused (incorrect or correct), leads to acquiring more or different information, and builds more surface knowledge. corrective feedback or knowledge of results

Ex: *indicate correct or incorrect responses
 *needing more or different responses
 *providing more or different information relevant to task
 *building on more task knowledge

- **At the Process level (FP):** Feedback at this level describes the process and strategies needed for students to accomplish the task. Feedback at this process level appears to be more effective than at the task level for enhancing deeper learning.

Ex: *helping to provide connections between ideas
 *providing strategies for identifying errors
 *learning how to explicitly learn from mistakes
 *providing cues about different strategies or errors

- Does teacher feedback differs according to the person responsible for the opening move (teacher or student) through the learning process (instructional, practising group work, practising individual work, and verification)



Feedback from Observed Interactions

Focus of feedback	Number of interactions (n = 2037)	
	f	%
Feedback absence	97	4.8
Self	92	4,5
Task	1062	52,1
Task followed by self	118	5,8
Task followed by process	345	16.9
Task & process followed by self	30	1,5
Process	263	12,9
Process followed by self	30	1,4

Feedback and Type of Interaction

Who initiate interaction		Focus of feedback			Total interactions
		Task	Task+ Process	Process	
Teacher	f	720	206	126	1052
	%	68.4	19.6	12.0	62.8
Student	f	342	139	142	623
	%	54.9	22.3	22.8	37.2

significant effects

Feedback and Pedagogical Moment

Pedagogical Moment		Focus of feedback			Total interactions
		Task	Task+Process	Process	
Instructional	f	520	145	84	749
	%	69.4	19.4	11.2	100.0
Practising – Individual Work	f	216	93	83	392
	%	55.1	23.7	21.2	100.0
Practising – Group Work	f	148	74	67	289
	%	51.2	25.6	23.2	100.0
Verification	f	178	33	34	245
	%	72.7	13.5	13.9	100.0

significant effects

- Does teacher feedback differs according to the student's answer (correct or other than correct) and to the type of question (closed or open) posed by the teacher.





Type of questions

- 1) **OPEN QUESTIONS:** the teacher accepts more than one answer and extends students' answers with the intention of bringing the interaction back in line;
- 2) **CLOSED QUESTIONS:** the teacher accepts only one correct answer which both teacher and pupils know to be the true answer to an original factual question.

Students' answers

- 1) **CORRECT ANSWER:** the teacher accepts the answer as correct;
- 2) **OTHER THAN CORRECT** (incorrect, incomplete or don't know): the teacher's feedback indicated that the student's answer was wrong or incomplete, or the student did not answer the question.

Since the number of responses for each of these separate categories was very small, it was decided to group all three categories into one.

Feedback and Type of Answer

Type of answer		Feedback focus			
		Task	Task+Process	Process	Total interactions
Correct	f	470	91	5	566
	%	83.0	16.1	0.9	73.1
Incorrect or incomplete	f	115	58	35	208
	%	55.3	27.9	16.8	26.9

significant effects

Feedback and Type of question

Type of question		Feedback focus			Total interactions
		Task	Task+Process	Process	
Open	f	133	38	9	180
	%	73.9	21.1	5.0	100.0
Closed	f	452	111	31	594
	%	76.1	18.7	5.2	100.0

No significant effects



Final remarks

- Most of the time exchanges between teacher and student present an IRF pattern controlled by teachers;
- Exchanges initiated by the students emerged from moments of learning consolidation, or practice, however, infrequent;
- Feedback at the task spreads throughout all the pedagogical moments;
- In pedagogical moments of practice (individual and group) feedback focused at the level of process occurred more frequently;
- Closed questions were usually employed to test students' knowledge;
- Most of the questions were answered correctly by the students, confirming that both the question level and complexity were low leading to a level of feedback that was focused at the task or product;
- The type of question (mostly closed) and the type of feedback (mostly at the level of task) did not vary;
- Teacher's feedback varied according to the student's response
- For incorrect and incomplete responses, teachers tended to provide more process feedback than in the case of correct answers