THE TEACHER'S ORAL FEEDBACK AND LEARNING

Leonor Santos, *University of Lisbon* Jorge Pinto, *Polytechnic Institute of Setúbal*

This article presents an exploratory study that seeks to build an analysis grid that helps teachers to reflect on its assessment regulatory practice with regard to oral feedback. Three episodes of the mathematics classroom were selected, that constituted different activities and outcomes of learning. The developed analysis allows us to say that the grid could be applicable in different classroom situations. Additionally this analysis highlights several feedback patterns explaining the different contributions to the learning process.

Background and research focus

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 correspondent implementation on the teacher's practice, although the research results point it out that this is a powerful way to the learning process (Black & William, 1998; William, 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 behaviour.

In Portugal, a project is on route, Project AREA[1] that pretends to develop regulating nature assessment practices closer to the pre-school and elementary students, in general, and of middle and high school students in Mathematics. The project team is composed of teachers from various levels of teaching and math educators.

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. For that, we decided to begin with an exploratory study. There are two purposes of this study: (i) to understand the main characteristics of the oral feedback during learning' tasks; and (ii) develop an instrument that provides to teachers to analyze and reflect about their one practice, concerning oral feedback. In particular, we pretend to answer to the following questions:

- Which are the direct intervenient in the feedback?
- In what activity part does feedback focuses?
- What pedagogic meaning can the feedback show?
- Is it possible to identify some relation between this scope and the role of the feedback for learning?

Theoretical framework

In our point of view, learning isn't a simple process of linear accumulation, or a set of parts. It is a transformation process, change, between stages (theoretical or practical knowledge). This change happens by the action of the community inserted subject. Galpérine (1980) argues that the subject activity isn't reduced to just a procedure related to the making, but also to its creation. Therefore, the author highlights a part action

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guiding (which corresponds to the mental process – representation of the task) and another part of the implementation, which is articulated, with the creation of the action (completion of the task). Thus, it's important that the pupil is able to understand the task before getting involved. This means that, the pupil, should be aware of action development, its successive transformations, the means at its disposal and the criteria on which it might be (Jorro, 2000).

Furthermore, the learning occurs between individuals and contextualized social environment, through mediation processes. In these processes, the language plays a central role (Vygotsky, 1986). Therefore, the interaction between teacher and pupils in the classroom is one of the privileged contexts on learning regulation and, as such, one aim of attention of the project AREA. One of the most important aspects of this relationship is the oral feedback given by the teacher.

The feedback is the key to the formative assessment. It can be defined as the information that is given or is being given on how an action is being developed in terms of its quality for success (Sadler, 1989). It is information about the distance between the current level and the desired reference level: the performance of pupils. One of the main feedback characteristics is the usage of this information to improve the pupils performance. The feedback involves two players: student and teacher. Teachers use it to communicate their decisions about readiness, diagnosis and remediation (Sadler, 1989). Students use it to control the strengths or weaknesses of their performances.

The quality of the feedback provided is a key feature in any procedure of formative assessment (Black & William, 1998). However, the literature review about the formative assessment practice in the classroom experimented by Black and William (1998) shows the complexity of this practice. The learning process requires a critical analysis, but not all critical analysis necessarily leads to learning. Stenmark (1989) said that asking the right question is an art that should be practiced by every teacher. Gipps (1999) has the same opinion by saying that asking questions in the classroom might not be as simple as it seems. 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 questions that are opened and adapted to the pupils thoughts about a specific subject, might help them 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, since it brings changes in the management of the classroom and the increased need of a deep knowledge about the scientific area of teaching and about the learning process (Moyer & Milewicz, 2002). To allow the feedback to succeed, it is necessary that the teacher has: (i) a clear idea of the process of task resolution, being able to break down this process into parts, (ii) understand the extent to which the child it is capable of dealing with this process and/or its parts, and (iii) know the figure that the child has, distancing itself from its position of knowledge (it is the teacher role to put himself in the position of another).

In helping feedback type, Jorro (2000) has three big speech types: (i) veridical speech, when based on a power relation, about the form of verdict (truth by power), allowing this to be centered on the characteristics/attitudes of the student or the task; (ii) prophetic speech, focused on a visionary posture about the evolution of the scholar duties, supported on attitudes or personal characteristics, and (iii) the incitement and/or inquiry speech, when searching the student involvement.

In this case, the speech focus in the task.Tunstall and Gipps (1996) proposed another typology of feedback from teachers to children in infant classrooms, in particular related with assessment. “Placed across a continuum representing evaluative-descriptive approaches to assessment, each type has been subdivided creating a dualistic structure” (p. 393), defining two evaluative types: Rewarding and punishing; Approving and disapproving; and others two descriptive ones: Specifying attainment and specifying improvement, constructing achievement and constructing the way forward.

There are many references about formative assessment where other possible categories can still be read as either treat students’ questions being from individual learners or directed live you collective students or questioning you explore and develop students' prior knowledge (Black & William, 1998).

In this references stands out that even so oral feedback is essential for the learning (feedback has already been studied during several years), "teachers do not generally review the assessment questions that they use and do not discuss them critically with peers, so there is little reflection on what is being assessed" (Black & William, 1998, p. 17). In this way, we propose to develop an instrument that helps the teachers to rethink about their action.

Methodology

The main goal of this investigation is to provide a picture of practical pedagogical analysis about oral feedback.

The first version of analysis grid was developed from the theoretical framing and the reading of diverse episodes of classroom. This one was focused in the interaction and 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? To whom it’s aimed at?	 Teacher (T) Teacher (T)	 Students (S) Students (S)	 Group of students (Ss) Group of students (Ss)

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

Meaning	Question (Q)	Answer (A)	Explain (E)

The process of questioning contains many sub-categories, such as to ask for a result (Qr), for a justification (Qjust), place a question that reorients the reasoning line (Qcc) and transmit the validation for others (Qval).

The response process contains many sub-categories, such as repetition (Repete), solving (Solve), correction (Correct), validation (Validate), and justification (Justify).

The explaining contains a total description (Et) or partial (Ep).

Then, we looked for to apply the grid to the three episodes of classroom, which were selected by the following two criteria: in respect to the different lesson aims (the resolution of a problem and the revision of a mathematical concept) and to be for us considered as different in terms of the conformity/efficiency of feedback for the pupils learning. There were selected two episodes relative to the two resolution situations of problems in children with seven and eight years old and an episode of a mathematics

classroom in which it's being reviewed the function concept, with pupils of thirteen and fourteen years old. We had written transcription of the audio register of these episodes.

Results

The first episode is a part of a classroom from the 2nd grade (pupils from seven to eight years old). The teacher is working in a problem formulation.

Episode 1 – An assessment interaction focuses in the task execution

The teacher writes in the whiteboard a problem created by F. on self work: "M. has 13 pens and F. has 24 pens".

1. T: *A. continue the problem…*
2. A: *So, if M. has 13 pens and F. has 24…*
3. T: *No, I want a question, A!*
4. A: *How many pens…*
5. T: *How many more pens does F. have? Write on the whiteboard.*
6. T: (To the class) *Who already did it?*
7. Class. *No.*
8. T. *A way to solve it is with a drawing or counting.*
9. The teacher draws two empty groups on the board and calls L. to go to the board.
10. L. does 24 lines in a group, counting them afterwards.
11. T. *Very nice! Sit down and now M. comes over.*
12. M. does 13 lines in a group and counts them loud.
13. T. *Very nice, you can sit, and who now comes to the board is D. How would you do it?*
14. D. *That's easy …24 + 13 gives…*
15. T. *But it's that what you would like to know?*
16. D. remains in silence
17. T. The teacher writes on the board 13+24 and with the pupil, does the calculation which result is 37.
18. T. *So F. has 37 more pens than M.?*
19. D. looks to the board in silence.
20. T. *It can't be, can't it?*
21. D. *No!*
22. T. looking to I. sheet says: *I'm seeing that I. thought right. Explain your colleagues how did you do it!*
23. I. goes to the board and explains how she did it. At the thirteen lines (that already existed) added lines until she had 24, counting them afterwards, the result was 11.
24. T. *Very nice I.! Now lets all pass the drawing that I. made to the notebook.*

Analysing the episode, according to the analysis grid, we obtain the following table:

	Dynamics	Focus	Sense
1	T/S1	Pd	Q (task 1)
2	S1/T	C	Repeat
3	T/S1	Pd	Correct
4	S1/T	Pd	Repeat
5	T/S1	Pd	Correct/Solve
6	T/Ss	Pd	Q (task 2)
7	Ss/T	Pd	A
8	T/Ss	Pr	Ep
9	T/S2	Pr	Ep
10	S2/T	Pr	Solvep
11	T/S2	Pr	Validate

	T/S3	Pr	CM
12	S3/T	Pr	Solvep
13	T/S3 T/S4	Pd Pr	Validate/CM CM/Qjust
14	S4/T	Pr/Pd	Repeat
15	T/S4	C	Qval
16	S4/-	-	-
17	T/S4	Pd	Solve
18	T/S4	C	Qval
19	S4/-	-	-
20	T/S4	C	Solve
21	S4/T	C	Validate
22	T/S5	Pr	Qjust
23	S5/Ss	Pr/Pd	Justify
24	T/S5 T/Ss	Pd Pr/Pd	Validate CM

Table 1. Episode 1 analysis

From the dynamics point of view of the part analysed, most of the interactions establishes were between a teacher and a pupil. Five students were involved, all of them after a direct solicitation from the teacher.

The feedback focus of the teacher is mostly on the process and result, having very few situations where the relation between the process, the result and the concept is established. We can actually see that the teacher is passing from student to student without the task developing.

The intervention of the teacher goes mostly to the correction of the answer and validation. When the teacher question it is in general requests of justification (two situations) or of validation (one situation). The management questions of the classroom aren't almost present in this episode.

It's important to pay attention to the kind of established interaction between the teacher and the pupil S4 (lines from 13 to 21), pupil that has difficulties in the task that's being solved. The student only repeats what the teacher says, keeps quiet and confirms the teacher's affirmations. Otherwise, the teacher asks for justification, and at last, it's himself to answer the questions. A similar pattern can be observed in the interaction between the teacher and the student S1 (lines 1 to 5).

We can also observe that the class doesn't work as a resource to learning. There's only one question (line 6) that the teacher addresses the class, but focusing the final answer for the task.

The following episode addresses another part of the classroom from the same grade, with another teacher. The pupils are answering to a problem that asks for the age of Rui mother, knowing her birth date.

Episode 2 – An assessment interaction focused on the reconstruction on the meaning of the task

On an activity about the location of the facts on a timeline, R. says to the class that his mother was born on 1969.

1: P (Asks the class): *How old is R. mother's.?*
2. Many students give their different answers trying to guess the age.
3. T: *How do you know the age?*
4. F: *Has 29 years old.*
5. T: *Why? Do you want to explain?*

6. F: *I've counted with the fingers from the birthdate from R. mother to the birthdate from R.*
7. T: *And since 1996, R. mother's didn't had birthdays?*
8. Class: *No…*
9. T: *See if R. agrees, he's the one who knows!*
10. F: *R. does your mother have 29 years old?*
11. R: *No* (laughing)
12. F: *R mother has 21 years old.*
13. T: *How do you know?*
14. F: *Because I know! I know her. When she comes pick R. at the school I see her.*
15. T: *And because you know her that means that you know her age?*
16. F: *She looks like 21 years old.*
17. T: *How can you be sure?*
18. M: *My father is younger, but looks older that my mother, because he has white hairs.*
19. T: *Yes, but then we can't know the age of someone just by the looks.*
20. F: *I know, she has 34!*
21. T: *That's right R?*
22. R: *Yes, he guessed it.*
23. T: *How did you do it?*
24. F: *I'm counted from the birthdate from R. mother till now.*
25. T: *Could you go the board explain to your colleagues how did you do it?*
26. T afterwards works with the data that were necessary to achieve the answer and asks: *Did everyone understood?*
27. T uses a similar problem about R. father and everybody says immediately the correct answer.

	Dinâmica	Focus	Sentido
1	T/Ss	Pd	Q (task1)
2	Ss/T	Pd	A
3	T/Ss	Pr	Qjust
4	S1/T	Pd	A
5	T/S1	C	Qjust
6	S1/T	Pr	Justify
7	T/Ss	C	Qcc
8	Ss/T	Pd	A
9	T/S1	C	Qval
10	S1/S2	Pd	Qval
11	S2/S1	Pd	Validate
12	S1/T	Pd	A
13	T/S1	Pr	Qjust
14	S1/T	C	Justify
15	T/S1	C	Qcc
16	S1/T	C	Justify
17	T/S1	C	Qjust
18	S3/T	C	Justify
19	T/Ss	C	Validate
20	S1/T	Pd	A
21	T/S1	Pd	Qval
22	S2/Ss	Pd	Validate
23	T/S1	Pr	Qjust
24	S1/T	Pr	Justify
25	T/S1	Pr	CM/Qjust

26	T/Ss	Pr+ Pd	Q (task 2)

Table 2. Episode 2 analysis

According to the dynamics part analyzed, most of the interactions are established between teacher and a pupil (S1). Another two pupils intervened in discussion by self initiative. The interaction with this pupil only finishes when he reveals that he has understood.

The feedback by teacher focus in the three dimensions of the task: conceptualization, process, and product, conferring itself that the teacher establishes a relation between these. When the S1 pupil is to think incorrectly, then the teacher doesn't correct it. But he asks the group or the pupil and focus on the conceptualization which addresses the discussion (line 7 and 15).

Every time that teacher spoken, he asks for the justification and validation order. He sends to the pupils theses activities. There is only one situation where teacher confirms the reply of the pupil (line 19). The teacher launches the same type task to verify if all the pupils had learned (line 29). The management questions of the classroom aren't almost present in this episode.

It can still be verified that the class group is look like a resource for learning.

The following episode is about another part of classroom of the eighth grade (pupils with 13 the 14 years of age). The teacher is to review the function concept.

Episode 3. Reviewing the function concept

[While the teacher speaks, she draws a diagram (its represents a function) in the whiteboard, with a two sets. The first one has elements 1, 2 and 3 and the second one has letters].

1. T: These elements [she pointing to the first set] have obligatorily to be all connected there [she points to the second set], and can thus be…
2. D: Oh teacher, so on the left they must be connect, but on the right they don't need to have link?
3. T: For the function to imply all that are from here [points to the start group] they have to have a single connection to there [and points to the final group]; it can't be this [draws another arrow and on of the elements from the 1st group, has now 2 images], you can't connect 2 to B and C, because stops being a unique correspondence.
4. [At the same time, three pupils ask the teacher]
5. A: Therefore not, teacher? Because thus …
6. B: It has that to be always one? [The pupil speaks about the arrival's set, and wants to know if, so that it is function, it must be only one in the arrival's set.]
7. F: And on the right side are the images.
8. T: [The teacher ignores the pupil's reply and goes one]. These one, [she pointing to the arrival's set], and connected…
9. A: Are images.
10. T: [The teacher goes on and she doesn't listen the pupils]... are the images, so there is a image A and a image B.
11. C: The ones that aren't link look like they don't exist.
12. P: Yes! They only belong to the arrival's set; for the function, nothing more.
13. [Pointing to the sheet] Therefore, if x is an object, from the domain of the function f, then it's image presents by f(x) or by y. Usually the objects are represented by x and images by f(x) or by y. We also do…
14. B: Could be another one, teacher?
15. [The teacher goes on]

16. T: How it is that it was? To discover objects and images, what do we do? ... For example, if I had something like this [She writing on the whiteboard f(...) = A], I want to know what the object that has A as image.
17. C e D: [Together] It's 1.
18. T: It's 1. How do we do, this thus, [she writing on the whiteboard f(2)=…], f of the 2 is ….
19. Some pupils: A B.
20. T: And this means what?
21. Some pupils, together: The object 2 will be the image B.
22. A: Oh teacher, so if the objects were linked on the C, the C also were image?
23. D: May be ….
24. B: Thus, the object B has two images?
25. T: Domain, objects…, counter domain, images. I want that you summarised.

	Dinâmica	Focus	Sentido
1	T/Ss	Pr	Ep
2	S1/T	Pr	Qval
3	T/Ss	C	Validate/Q/E
4	Ss/T	Pr	Q
5	S2/T	Pr	Qval
6	S3/T	Pr	Qval
7	S4/T	C	Justify
8	T/Ss	Pr	Ep
9	S2/T	C	Justify
10	T/Ss	C	Ep
11	S5/T	C	Justify
12	T/Ss	Pr	Validate/E
13	S3/T	C	Qval
14	T/Ss	Pr Pd	Ep Qr
15	S1 and S4/T	Pd	R
16	T/Ss	Pd	Validate/Qr
17	Ss/T	Pd	A
18	T/Ss	C	QJust
19	Ss/T	Pd	A
20	S2/T	Pd	Qval
21	S1/T	Pd	Validate
22	S3/T	Pd	Qval
23	T/Ss	C	Q (task 2)

Table 3. Episode 3 analysis

According to the dynamics part analyzed, the teacher addresses the classroom but rarely she answering to the pupils' questions (although they are frequent). She is as if they did not exist. It seems to have an orientation of her speech, which elapses of her knowledge and not of the interpretations that is going on.

The feedback by teacher focus in the three dimensions of the task: conceptualization, process, and product. However, the establishment of a relation between these doesn't seem to exist.

The intervention of the teacher over all goes for the explanation and validation. There is only one situation where the teacher asks for justification (line 18).

It can still be observed that the class group doesn't work as a resource for learning. The group doesn't consider by the teacher as one its interlocutor, but as an "audience".

Conclusions

The select episodes are about very different classroom situations: in one of this cases are to be worked problem formulation, in another one problem solving and in third case it's a revision lesson of a mathematical concept, the function concept. However, in every one of these situations there are a relationship between teacher and pupils (with oral feedback by the teacher). Of the carried through analysis we could say that the grid used is applicable to these different situations. Although, from this analyses emerge different characteristics in each of the three dimensions considered.

One can find very different styles for the dynamics established in the interaction teacher-students. These can go from a dialogue with a student, using the class as a learning resource, to a teacher-centered speech and directed to the class. In the second case, the teacher doesn't react according to the interventions of the pupils. He follows a predefined reasoning and coherent with the logic of the scientific knowledge.

The teacher focus covers in the three episodes the three components of the action (Galpérine, 1980). However, the way as each one of them appears in the feedback of the teacher is diverse. Sometimes, they appear interrelated. In these cases, the teacher appeals to the conceptualization when he/she wants readdress the reasoning of the students and to the processes when he/she search that students validate and justify the gotten results. At times, the conceptualization appears look like support to the explanation of the actions. By the way, this difference is linked with the addresses of the interaction by the teacher. When the teacher preferably questions the students, uses one or another dimension that according to the ways of students thinking, when the teacher mostly explains and validates any one of the action dimensions is based on his/her logic of thought.

Of the carried through analysis we could say that the results of these differences for the learning are varied. In episode two, the teacher finishes the interaction with a pupil after being presumptuous that pupils understood. More than that, at the end, teacher suggests an analogous task to confirm that all are capable to answer. In the episode one, the pupils go on until the teacher is able to find a student who knows to solve the task correctly. In episode three, the teacher also considers a synthesis task about basic ideas, but without a chance to give to each pupil addresses reply to its intervention. These techniques go by the way of meeting to the evolution of the different levels of feedback identified by Black and William (2006). In the analyses episodes, the three teachers develop potential pedagogic situations feedback, and provide situations in which students' answers are evoked. But only the second one, receipt and interpret these to answers further teaching action, permit students to considerer and interpret also these responses and move to the next part of the teaching' learning process.

This study, just as like many others (Black & William, 1998), evidences that feedback isn't enough to contribute to learning. It isn't enough to whish to be able to do it. The intentionality is a necessary condition, but not a sufficient one. The feedback is a complex process that includes a great diversity of components.

Until point, the grid does not include basic dimensions in feedback? Does it is possible to be used for its reflection on the practical action by the teacher? It's true that this reflection could not be made in the share of the classroom. It must be done after classroom. However, it's necessary that the teacher records the interaction (or an audio register, or with the contribution of one of its pairs). This grid will be a mediating process in the development of one practical regulation assessment of the teacher?

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